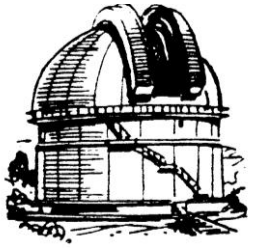
# Journal

**of the**



# Nottingham Astronomical Society

**March 2014**

***Inside this issue***



## Thursday, March 6th

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

**Tonight we welcome**

## Professor Jamie Gilmour

**who will be speaking on**

## Stardust, Meteorites and the Early Solar System

### RECENT NEWS STORIES ON THE WEB

***Follow these links for interesting current news:***

Astronomers See Asteroids Hitting Distant Pulsar

http://www.sci-news.com/astronomy/science-asteroids-stant-pulsar-01776.html

Astronomy: Death of a comet

http://www.nature.com/news/astronomy-death-of-a-comet-1.14741

Astronomers spot record-breaking lunar impact

http://www.sciencedaily.com/releases/2014/02/140224081025.htm

NASA's IRIS spots its largest solar flare

http://www.sciencedaily.com/releases/2014/02/140221153146.htm

Map of complex, carbon-rich molecules abundant throughout the universe

http://phys.org/news/2014-02-complex-carbon-rich-molecules-abundant-universe.html

Stream of stars in Andromeda satellite galaxy shows cosmic collision

http://phys.org/news/2014-02-stream-stars-andromeda-satellite-galaxy.html

# Sky Notes
## March 2014

**Compiled by Roy Gretton**

*All times are given in Greenwich Mean Time (GMT) unless otherwise stated*

The northward equinox (Spring Equinox in the northern hemisphere) occurs just before 5 pm on March 20th. At this time the Sun will be directly above Earth's equator.
British Summer Time begins at 01:00 on March 30th, when clocks will be advanced by one hour.

**PHASES OF THE MOON**

| | |
|---|---|
| New Moon | 8 am on March 1st |
| First Quarter | 1:27 pm on March 8th |
| Full Moon | 5:08 pm on March 16th |
| Last Quarter | 1:46 am on March 24th |
| New Moon | 7:45 pm **BST** on March 30th |

This month the Moon is closest to the Earth on the 27th, and furthest on the 11th.

**THE PLANETS**

**Mercury** spends the month as a morning object, reaching greatest western elongation (28 degrees) on March 14th. But even on this date it will be unobservable from the UK, being less than one degree above our horizon by the time the Sun is 6 degrees below it.

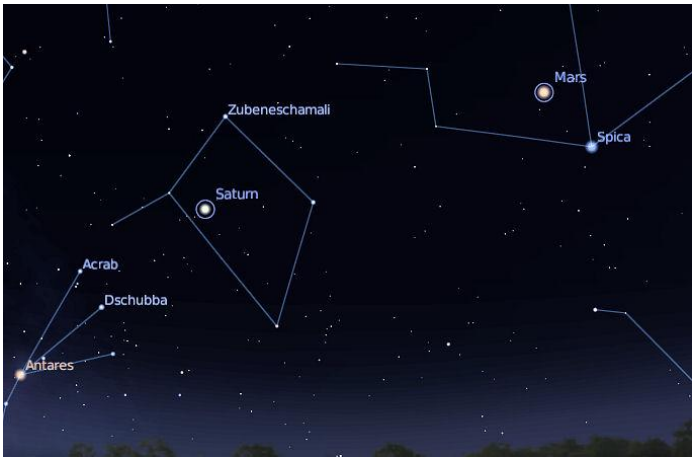
**Venus** is also a morning object, about 46 degrees from the Sun throughout March. During this time it will be fading slightly (though still brilliant), but not well placed for observation from our latitude, due to its southerly declination.

**Mars**, in the constellation of Virgo, begins its retrograde motion on the first day of March, meaning that we shall see it loop westwards to the north of Spica. By now it will be rising before 8:30 pm, and growing in brightness until it reaches magnitude –1.3 by the close of the month. In a matter of a few weeks its angular size will have expanded from 11.6 to 14.6 arcseconds, making telescopic observation increasingly worthwhile.

**Jupiter**, high in the constellation of Gemini, continues to adorn the evening sky throughout this month, although it is fading a little (from magnitude –2.4 to –2.2) and shrinking in apparent size (from 42 to 39 arcseconds). It remains very well placed for evening observation.
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 100mm 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.

| March | Shadow transit of |
|---|---|
| 2nd | Io 18:31 to 20:46 |
| 6th | Europa 20:47 to 23:29 |
| 9th | Ganymede 18:08 to 21:24 |
| 9th | Io 20:26 to 22:41 |
| 11th | Callisto begins 21:11 |
| 13th | Europa begins 23:23 |
| 16th | Ganymede begins 22:08 |
| 16th | Io begins 22:21 |
| 25th | Io 18:45 to 21:01 |
| 31st | Europa 18:52 to 21:35 **BST** |

**Saturn**, in the constellation of Libra, begins its retrograde motion on March 3rd. By this time it will be rising at about midnight and shining at magnitude +0.4. With the ring system tilted at nearly 23 degrees to our line of sight, the planet is a glorious spectacle through a telescope, even though it is not high enough in our sky to be seen at its best. Saturn's largest and brightest satellite, Titan, will be due north of the planet on March 15th and again on the 31st.




Looking south at
3 am on March 16th

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

**METEORS**

None of our regular meteor showers reach maximum activity in March.

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## NATIONAL STUDENT SPACE CONFERENCE

### LEICESTER UNIVERSITY, March 1st and 2nd 2014

You don't have to be a student in order to attend.

For further details go to http://ukseds.org/nssc2014/

# DIARY DATES 2014

## Monthly Meetings of the Nottingham Astronomical Society

Our programme for this year is shown below. Don't forget to 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

doors open at 7:30pm for 8pm start.

**Thursday 6th March 2014**

**Stardust, Meteorites and the Early Solar System**

**Prof. Jamie Gilmour**

**Thursday 3rd April 2014**

**Basic Astrophotography**

**Paul Money**

**Thursday 1st May 2014**

**White Dwarf Stars**

**Dr Sarah Casewell**

**Thursday 5th June**

**Practical Radio Astronomy for Amateurs**

**Paul Hyde**

**Thursday 3rd July**

**Phoenix from the Ashes – the Origin of the Chemical Elements**

**Prof Mike Edmunds**

**Thursday 7th August**

**Summer Break - No meeting**

**Thursday 4th September**

**Members' Evening – Non-members welcome – Topics to be arranged**

| |
|---|
| **Thursday 2nd October**<br><br>**The Latest on the Sun**<br><br>**Dr Lucie Green** |
| **Thursday 6th November**<br><br>**2014 Annual General Meeting** |
| **Thursday 4th December**<br><br>**Into the Cosmic Ocean**<br>***The Dream of Travel to the Stars*** |

## 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.

## ADVERTISEMENT

## TELESCOPE FOR SALE

**Meade LX90 10-inch with tripod and many extras**
**Ready for use - all you need is a 12-volt power source**
**Can be inspected in Keyworth**
**Free delivery within a reasonable distance**
**Special price for Society members - only £1300**

**Please contact Sam Boote at s.boote@bcs.org or at Society meetings.**

## TEN YEARS AGO: From the March 2004 issue of the NAS Journal

**NAS Observatory work weekend, 21-22 February 2004**

A superb piece of teamwork by members (and a very good friend) of the NAS during the weekend of 21st -22nd February successfully installed the observatory dome shutter mechanism along with other tasks. Much thanks are due to **Mike Provost** for co-ordinating all the activities and to **Nick Howarth**, for designing and installing the mechanism. Many members came along to the site to work, lend tools, or provide much welcome food and drink. Despite the freezing cold weather, more than half the current total membership of the NAS visited the site during the weekend. A wonderful turnout - Thank you, everyone!

**Saturday**
A really productive day at the Observatory. Nick Howarth (assisted by **David Owen**, **Richard Stewart**, **Roy Gretton** and **Greg Eisenhauer**) got the pulley blocks and motor mechanism bolted to the dome, and one of the chains threaded up. **Keith Harris** and **Paul Saxton** (assisted by David Owen) got the electrics wired up and tested. **Paul Stocks**, **Stuart Atkin** and **David Lukehurst** came early to lend us tools and take photos and **Fred Hopper** and **Cyril Henry** arrived later with food and drink. David Owen used some spare 240V generator output to charge up some of the batteries and began to check them over.
The scaffolding worked well: thanks to **Joe** and **Dorothy Sowerby** for getting that set up on Friday. For some, there seemed to be a fair amount of standing around while Nick drilled away, but there were moments where everybody's help was needed and we wouldn't have managed with just a few of us. Apologies to anyone whose contribution has not been mentioned – it was a long day!

**Sunday**
Nick's mechanism works! We wound the shutter up and down several times, both by hand and with the electric motor. The chain wasn't running properly on one of the pulleys and in an attempt to guide it properly a bolt was added to the pulley block. The bolt guided the chain perfectly, but caught on one of the springs and bent it out of shape. The overload also broke the flexible coupling ('spider'). But from this, we discovered that under such circumstances, the coupling, rather than the motor/gearbox, breaks. So we have an unexpected 'mechanical fuse' in the system because the coupling failure torque is greater than what the motor can produce, according to the specifications.

**Later in the week…**
Greg fitted a piece of Teflon to enable the chain to run smoothly over the pulley. This completed all the 'overhead' work. Joe and Ted later dismantled the tower scaffold, which has now been collected from the site. Joe freed, wire brushed, oiled and re-assembled the telescope mounting bolts and nuts on the concrete block. Greg and Mike replaced the bent spring on the chain with a new one.

***What's next?***

There are a few jobs that remain to be completed and the weekend of **6th -7th March** now looks set for the final 'push' to finish everything off. We can discuss details at the CTC meeting on 4th March. As before, some volunteers are needed please…

Beacon Hill Telescopes have now completed all the components of the large telescope. It will be test assembled and then dismantled ready for transport to the site. David Lukehurst is liaising with BHT and an installation date is expected to be set soon.

# INTRODUCING Sky Guide

I'm Mat, a member of NAS and also of a small team of three that have built a star gazing app for iPhone and iPad called Sky Guide.
The team is Nick Risinger (astrophotography and design), Chris Laurel (programming and hard sums), and me (music and sounds). The other two are both based in Seattle, US.
Nick travelled 60,000 miles to take 37,000 photographs of the night sky for Sky Guide, which is, unbelievably, still the largest true-colour image of the night sky and Milky Way. If the name seems familiar you may have seen him talking about creating it on Horizon on BBC2, or the Sky Guide image being shown on Stargazing Live.

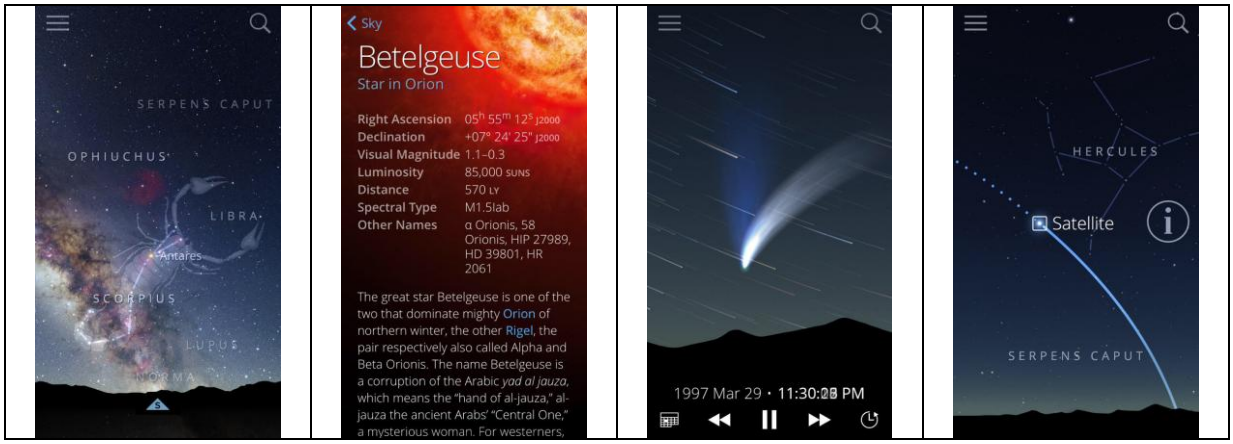
The app itself shows you the night sky at your location to aid identification of the stars, planets and satellites above you. There are a few apps that do this, but this is the only one using a photographic image rather than computer generated dots for the stars.

To encourage discovery, when you tap on a star it plays a note (from an old 70s ARP Odyssey synthesizer, for any audio geeks); the hotter the star, the higher the pitch; the nearer the star, the louder the note. Planets, satellites, clusters, constellations and nebulae all have their own sounds too. The notes are all in-key with the background music so you can 'play the stars' and create music.

Tapping an object allows you to bring up info such as the mythology of the constellation (written by Ian Ridpath, whom some of you may know from Astrofest), the distance, the gravity on a planet, etc or whether the satellite you're looking at is a discarded rocket from the Soviet era. I was quite surprised at just how many satellites are space junk.

There is also a time-lapse mode where you can speed up or rewind time. You can see comets from history bend as they approach the Sun (full particle modelling), satellites wiz across the sky, or my favourite: in 60 days/second mode, you can see the inner rocky planets orbiting the Sun, as seen from your back garden!

Of course there are more features, and hundreds of articles, so if you'd like to see more you can find it on the iPhone, iPod Touch and iPad, I also have a few free promo codes if anyone is interested.
We've been very lucky so far with the number of users and awards from Apple and more, and there are still more updates to come.



# Nottingham Astronomical Society

Affiliated to the **B**ritish **A**stronomical **A**ssociation
Member of the **F**ederation of **A**stronomical **S**ocieties
Member of the **S**ociety for **P**opular **A**stronomy
Supporters of the **C**ampaign **f**or **D**ark **S**kies
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***CAMPAIGN FOR DARK SKIES REPRESENTATIVE:***
**Barrie Chacksfield**
*email:* b.chacksfield@gmail.com

***ORDINARY COMMITTEE MEMBERS:***

**Kevin Greally**
**David Anderson**
**Phil Heesom**
**Jackie Sutton**

## 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.

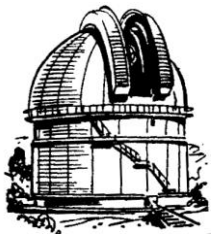
### *Annual subscriptions 2014*

| | |
|---|---|
| Full | £25 |
| Concessions | £12.50 |
| Joint rate for partners living at the same address | £37.50 |

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.

# NOTTINGHAM ASTRONOMICAL SOCIETY



Founded in 1946 for all interested in astronomy
Affiliated to the British Astronomical Association
Member of the Federation of Astronomical Societies

Registered Charity No. 1066645
Member of the Society for Popular Astronomy
Supporter of the Campaign for Dark Skies

## *Membership application and Gift Aid declaration*

**Title:**

**Full name:**

**Full home address:**

**Postcode:**

**Telephone:**

**e-mail address:**

| | | | | | |
|---|---|---|---|---|---|
| **Subscription rate:** | Full | £25.00 | (year) | £12.50 | (half year) |
| | Concession | £12.50 | | £6.25 | |
| | Partnership | £37.50 | | £18.75 | |

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

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