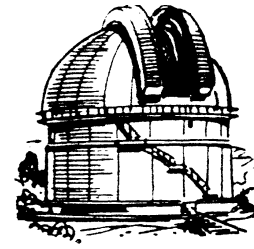


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# Journal

of the



## Nottingham Astronomical Society

November 2012

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Thursday, November 1<sup>st</sup>

British Geological Survey

Nicker Hill, Keyworth

8 pm (doors open at 7.30pm)

Tonight we shall be holding our

## Annual General Meeting for 2012

We encourage all members of  
the Society to attend if at all  
possible

### An Exoplanet on our doorstep!

The Harps instrument (High Accuracy Radial velocity Planet Searcher) at the European Southern Observatory's La Silla facility in Chile has discovered the nearest known planet outside of our Solar System, orbiting one of the stars of the Alpha Centauri system, a little over four light-years away. The planet, designated **Alpha Centauri Bb**, has a similar mass to that of Earth, but is nearer to its star than Mercury is to our Sun.

Alpha Centauri is a double star, with components A and B. The whole system probably includes a third component, Proxima Centauri, which is the closest star to the Sun. Of the more than 800 exoplanets discovered up to now, Alpha Centauri Bb is by far the closest to us.

The Harps instrument detects the presence of planets spectroscopically by the detecting the tiny changes of wavelength in the starlight, caused by motion in the line of sight (redshift or blueshift). This new planet causes the star to wobble backwards and forwards at a speed of only half a metre per second, the measurement of which requires equipment of extraordinarily high sensitivity. Measurements made over a period of four years show that the planet orbits Alpha Centauri B in just 3.6 days, suggesting that the hemisphere facing the star has a surface temperature above 1000 degrees Celsius.

# Sky Notes

## November 2012

Compiled by Roy Gretton



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

### PHASES OF THE MOON

Last Quarter	7 <sup>th</sup> November, 00:36
New Moon	13 <sup>th</sup> November, 22:08
First Quarter	20 <sup>th</sup> November, 14:31
Full Moon	28 <sup>th</sup> November, 14:46

*(Data from the BAA Handbook)*

This month the Moon is closest to the Earth on the 14<sup>th</sup>, and furthest on the 1<sup>st</sup>.

### THE PLANETS

**Mercury** is unobservable for most of November, although at the end of the month it will be 20 degrees from the Sun in the pre-dawn sky. Look toward the southeast in the constellation of Libra, below and to the left of Venus.

**Venus** will be visible low in the southeast before dawn for the whole of November. On the 11<sup>th</sup> the crescent Moon will be 5 degrees to the south of the planet. By the end of the month Venus will be less than 30 degrees from the Sun.

**Mars** is now no longer available for observation from the UK. We shall have to wait at least six months for the planet to become a worthwhile target again.

**Jupiter** is the outstanding planetary object in our sky, and will be such throughout the coming winter. Shining brightly at magnitude  $-2.8$  in the constellation of Taurus, it is now undergoing retrograde motion (i.e. moving westwards toward Aldebaran).

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 80mm 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 (*Data obtained from the BAA Handbook*).

November 2 <sup>nd</sup>	Shadow transit of Io	19:46 to 21:56
4 <sup>th</sup>	Europa	beginning 22:45
9 <sup>th</sup>	Io	21:40 to 23:50
16 <sup>th</sup>	Io	beginning 23:34
18 <sup>th</sup>	Io	18:02 to 20:13
21 <sup>st</sup>	Ganymede	18:38 to 20:43
22 <sup>nd</sup>	Europa	17:15 to 19:39
25 <sup>th</sup>	Io	19:56 to 22:07
28 <sup>th</sup>	Ganymede	beginning 22:38
29 <sup>th</sup>	Europa	19:51 to 22:15

**Saturn**, having passed through conjunction with the Sun on October 25<sup>th</sup>, is unobservable this month.

**Uranus**, shining at magnitude 5.7, is an evening “star” in the constellation of Pisces. *See further information below.*

**Neptune**, in the constellation of Aquarius, is becoming increasingly difficult to observe in the evening sky.

## METEORS

The two main meteor showers expected in November are the **Taurids** (maximum activity on the 5<sup>th</sup>, with a predicted zenithal hourly rate of 10), and the **Leonids** (maximum on the 17<sup>th</sup>, with a possible ZHR of 20). We have favourable conditions for both showers this year, with little interference from moonlight.

## VARIABLE STAR: Algol

There are **five** minima of this **eclipsing binary** visible from the UK this month. They occur on November 1st (22:50), the 4<sup>th</sup> (19:40), the 19<sup>th</sup> (03:45), the 22<sup>nd</sup> (00:35) and on the 24<sup>th</sup> (21:25). The star dims from its normal brightness (magnitude 2.1) magnitude 3.4 over a period of 4.8 hours, and then returns to its normal brightness in a similar length of time.

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## DIARY DATES 2012

### **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](http://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 1st November 2012**

**2012 Annual General Meeting**

**Thursday 6th December 2012**

Talk: “ **Climate Change and the Sun-Earth Connection**”

**Dr Jim Wild**

Space Plasma Environment and Radio Science Group  
Lancaster University

## Nottingham Trent University Open Dome Event –

### "The Space Race - Why we have to travel to the stars "

**Date:** 28 November 2012

**Time:** 8.00 pm - 10.00 pm

**Event:** Open Dome Event – The Space Race - Why we have to travel to the stars

**Location:** CELS then Optical observatory, Clifton campus

**Details:**

Remote unmanned robots and satellites have vastly increased our knowledge of the solar system. We can even carry out geological field work remotely or return soil samples. So there is really no need for us humans to leave the planet. Or is there?

The event will start at 8 pm with Dr. N. Champion (University of Wales) making a case for human space flight. In his talk "The Space Race - Why we have to travel to the stars" he will review our past endeavours and illustrate a deep rooted need for humans to face the challenges of human space exploration. This talk will be followed by a brief introduction on what is visible in this month's sky. Afterwards, visitors will get a tour of the NTU observatory and the chance to see interesting objects in the autumn sky with the observatory's telescopes, small telescopes, and binoculars if the weather allows it.

If the weather is not good, a small planetarium session will be offered in the observatory pointing out objects of interest.

**Booking is required for this event. Please contact [Daniel Brown](#) to register.**

For further information about the optical observatory, please visit the [observatory website](#).

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## The Nottingham Astronomical Society: E - SERVICES

Whether or not you are a NAS member, you can now 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 Journal e-mailing list**

To register for your monthly e-mailed copy of the NAS Journal, 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.

## Focus on Uranus

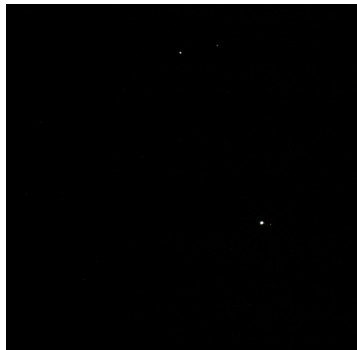
Year by year, Uranus is gradually becoming better placed for observation from the UK. In 1969 it moved south of the celestial equator, but crossed back into the northern hemisphere in 2011, where it is destined to reside for the next 40 or so years. It will reach its most northern declination in 2034, when, on its slow progress around the celestial sphere, it will have reached the constellation of Gemini. With an orbital period of 84 years, Uranus reaches opposition to the Sun about four days later in each successive year.

Early evening is a good time to find Uranus this month. At the start of November it is due south at about 21:30 UT, and nearly 40 degrees above the southern horizon at that time.

The Editor obtained the following images of Uranus on the evenings of October 10<sup>th</sup> and 14<sup>th</sup>, to show the movement of the planet, relative to the two stars near the top of each frame, over a period of four days. The images were obtained with a Canon 450D camera at the prime focus of a 30-cm f/5.2 reflector. The exposure was 30 seconds at ISO100 in each case. The third image is a close-up of the planet, showing a tiny featureless disk.



Uranus, 2012 Oct 10  
Approx 22 hr UT



Uranus, 2012 Oct 14  
Approx 22 hr UT



Close-up of the Oct 10 image

Uranus is currently further away from us than average, having been at aphelion (20.1 AU from the Sun) relatively recently (February 2009). Earthbound observers will have to wait until 2050 for the planet to reach perihelion, when it will be 18.28 AU from the Sun, and its visual magnitude will have brightened to 5.3 from the current 5.7. By then Uranus will have reached the constellation of Leo.

Voyager 2 is the only spacecraft to have flown past Uranus. It discovered 10 new satellites, as well as a faint ring system, and a magnetic field stronger than that of Saturn. The images from Voyager showed little detail on the planet itself, but gave some evidence that there might be an ocean about 800 km below the visible cloud tops. Unexpectedly, the average temperature at its sun-facing pole was found to be the same as that at the equator.

*Roy Gretton*

## ADVERTISEMENTS

### SKYWATCHER TELESCOPE FOR SALE

SKYWATCHER telescope, 114mm aperture, 1000mm focal length, catadioptric Newtonian reflector, used only once and as new.



The owner reports a new instrument of the same type for sale on Ebay at about £130, but would be willing to accept £60 or near offer in this case.

Contact

**Michael Neal**  
Nottingham Road  
Keyworth

Tel: 0115 9375695

## FOR SALE

- **Orion** (USA) 6x26 correct image **finderscope**, complete with bracket   **£15**
- **Telescope Optics Book** by Rutten and van Venrooij (hardback), in excellent condition  
**£12**

### Contact **BARRY WINSTON**

Home tel no 0115 989 4239      mobile no. 07507 863 689.

Email [barrywinston@yahoo.com](mailto:barrywinston@yahoo.com)

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### **WANTED: Eyepieces**

I am currently looking for 2nd hand Televue eyepieces to compliment my TV 101.

I am looking for mainly Nagler eyepieces but would be interested in other models in the Televue too.

I am situated close to Alfreton, Derbyshire. Thank you.

**Paul Davies**

Email: [paul@graphic.demon.co.uk](mailto:paul@graphic.demon.co.uk)

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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)

## **CAMPAIGN FOR DARK SKIES**

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**Barrie Chacksfield**

email: [b.chacksfield@bgs.ac.uk](mailto:b.chacksfield@bgs.ac.uk)

## **ORDINARY COMMITTEE MEMBERS:**

**Joe Sowerby**

**Dorothy Sowerby**

**Kevin Greally**

**David Anderson**

## **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 2012**

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

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

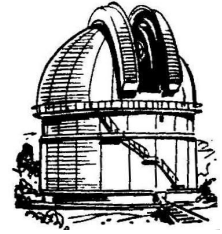
If you would like more information about the **Nottingham Astronomical Society**, or would like to become a member, please contact the Secretary [secretary@nottinghamastro.org.uk](mailto:secretary@nottinghamastro.org.uk) or speak to any NAS committee member at one of the regular monthly meetings. A membership application form is inside this issue of the Journal.

## **The Nottingham Astronomical Society**

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# 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:**

<b>Subscription rate:</b>	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.

**Signature:**

**Date:**