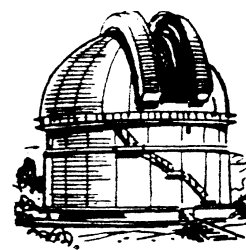


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# Journal

of the



## Nottingham Astronomical Society

January 2013

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Thursday, 3<sup>rd</sup> January  
British Geological Survey  
Nicker Hill, Keyworth  
8 pm (doors open at 7.30pm)

Tonight we welcome  
**Paul Money**

who will be speaking on

**“Naked Eye and  
Binocular Astronomy”**

### **A NEARBY SUN-LIKE STAR WITH A FAMILY OF PLANETS**

**Tau Ceti** is one of the closest Sun-like stars in our cosmic neighbourhood. It is a mere 12 light-years away, visible to the naked eye, and has the same spectral classification as our Sun. An international team of researchers from the UK, Chile, the USA and Australia has announced the discovery of five planets in orbit around Tau Ceti. Interestingly, one of them appears to be in the star's “habitable zone”, the region where liquid water might exist. The discoveries still have to be confirmed, but the planets are estimated to have masses between 2 and 6 times the mass of Earth, making it the lightest planetary system yet detected. The planet in the theoretical habitable zone, designated *Tau Ceti e*, is believed to have a mass of about 4.5 times that of the Earth, making it the smallest planet known to be orbiting in the habitable zone of a Sun-like star.

The discoveries resulted from the use of new methods to detect very faint signals, and to distinguish them from general “noise”, by using a highly sensitive technique that combined data from over 6,000 observations obtained from three different telescopes. The radial velocity method, which looks for wobbles in a star's movement caused by the gravitational pull of planets, was employed.

# Sky Notes

## January 2013

Compiled by Roy Gretton



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

The Earth reaches perihelion on the morning of January 2<sup>nd</sup>, when it will have approached to within 147,100,000 km of the Sun (98.3 percent of its mean distance).

### PHASES OF THE MOON

Last Quarter	5 <sup>th</sup> January, 03:58
New Moon	11 <sup>th</sup> January, 19:44
First Quarter	18 <sup>th</sup> January, 23:45
Full Moon	27 <sup>th</sup> January, 04:38

*(Data from the BAA Handbook)*

This month the Moon is closest to the Earth on the 10<sup>th</sup>, and furthest on the 22<sup>nd</sup>.

### THE PLANETS

**Mercury** reaches superior conjunction on January 18<sup>th</sup>, and is unobservable for northern hemisphere observers this month.

**Venus**, having provided a brilliant display in the morning sky throughout the autumn, has now effectively disappeared into the dawn glow.

**Mars** is a morning object, but an extremely difficult target for observers in the northern hemisphere, beginning January about twenty degrees south of the equator, and having an apparent diameter of four arcseconds.

**Jupiter** is by far the best-placed planet this month, and the most rewarding for telescopic observers, despite the fact that it is now past its best. It begins the year with an apparent equatorial diameter of 47 arcseconds, and shines at magnitude  $-2.7$ , high in the constellation of Taurus. 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).*

January	Shadow transit of
3 <sup>rd</sup>	Io 18:28 to 20:39
3 <sup>rd</sup>	Ganymede 18:39 to 20:58
7 <sup>th</sup>	Europa begins 22:10
10 <sup>th</sup>	Io 20:24 to 22:35
10 <sup>th</sup>	Ganymede begins 22:40
17 <sup>th</sup>	Io begins 22:19
19 <sup>th</sup>	Io 16:48 to 18:59

25 <sup>th</sup>	Europa	16:40 to 19:04
26 <sup>th</sup>	Io	18:44 to 20:54

**NB:** *The evening of January 3<sup>rd</sup> provides an opportunity to observe **two** shadow transits simultaneously, although I wouldn't miss Paul Money's talk for that reason.  
Better get out there **before** the NAS meeting!*

**Saturn** is a morning object in the constellation of Libra. By the end of January it will be rising at 1 a.m. and shining at magnitude +0.5. Being about 13 degrees south of the equator it is not particularly well-placed for UK observers. Titan, Saturn's largest and brightest satellite, can be seen due north of the planet on January 8<sup>th</sup> and again on the 24<sup>th</sup>.

**Uranus** continues to be observable, but with increasing difficulty in the evening sky, shining at magnitude 5.7 about two degrees west of the star 44 Piscium.

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

## METEORS

The only meteor shower of note in January is the **Quadrantids**, which reach maximum activity on the 3<sup>rd</sup>, when they may be as prolific as the August Perseids. This year conditions are fairly favourable, with a 21-day old Moon giving minor interference.

## VARIABLE STAR: Algol

There are no fewer than **seven** minima of this **eclipsing binary** visible from the UK this month. They occur on January 1<sup>st</sup> (04:05), the 4<sup>th</sup> (00:55), the 6<sup>th</sup> (21:40), the 21<sup>st</sup> (05:45), the 24<sup>th</sup> (02:35), the 26<sup>th</sup> (23:25) and on the 29<sup>th</sup> (20:10). 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.

## 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.

## ADVERTISEMENTS

### 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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## **PRESIDENT:**

**Fred Hopper**

e-mail: [fred.w.m.hopper@googlemail.com](mailto:fred.w.m.hopper@googlemail.com)

## **VICE PRESIDENT:**

**Roy Gretton**

e-mail: [roygretton@hotmail.co.uk](mailto:roygretton@hotmail.co.uk)

## **SECRETARY:**

**Robert Bush**

e-mail: [secretary@nottinghamastro.org.uk](mailto:secretary@nottinghamastro.org.uk)

## **TREASURER:**

**Sam Boote**

e-mail: [s.boote@bcs.org](mailto:s.boote@bcs.org)

## **JOURNAL EDITOR:**

**Roy Gretton**

e-mail: [roygretton@hotmail.co.uk](mailto:roygretton@hotmail.co.uk)

## **OBSERVATORY DIRECTOR:**

**John Hurst**

email: [jmhurst@hotmail.co.uk](mailto:jmhurst@hotmail.co.uk)

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

## **CAMPAIGN FOR DARK SKIES**

### **REPRESENTATIVE:**

**Barrie Chacksfield**

email: [b.chacksfield@gmail.com](mailto:b.chacksfield@gmail.com)

## **ORDINARY COMMITTEE MEMBERS:**

**Kevin Greally**

**David Anderson**

**Victoria Jolly**

**Phil Heesom**

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## **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 2013**

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.

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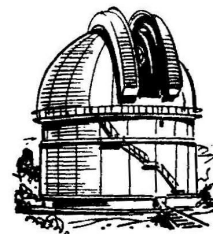
If you would like more information about the **Nottingham Astronomical Society**, or would like to become a member, please contact the Secretary [secretary@nottinghamastro.org.uk](mailto:secretary@nottinghamastro.org.uk) or speak to any NAS committee member at one of the regular monthly meetings. A membership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

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## **The Nottingham Astronomical Society**

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Affiliated to the British Astronomical Association  
Member of the Federation of Astronomical Societies

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## 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.

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**Date:**