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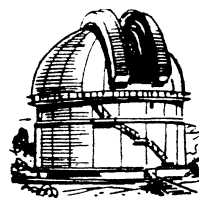
# Journal

of the

## Nottingham Astronomical Society

January 2018

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### In this issue

- Sky Notes for January
- Diary Dates 2018
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- Other events on the wider astronomical scene
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**Thursday, January 4<sup>th</sup>**

Gotham Memorial Hall  
Gotham, NG11 0HE

8 pm (doors open at 7 pm)

Tonight we are holding an

### **Open Evening**

A chance to meet new members,  
peruse our library,  
seek answers at our Help Desk,  
and take part in our

**NEW YEAR QUIZ**

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**We wish all Members of the NAS, and all who subscribe  
to this Journal, a very happy and prosperous 2018.  
May the stars shine for you!**

### **SOME ASTRONOMICAL ANNIVERSARIES IN 2018**

#### **20 years ago this year**

The first module of the International Space Station was launched (20<sup>th</sup> November 1998)

#### **30 years ago this year**

The Soviet Union launched two probes to Mars, both of which failed to complete their missions (Phobos I launched July 7<sup>th</sup>, Phobos II launched July 12<sup>th</sup> 1988)

#### **50 years ago this year**

Apollo 8, the first manned spacecraft to venture beyond low Earth orbit, travelled around the Moon (Christmas Day 1968)

#### **130 years ago this year**

The 36-inch Lick refractor had its first light, and for 9 years was the largest telescope in the world (3<sup>rd</sup> January 1888)

# Sky Notes

## January 2018



Compiled by Roy Gretton

*All times given below are in Universal Time (UT)*

**Earth** will be at **perihelion** at 3:17am on January 3<sup>rd</sup>. The centre of the Earth will then be 147,100,176 km from the centre of the Sun, which is about 800 km closer than we were at perihelion in 2017.

### PHASES OF THE MOON

<i>Phase</i>	<i>Date and time</i>
Full Moon	2:25am on January 2 <sup>nd</sup>
Last Quarter	10:26pm on the 8 <sup>th</sup>
New Moon	2:18am on the 17 <sup>th</sup>
First Quarter	10:22pm on the 24 <sup>th</sup>
Full Moon	1:28pm on the 31 <sup>st</sup>

...and by some people's reckoning, the second Full Moon in the month is designated a "Blue Moon".

This month the Moon is closest to the Earth on the 30<sup>th</sup> (following a previous perigee on January 1<sup>st</sup>), and furthest on the 15<sup>th</sup>.

(Strangely, the *BAA Handbook* states that **perigee** will be on the January 15<sup>th</sup>, which I reckon is incorrect, since December's perigee was on the 4<sup>th</sup>, and apsides move backwards by roughly three days each calendar month. I think the BAA has its apogees and perigees mixed up!)

### THE PLANETS

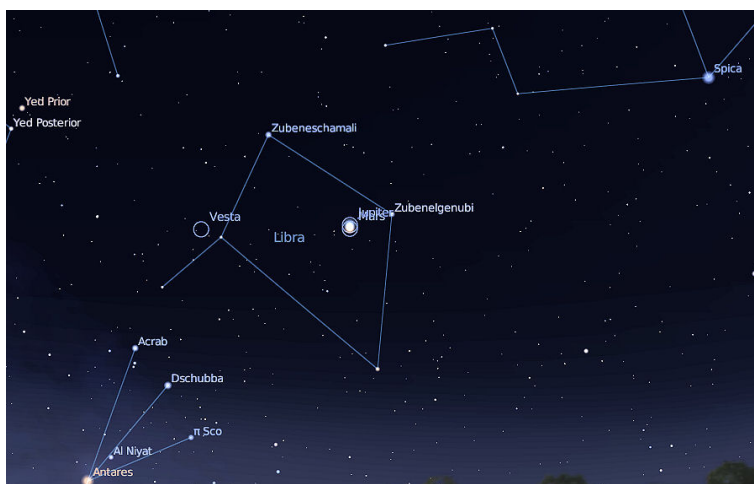
**Mercury** begins the year at greatest western elongation (23 degrees from the Sun), which means that the first week of January will be one of the best periods of the whole year to observe this planet in the morning sky. It will be low in the southeast before sunrise, shining at magnitude  $-0.3$  and reaching an elevation of about 5 degrees by 7:15am. By the end of the second week of the month Mercury will be diving back into the solar glow as it heads toward superior conjunction in mid-February.

**Venus** must be regarded as unobservable in January, as it passes through superior conjunction on the 9<sup>th</sup>.

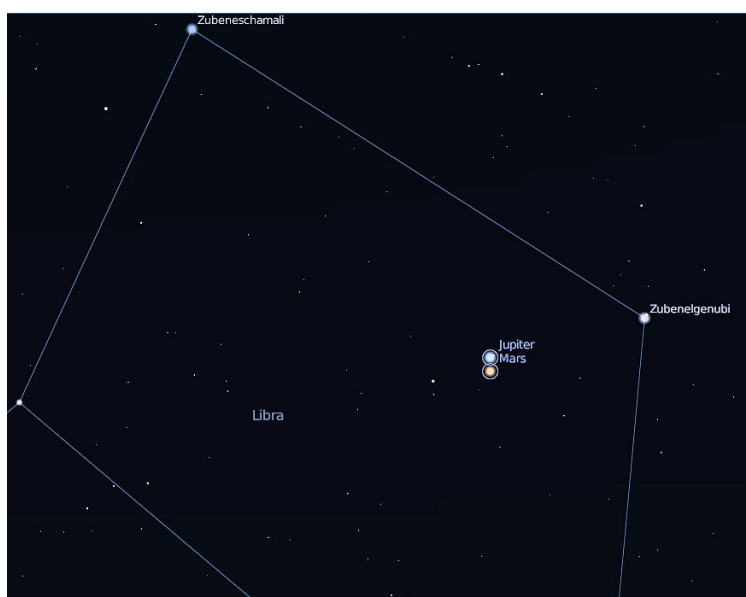
By mid-January the angular diameter of **Mars** begins to exceed 5 arcseconds for the first time for nearly a year, and so under favourable conditions hints of surface detail may become visible through moderate-sized amateur telescopes. The main disadvantage for UK observers is the fact that Mars is heading relentlessly southward, reaching  $-20$  degrees declination by the end of the month; and it will not be until next October that Mars will again move north of  $-20$  degrees. However, a noteworthy phenomenon occurs on January 7<sup>th</sup>, when Mars will pass one-fifth of a degree south of Jupiter (see below).

**Jupiter** continues to draw away from the Sun in the morning sky, and by the end of January will be rising more than 5 hours before sunrise. Throughout the month it will be about 16 degrees south of the celestial equator in the constellation of Libra, and shining at magnitude  $-1.9$ , with an angular diameter beginning to exceed 35 arcseconds. At sunrise on January 7<sup>th</sup>, Jupiter and Mars will be approximately 0.2 of a degree apart, meaning that about an hour

before sunrise they will be visible in the same field of view through a moderate-power eyepiece. Jupiter, the more northerly of the pair, will be much the brighter of the two.



Looking SSE  
at 6:30am on  
January 7<sup>th</sup>



Close-up view of  
**Jupiter and Mars**  
at 6:30am on  
January 7<sup>th</sup>

**Saturn** must be regarded as unobservable for UK observers as it is very close to the Sun, and well south of the celestial equator.

**Uranus**, about 10 degrees north of the celestial equator in the constellation of Pisces, is now an evening object, passing due south just before 7pm as the year begins, and remaining visible until 1 am. If you have never seen Uranus before, this month might be a good time to go looking for it. Through a telescope it appears as a pale greenish disk, a little over three arcseconds across.

**Neptune** is nearly 8 degrees south of the celestial equator in the constellation of Aquarius, and shining at magnitude 8. It is now well past its best for observation during the current apparition.

## METEORS

Conditions are decidedly **unfavourable** for observing the **Quadrantids** this year, as they reach their maximum activity (perhaps 80 events per hour) on January 3<sup>rd</sup>, very close to the Full Moon. These meteors, which appear to radiate from a point in the north of the constellation of Boötes, not far from the handle of the Plough, can be as prolific as the better-known Perseids of August.

# DIARY DATES 2018

## Monthly Meetings of the Nottingham Astronomical Society

### 1) Meetings at Gotham Memorial Hall

Nottingham Road, Gotham, NG11 0HE

Held on the **FIRST Thursday** of each month except **August**

Doors open at 7pm for 8pm start.

*These events are normally centred around a talk by a visiting speaker, except Opening Evenings, when NAS members provide the activities.*

*Normally we have a **Library** and a **Helpdesk** open at each meeting.*

<u>Date</u>	<u>Topic</u>	<u>Speaker</u>
January 4 <sup>th</sup>	Open Evening with a New Year Quiz	
February 1 <sup>st</sup>	Triumphs of Voyager – Part 2 <i>Where no probe has gone before</i>	Paul Money FRAS, FBIS
March 1 <sup>st</sup>	Dark Future? <i>Can the UK's dark spaces survive?</i>	Bob Mizon, MBE, FRAS BAA Commission for Dark Skies
April 5 <sup>th</sup>	Jodrell Bank 60 years on	Prof Ian Morison University of Manchester
May 3 <sup>rd</sup>	Lucky Planet – why Earth is exceptional <i>and what it means for life</i>	Prof David Waltham Royal Holloway, University of London
June 7 <sup>th</sup>	Diamonds in the Sky <i>White Dwarfs in Modern Astrophysics</i>	Professor Martin Barstow University of Leicester
July 5 <sup>th</sup>	Cassini's Final Science	Dr Phil Sutton University of Lincoln
August 4 <sup>th</sup> (Saturday)	Annual Society BBQ at the Observatory	
September 6 <sup>th</sup>	The Adventures of Curiosity on Mars	Prof Sanjeev Gupta Imperial College, London
October 4 <sup>th</sup>	Juno – the Answers	Prof Emma Bunce University of Leicester
November 1 <sup>st</sup>	Annual General Meeting	
December 6 <sup>th</sup>	Transient Events in Astronomy or <i>things that go bump in the night</i>	Prof Dame Jocelyn Bell Burnell DBE, FRS, FRSE, FRAS

## 2) Social and Practical Astronomy Meetings at the Burnside Memorial Hall, Plumtree

Church Hill, Plumtree, Nottingham, NG12 5ND

Held on the **THIRD Thursday** of each month from **7:30pm**

*These meetings are of a more informal nature, providing opportunity for members and guests to share their hobby over a cup of tea or coffee, as well as listening to a short talk.*

**The next meeting will be on January 18<sup>th</sup>**

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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

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### **Events in the coming months open to everyone** (follow hyperlinks for more information and how to book)

20th January	BAA <a href="#">Ordinary Meeting</a> , London
27th January	<a href="#">SPA Quarterly Meeting</a> , London
30th January	<a href="#">Project Adrift</a> , Open Dome Event, Clifton
17th February	Soc History of Astronomy <a href="#">Research Workshop</a> , Birmingham
28th February	<a href="#">A brief history of women in astronomy</a> , Open Dome Event, Clifton
4th March	BAA <a href="#">Deep Sky Section Meeting</a> , Bedford
10th March	BAA <a href="#">Back to Basics Workshop</a> , Bristol
21st April	Society for the History of Astronomy <a href="#">Spring Meeting</a> , Cambridge

**Editor's Note:** What you are about to see on the following three pages are some glorious astronomical images captured by members of the Society in recent weeks.

*If any members have astronomical images they would like to share in this Journal, I would be delighted to receive them. Don't worry if they don't match the standard and quality of these samples; they only have to represent your enjoyment of astro-imaging.*

## DEEP-SKY IMAGES CAPTURED RECENTLY BY NAS MEMBERS

### IC 1396 – The Elephant's Trunk Nebula in Cepheus (Leigh Blake)

Captured at the end of November, this image was acquired with my SkyWatcher ED80 and an Atik 460ex mono CCD. The image consists of 5 hours of 30 min exposures using a Hydrogen Alpha narrowband filter.





Where to find the Elephant's Trunk Nebula

### IC 405 – Flaming Star Nebula in Auriga (Leigh Blake)

This image was acquired over 2 nights mid-December, the first collecting 4.5 hours of narrowband Hydrogen Alpha exposures, the second collecting an hour each of red, green and blue filtered light with the mono camera. These were then combined to produce the image below.





Where to find the Flaming Star Nebula

**The following software was used to capture and process the images:**

- Image collection and equipment control -  
Sequence Generator Pro - <http://www.mainsequencesoftware.com/>
- Image Stacking -  
Deep Sky Stacker - <http://deepskystacker.free.fr/english/index.html>
- Image processing  
Pixinsight - <https://pixinsight.com/>

## THE PLEIADES (Gareth Davies)

Captured on 11<sup>th</sup> December 2017 using a Canon 700D camera at the prime focus of a Skywatcher 80ED. The total exposure time was 3 hours, made up of 5-minute sub-frames at ISO 800.



## Social and Practical Astronomy, Plumtree

The **December** meeting at Plumtree was a festive social event, consisting of mulled wine and warm mince pies; let's not mention the overcooked sausage rolls. A quiz saw the group divided up into teams, and despite the remonstrations about the number of chemistry-related questions, the teams all did very well. The winning team consisted of Roy Gretton, Chris Sneddon and Graham Shepherd - well done.

The quiz can be found here if you want to have a go: <https://goo.gl/5tPZei>

Once you've done the quiz, the answers can be found here: <https://goo.gl/12vMfC>



at the

### **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](http://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 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](mailto:secretary@nottinghamastro.org.uk)

You don't have to be a Society member to take advantage of this service.

*If you happen to change your email address, please remember to inform the Society by emailing us at [treasurer@nottinghamastro.org.uk](mailto:treasurer@nottinghamastro.org.uk)*

# 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 Commission for Dark Skies

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## **CHAIRMAN:**

**John Hurst**

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## **VICE CHAIRMAN:**

**Roy Gretton**

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

## **SECRETARY:**

**(vacant post)**

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## **TREASURER:**

**David Anderson**

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**Leigh Blake**

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

## **DIRECTOR OF OBSERVING:**

**(vacant post; Acting Director: John Hurst)**

email: [observatory@nottinghamastro.org.uk](mailto:observatory@nottinghamastro.org.uk)

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

## **ORDINARY COMMITTEE MEMBERS**

**David Buxton**

**Chris Sneddon**

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## **Meetings**

Our formal meetings, often with an illustrated talk by a guest speaker, are held on the first Thursday of each month (except in August) at:

**Gotham Memorial Hall  
Gotham  
Nottingham NG11 0HE**

Doors open                      7.00pm  
**Meetings start                8.00pm**  
Meetings end                10.00pm

These meetings are open to the public, and visitors are welcome to attend.

## ***Annual subscriptions 2018***

Full	£30
Joint rate for partners living at the same address	£45
Under-18s and full-time students	£5

Subscriptions become due on 1<sup>st</sup> January. Half-price subscription is charged if joining after 30<sup>th</sup> June (minimum subscription £5).

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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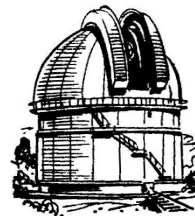
## **The Nottingham Astronomical Society**

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# 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 Commission 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	(year)	(half year)
	Partnership	(year)	(half year)
	Under-18 and full-time students		

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:**