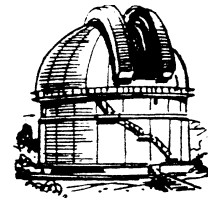

Journal

of the

Nottingham Astronomical Society

November 2018



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Thursday, November 1st

Gotham Memorial Hall
Gotham, NG11 0HE

8 pm (doors open at 7 pm)

Tonight we welcome NAS Members to a

Cheese and Wine Evening

following a brief Annual General Meeting



*Soft drinks and tea/coffee will
also be available*

Autumn Evenings are a great time to take a look at the
Great Andromeda Galaxy, M31



An image taken through the Editor's 30-cm reflector on October 9th

Sky Notes

November 2018

Compiled by Roy Gretton

All times given below are in Universal Time (UT)



PHASES OF THE MOON

<i>Phase</i>	<i>Date</i>
New Moon	November 7 th
First Quarter	November 15 th
Full Moon	November 23 rd
Last Quarter	November 30 th

This month the Moon is closest to Earth on the 26th, and furthest on the 14th.

THE PLANETS

Mercury spends much of this month more than 24 degrees south of the celestial equator, so although it reaches greatest eastern elongation (in the evening sky) on November 6th, it will be extremely difficult to observe. By the 27th of the month it will have moved back toward the Sun to reach inferior conjunction.

Venus will be unobservable as November begins, but by the middle of the month it will be rising over two hours before the Sun, and by then it will be a brilliant (magnitude -4.6) object in the morning sky, appearing as a thin crescent through a telescope.

Mars begins this month in the far southern constellation of Capricornus, but moves across into Aquarius on November 11th, and by the end of the month it will be only 8 degrees south of the celestial equator. At the same time it will be fading continuously, and shrinking in angular size, such that it will be less than 10 arcseconds across at the close of November.

Jupiter is now unobservable as it heads toward conjunction with the Sun on November 26th.



***Mars, Uranus
and Neptune in
the evening sky***

Looking south at
8pm on
November 26th

Saturn, in the constellation of Sagittarius, remains more than 22 degrees south of the celestial equator for the remainder of this year. It can still be seen low in the southwest after sunset as November begins, but will soon be disappearing into the twilight glow.

Uranus was at opposition to the Sun last month, and so is very well placed for observation from the UK. Its magnitude is 5.7 and its angular diameter 3.7 arcseconds.

Neptune, in the constellation of Aquarius, is an evening object, observable with a suitable telescope (magnitude 7.9).

METEORS

The **Taurids** have two maxima, the first on November 5th and the second on the 12th. Conditions are favourable for both this year, with the Moon giving almost no interference. Taurids tend to be slow-moving meteors, and may give bright events.

The **Leonids** reach maximum activity on November 18th, with a waxing gibbous Moon. Nothing spectacular is anticipated this year, with perhaps 20 events per hour under ideal circumstances.

Our Observatory: A New Member recalls his first visit

Having left my home island Guernsey in the Channel Islands in May 2018 to come to live in Cotgrave and be near our three grandchildren, I was overjoyed to learn of the Nottingham Astronomical Society, and joined in June 2018. I have enjoyed the meetings and the variety of subjects covered.

However it was a great pleasure ultimately to visit the Society's observatory early in October. I duly found the approach path off the main road – not easily done as there is no descriptive signage but, as they say, once you have been you know where. I was a little early as I had been anxious to find the way and waited patiently for someone to unlock the gates. Once in and parked I waited for the “main players” to arrive – those with telescopes ! The main observatory scope was out of action but the number of personal telescopes on offer enabled me to see, in this manner for the first time, Saturn, Mars, Uranus, the Great Andromeda Galaxy and other delights. Truly marvellous and my grateful thanks to everyone concerned!

I cannot suitably describe all the hard work done by the members, particular Richard who very patiently attempted to explain matters to me. Chairman John Hurst also explained the history of the site and the observatory dome.

One thing very apparent as darkness came was how cold it was, and next time I will remember a scarf, gloves and woolly hat. Sorry to upset members but the woolly hat will be a Manchester United hat but you won't be able to see that too well in the darkness!

Bernie Besnard

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 Open Evenings, when NAS members provide the activities.

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

Date	Topic	Speaker
November 1 st	A Cheese and Wine Evening following a brief AGM	
December 6 th	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 November 15th (see further details 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

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 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

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

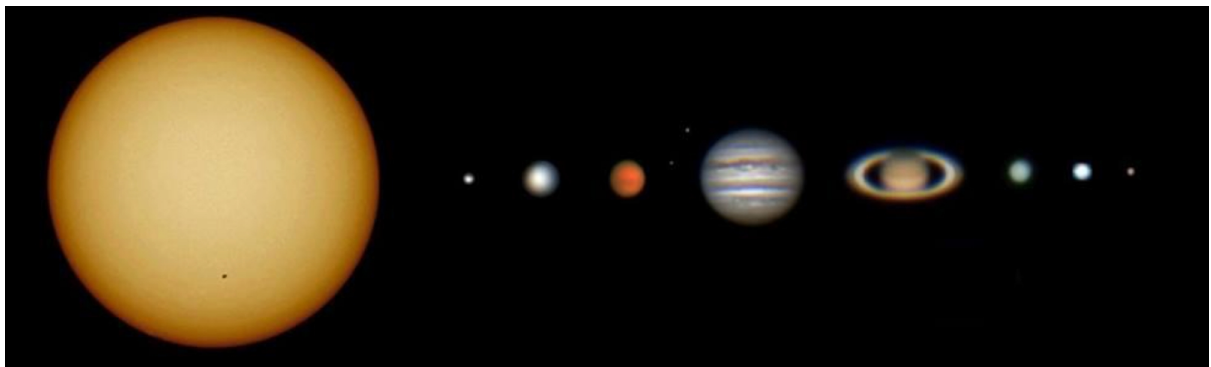
Social and Practical Astronomy, Plumtree

At the October meeting Gareth Davies gave a talk on his project to image all the planets in the Solar System. Coincidentally it is also 100 years since Gustav Holst's composition The Planets was first performed in public.

The talk focused on the progression of Gareth's images starting with his first picture of the Moon and Jupiter taken through the eyepiece with an iPhone using a Celestron refractor. His next advance followed by attaching a Cannon DSLR 700D to the prime focus. Now Jupiter and its cloud belts were in sight.

The astronomy bug was now firmly biting. With a SkyWatcher Maksutov and a planetary camera added to Gareth's armory, Damian Peach was starting to get seriously worried. A lovely image of Jupiter revealed a transit of a Galilean Moon across the planetary disc.

With images of Mercury, Mars, Venus and Saturn in the can, the tricky outer solar system planets were next and yielded fascinating results. Poking out from behind Neptune was its moon Triton, a real achievement for such a difficult target. But the biggest challenge was first locating and then imaging Pluto. Yes, technically no longer a planet and had yet still to be discovered when Holst composed The Planets. A painstaking process to locate Pluto using star charts was eventually achieved by identifying neighboring star patterns to pinpoint the dwarf planet in his deep-sky image.



The final result I'm sure you will agree is fantastic. Well done Gareth and thank you for presenting your results.

Richard Severn

Forthcoming Plumtree Meetings

The **November** meeting will be a talk by John Hurst entitled "Going South", and Professor Merrifield will be here in **December** to talk about the Science of Christmas.

James Dawson

NAS Helpdesk

helpdesk@nottinghamastro.org.uk

Enceladus: Saturn's sixth largest moon

This satellite is seemingly similar in chemical makeup to comets. It is about 500 kilometres (310 miles) in diameter, about a tenth of that of Saturn's largest moon, Titan.

Enceladus is mostly covered by fresh, clean ice, making it one of the most reflective bodies of the Solar System. Consequently, its surface temperature at noon only reaches -198°C (-324°F), far colder than a light-absorbing body would be. Despite its small size, Enceladus has a wide range of surface features, ranging from old, heavily cratered regions to young, tectonically deformed terrains.

Enceladus was discovered on August 28th, 1789, by William Herschel, but little was known about it until the two Voyager spacecraft, Voyager 1 and Voyager 2, passed nearby in the early 1980s.

In 2005, the *Cassini* spacecraft started multiple close flybys of Enceladus, revealing its surface and environment in greater detail. In particular, *Cassini* discovered water-rich plumes venting from the south polar regions. Cryovolcanoes near the south pole shoot geyser-like jets of water vapour, molecular hydrogen, other volatiles and solid material, including sodium chloride crystals and ice particles into space, totalling about 200 kg (440 lb) per second. Over 100 geysers have been identified. Some of the water vapour falls back as "snow"; the rest escapes, and supplies most of the material making up Saturn's E ring. According to NASA scientists, the plumes are similar in composition to comets. In 2014, NASA reported that *Cassini* found evidence for a large southern polar subsurface ocean of liquid water with a thickness of around 10 km (6 mi).

These observations of geysers, along with the discovery of escaping internal heat and very few (if any) impact craters in the south polar region, show that Enceladus is currently geologically active. Like many other satellites in the extensive systems of the giant planets, Enceladus is trapped in an orbital resonance. Its resonance with Dione excites its orbital eccentricity which is damped by tidal forces, tidally heating its interior and driving the geological activity.

Enceladus ejects plumes of salt water that are laced with grains of silica-rich sand, nitrogen (in ammonia), and organic molecules, including trace amounts of simple carbon compounds such as methane (CH_4), propane (C_3H_8), acetylene (C_2H_2) and formaldehyde (CH_2O). This indicates that hydrothermal activity—an energy source—may be at work in Enceladus's subsurface ocean. In addition, models indicate the large rocky core is porous, allowing water to flow through it to pick up heat. Molecular hydrogen (H_2), a geochemical source of energy that might be metabolized by microbes to provide energy for life, could be present if, as models suggest, Enceladus's salty ocean has an alkaline pH.

The presence of a range of organic compounds and ammonia indicates their source may be similar to the water/rock reactions known to occur on Earth, and that are known to support life. Therefore, several robotic missions have been proposed to further explore Enceladus and assess its habitability.

So yet another possibility of life elsewhere in the Solar System, but confirmation of this lies well beyond my life span.

Bernie Besnard

Three Blue Planetary Nebulae visible in the Autumn Sky
in order of increasing distance from Earth
imaged by the Editor on October 6th, using a 30-cm reflecting telescope



1. **M27** in the constellation of Vulpecula



2. **NGC6210** in Hercules



3. **NGC6886** in Delphinus
(the small blue dot!)

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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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 1st January. Half-price subscription is charged if joining after 30th June (minimum subscription £5).

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

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