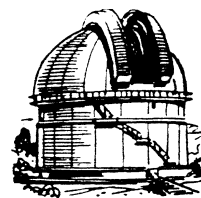

Journal

of the

Nottingham Astronomical Society

March 2019



In this issue

- Sky Notes for March
- E-Services
- Diary Dates 2019:
Meetings at Gotham and Plumtree
- Social and Practical Astronomy: Report of the last meeting and preview of the next
- Easy Astro-Imaging
- Great Lunar Images!
- Why Do Mercury and Venus have no moons?
- Advertisements
- Society Information

Thursday, March 7th

Gotham Memorial Hall
Gotham, NG11 0HE

8 pm (doors open at 7 pm)

Tonight we welcome

Paul Money

FRAS, FBIS



who will be speaking on

Beyond Pluto

New Horizons in the Kuiper Belt

ONE COLD SUNDAY AFTERNOON IN JANUARY



**Our Chairman, John Hurst, working to re-fit
the Right Ascension motor to our large telescope**

Sky Notes

March 2019

Compiled by Roy Gretton

All times given below are in Universal Time (UT)



The Northern Hemisphere **Spring Equinox** occurs at 10 pm on March 20th, when the Sun will be exactly above Earth's equator for the first time this year.

British Summer Time begins on Sunday, March 31st (*the latest possible date*). Clocks should be advanced by one hour at 1 am on that date.

PHASES OF THE MOON

<i>Phase</i>	<i>Date</i>
New Moon	March 6 th
First Quarter	March 14 th
Full Moon	March 21 st
Last Quarter	March 28 th

This month the Moon is closest to Earth on the 19th and furthest on the 4th.

THE PLANETS

As March begins, **Mercury** is well placed for observation in the evening sky, having passed through greatest eastern elongation on the penultimate day of February. Shining at magnitude zero, it lies very close to the celestial equator in the constellation of Pisces, and sets about an hour-and-a-half after the Sun.

Venus continues to be visible in the early morning sky, shining at magnitude -4 for all of March, but moving steadily closer to the Sun, so that by mid-month it will be rising barely an hour before sunrise.



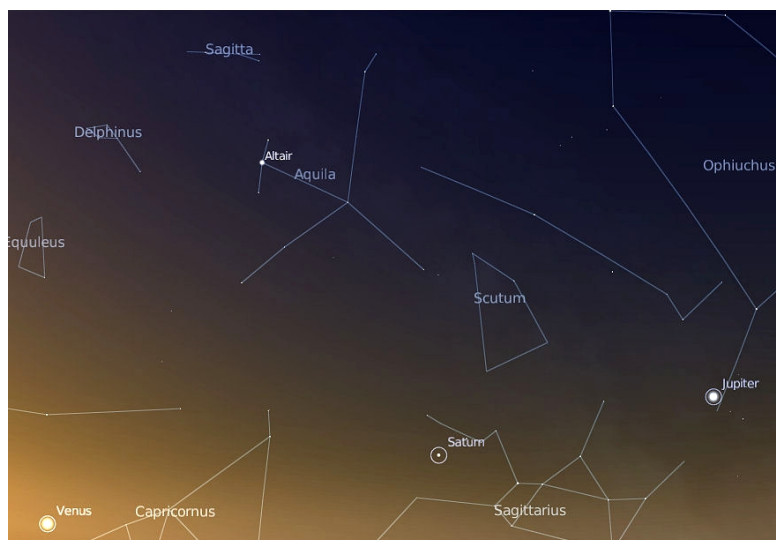
**Looking WSW
at 6:30pm on
March 1st**

A curious fact about **Mars** at the present time is that, due to factors such as its orbital motion relative to the Earth's, and the changing angle that the ecliptic makes with the horizon as winter progresses into spring, the planet *has been setting at virtually the same time of night since the year began*. In fact, *for the whole period since early November until late this*

coming April, Mars will have been setting at approximately 11 pm UT for observers at our latitude. This month it continues to fade in brightness (to about magnitude 1.5), and its angular diameter falls below 5 arcseconds, so you will need an extremely fine telescope, and incredibly good seeing conditions, to be able to discern any surface detail whatsoever.

Jupiter, more than 22 degrees south of the equator in the constellation of Ophiuchus, edges even further south this month. It will, however, be rising at about 2 am in mid-March, and shining at magnitude -2.1 .

Saturn, another gas giant lingering in the far south constellation of Sagittarius, rises at about 4 am in mid-March, and shines at an unspectacular magnitude of $+0.6$.



**Looking SSE
at 5:30am
on March 22nd**

*Three planets in
the morning sky*

Uranus, close to the border between Aries and Pisces, is an evening object, setting at around 9 pm in mid-March.

Neptune is unobservable as it reaches conjunction with the Sun this month.

METEORS

The **Virginids** begin to show weak activity in the second half of March, although you will be very lucky to see more than a handful of events in an hour of watching.

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

DIARY DATES 2019

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.*

<u>Date</u>	<u>Topic</u>	<u>Speaker</u>
March 7 th	Beyond Pluto <i>New Horizons in the Kuiper Belt</i>	Paul Money FRAS, FBIS
April 4 th	Gaia's Galactic Survey	Dr Nicholas Walton University of Cambridge
May 2 nd	It's About Time <i>Time's Arrow and Time Travel</i>	Prof Ian Morison University of Manchester
June 6 th	From Tycho to Newton <i>Foundations of modern astronomy</i>	Dr Allan Chapman FRAS
July 4 th	Metal Detecting <i>What are metals to astronomers?</i>	Dr Julian Onions University of Nottingham
August 3 rd (Saturday)	Annual Barbecue at the Observatory <i>(Members and their guests only)</i>	
September 5 th	Where Are the Aliens? <i>Might we be alone?</i>	Prof Brad Gibson University of Hull
October 3 rd	The 200 at 70 <i>The Hale Telescope</i>	Dr Steve Barrett University of Liverpool
November 7 th	Annual General Meeting with a Wine and Cheese Social	
December 5 th	Voyages to the Sun <i>Probing our nearest star</i>	Prof Lucie Green University College London

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 March 21st (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

Social and Practical Astronomy, Plumtree

The **February** meeting was hosted by Leigh Blake and Julian Onions looking at the different star types in the main sequence. With clear skies members took up the observing challenge to view one of each of the seven star classes O, B, A F, G, K, M which are classified by their spectra and temperature. Gareth was on hand with a telescope outside, to aid our observations.

Next month's Social and Practical Astronomy meeting at Plumtree is on **Thursday 21st March** at 8pm.



We are trying something a little different and would like members to bring along their most useful gadget that assists either your visual or photographic astronomical observations. So have a think and choose your Astronomy Gadget to demonstrate/discuss for 5 minutes (maximum) at the meeting. Describe what it is, how it works and how it enhances your observations/images. We are looking for a range of items such as filters, software, phone apps, cameras or even your observation techniques/tips if you don't own a telescope.

We would like to know in advance what you intend to bring so please email helpdesk@nottinghamastro.org.uk before the meeting so we can plan the meeting. We will have a laptop and screen available if you require it.
Hope to see you all on 21st March.

Regards
Richard Severn

Easy Astro-Imaging **Example 1: The International Space Station**

The following images were obtained using a tripod-mounted Canon 450D camera with an 18mm lens, at about 6:10pm on January 28th, as the ISS was passing over the UK. Its maximum elevation on this occasion was 43 degrees, and maximum brightness was magnitude -3.1 . Each exposure was 30 seconds.



1



2



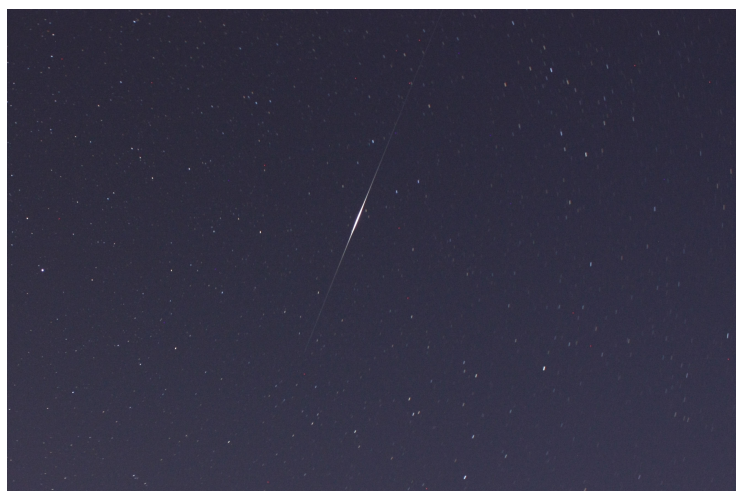
3



4

The images are centred on the Hyades star cluster, above which are the Pleiades. The bright star near the top-left corner is Capella, and Betelgeuse is about a quarter of the way along the bottom of each image.

Easy Astro-Imaging **Example 2: An Iridium Flare**

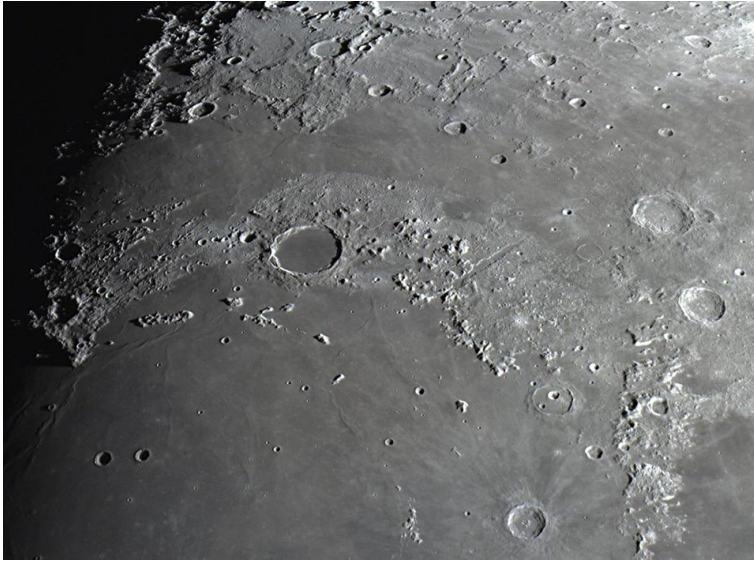


The satellite Iridium 45 passing near Langar at 6:09pm on January 30th, imaged at ISO 800. The expected maximum magnitude was -5 . The bright star close to the left-hand edge of the image is Polaris.

Roy Gretton

The Moon in February: great images captured by Gareth Davies

Each image is based on 1000 frames taken with a ZWO 120 MC camera attached to a Skywatcher 127 Skymax Maksutov-Cassegrain telescope. Each individual exposure was 4.2 milliseconds, and 80% of the frames were stacked using RegiStax and processed in Photoshop.



*Plato with the
Lunar Alps and
the Alpine valley*



Copernicus

(This is a four panel
mosaic composited
in Microsoft ICE)



*Clavius,
looking toward
the lunar
south pole*

Spring is the best time of year for observing the Moon in the evening sky, as the ecliptic makes a steep angle with the western horizon at this season.

Why Do Venus and Mercury Not Have Any Moons?

In the beginning, when the Solar System formed, an object will accrete material (gas and dust) to have enough mass so it can become a planet. In this theory, a natural satellite is the leftover material which was not accreted by the planet. The material then forms a satellite and orbits the planet under its gravitational influence.

But, a planet can also have a moon by capturing another object such as an asteroid or comet and trap them in its orbit under its gravitational influence. In this case, Mars's moons Phobos and Deimos are good examples of asteroids captured by Mars, becoming its satellites.

A planet can get its satellite through a collision between it and another object. The leftover material is trapped in the planet's gravitational influence and ends up coalescing to form a moon orbiting the planet. This is a likely scenario for our Moon. So a few billion years ago when the Earth was still young... our beautiful Earth collided with a Mars-sized object.

During the collision some material was ejected and was trapped in Earth's gravity. This ejected material then merged and formed the Moon.

So how about Mercury and Venus?

From these possible scenarios, both planets should have at least one small satellite orbiting each of them. But why they are they moonless?

The biggest problem for moons for Mercury and Venus is (as real estate agents say) location, location, location! Both planets are too close to the Sun. But yes, according to one scenario of satellite formation, Mercury and Venus have the possibility to host a satellite.

And it's probably right. From those 3 theories, only 2 are possible for the case of Mercury and Venus. It is possible for Mercury and Venus to have satellites through the collision theory similar to the Earth/Moon scenario, or accretion of the material in the early Solar System. Satellites in both planets formed when the Solar System was still very young.

But it is impossible for both planets to capture a comet or asteroid. The problem is their close distance to the Sun. At this distance, the gravitational influence of the Sun is dominating the system and if there is a comet or asteroid passing by then they will be captured by the Sun.

Base on this possibility, there was a time when Mercury and Venus could have had their own companion.

Satellite modelling for Venus shows us that there was a time when Venus gained a satellite from a collision with another large object. It is believed, there were 2 collisions that changed the fate of the satellite as well as Venus's spin. If the first collision we gain a moon for Venus, then in 10 million years Venus had another impact in an opposite direction which not only made the moon spiral inward and collide with Venus but which also reversed the planet's rotation.

Another model shows that Venus only had one large impact which gained it a moon and reversed its spin at the same time. But it is also possible for Venus to form a Moon through accretion. Similar theories also apply for Mercury except for the part of spin reversing.

Once both planets have moons, there is another problem that comes up. Both planets are too close to the Sun. Which means any moon at too great a distance from the planets would be in an unstable orbit and would be captured by the Sun. If they were too close to Mercury or Venus they would be destroyed by tidal gravitational forces. The zones where moons around these planets could be stable over billions of years is probably so narrow that no body was ever captured into that exact orbit, or created in situ when the planets were first being accreted.

In the end, Mercury and Venus will never be able to have a moon.

Bernie Besnard

ADVERTISEMENTS

For Sale

1. **9.25" Celestron SCT with Starbright XLT coatings.** Includes:

Antares F6.3 focal reducer
Antares 2" tube with twist grip
Celestron 1.25" star diagonal
Celestron 1.25" Visual back.
Celestron 9x50 R.A.C.I. illuminated finderscope.
Feather Touch focuser
JMI electrical focuser attachment for feather touch.
Telrad base
Vixen mounting bar, (has been on Skywatcher HEQ5Pro.)
Extra mounting bar on top.
AstroZap flexiheat Dew shield and controller.
Bahtninov mask.

£700 for tube and accessories.

2. **SkyWatcher 200PDS Newtonian Reflector.** Includes:

Finderscope
Telrad base
Dew Shield
Skywatcher motor drive, can be easily connected / disconnected
from Dual speed Crayford with turn of allen key.
GSL 35mm extension tube.

£200 for tube and accessories.

Genuine reason for sale, need to rationalise to more manageable set up.

Contact **Pete Hill** on 01283716285

Eyepieces for sale

All have been looked after and come with end caps but no boxes. All are 1.25-inch push-fit.

William Optics SPL 6mm. Retails [new](#) for £79. Price £40.



Celestron X-Cel LX 12mm. Retails [new](#) for £80. Price £40.



Sky Watcher Sky Panorama 15mm. Retails [new](#) for £80. Price £40.



TAL 2x Barlow. No longer manufactured; commonly sell for £50. Price £30.



Please contact **James Dawson** on the NAS Helpdesk: helpdesk@nottinghamastro.org.uk

Nottingham Astronomical Society

Affiliated to the **British Astronomical Association**
Member of the **Federation of Astronomical Societies**
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 2019

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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