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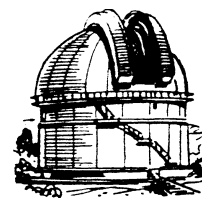
# Journal

of the

## Nottingham Astronomical Society

### April 2020

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**Thursday, April 2<sup>nd</sup>**

**8pm: Our first-ever online talk**

**to be delivered by**

**Dr Julian Onions, FRAS**  
of the University of Nottingham



**who will be speaking on**

**Galaxies**

**– one Gigayear at a Time**

#### **In a change to our schedule, our April meeting will be broadcast live online**

The live stream meeting will start at 8pm. The stream can be accessed from 7:30pm onwards. Members will be emailed a link an hour before the meeting is due to begin.

Alternatively the live stream can be viewed directly on our website at <https://nottinghamastro.org.uk/youtube-stream/> from 7:30pm.

If you are a registered user of YouTube you will be able to ask questions during the live broadcast via the YouTube live chat, alternatively send your questions live via our social media:

**Facebook** <https://www.facebook.com/nas.org.uk>

**Twitter** [www.twitter.com/nottinghamastro](https://twitter.com/nottinghamastro)

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

If successful we will look to broadcast more live online meetings while we are unable to hold meetings at Gotham and Plumtree. We would especially welcome live interaction during the event to keep the meeting as interactive as possible for members, and make it like our normal face-to-face gatherings. Please encourage your family and friends to watch by forwarding them the link.

## **A Message from our Chairman**

Dear all,

Since the virus emergency has necessitated cancellation of our meetings, our IT experts have been busy working on how we can bring you our talks on line – the virus can spread through the air, but not down the wires! Our own Julian Onions has volunteered to be the ‘guinea pig’ for our first ever on line talk – with questions from the audience. This should be entertaining!

Many thanks chaps, for a great idea. We hope to repeat the experience for future months, till we can all get together again. The programme has been left as previously published, but may need to change due to circumstances. I will keep you all informed.

Best wishes,

**John Hurst,**  
Chairman

### **Folding@home**

Cambridge University has put out an appeal for people to donate their spare computing capacity to the Folding@home Consortium (<https://foldingathome.org>).

Folding@home is a distributed computing project based at Washington University School of Medicine, Washington State, for simulating protein dynamics, including the process of protein folding and the movements of proteins implicated in a variety of diseases, including COVID-19. It brings together citizen scientists who volunteer to run simulations of protein dynamics on their personal computers: insights from this data are helping scientists to better understand biology and are providing new opportunities for developing therapeutics.

I’ve been running this for a few days now in the background on my laptop, for 12+ hours/day: even on ‘full power’, it doesn’t affect performance very much at all. You can, if you wish, set up an account or a team to earn points: I’ve chosen to stay anonymous. It’s easy to set up: download the appropriate .exe file, then run it. It sets itself up automatically to use the spare computational power of the main computer cores and the graphics cards. There are options to see what progress it’s making with the work units that your computer has been allocated.

Why not give it a go on your PC or laptop? Be careful of scammers, so make sure that you go to the link that I’ve given.

**Mike Provost**

# Sky Notes

## April 2020

Compiled by Roy Gretton



*All times given below are in British Summer Time*

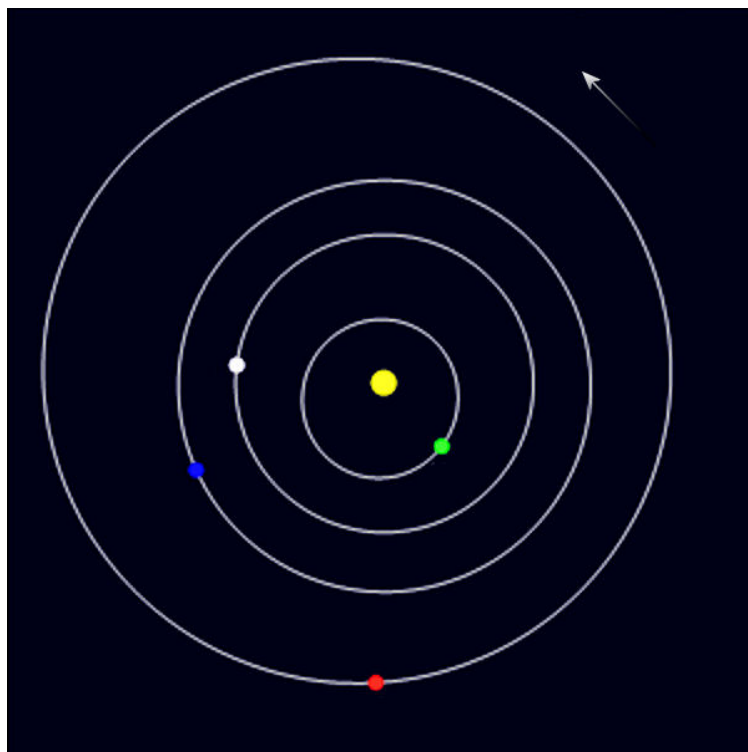
### PHASES OF THE MOON

<i>Phase</i>	<i>Date</i>
First Quarter	April 1 <sup>st</sup> and 30 <sup>th</sup>
Full Moon	April 8 <sup>th</sup>
Last Quarter	April 14 <sup>th</sup>
New Moon	April 23 <sup>rd</sup>

This month the Moon is closest to Earth on the 7<sup>th</sup>, and furthest on the 20<sup>th</sup>.

### THE PLANETS

*The inner Solar System on 14<sup>th</sup> April,  
viewed from above the North Pole.  
The arrow shows the direction of rotation.*



Venus (**white** dot) is getting closer to Earth (**blue** dot), as the latter moves more slowly around its orbit. Venus lies to the east of the Sun, and is therefore an evening object when viewed from Earth. It will appear as a thick crescent in early April, thinning as the month proceeds. Mars (**red** dot) and Mercury (**green** dot) are both to the west of the Sun, and therefore morning objects. The distance between Earth and Mars is steadily decreasing, and will reach a minimum in October.

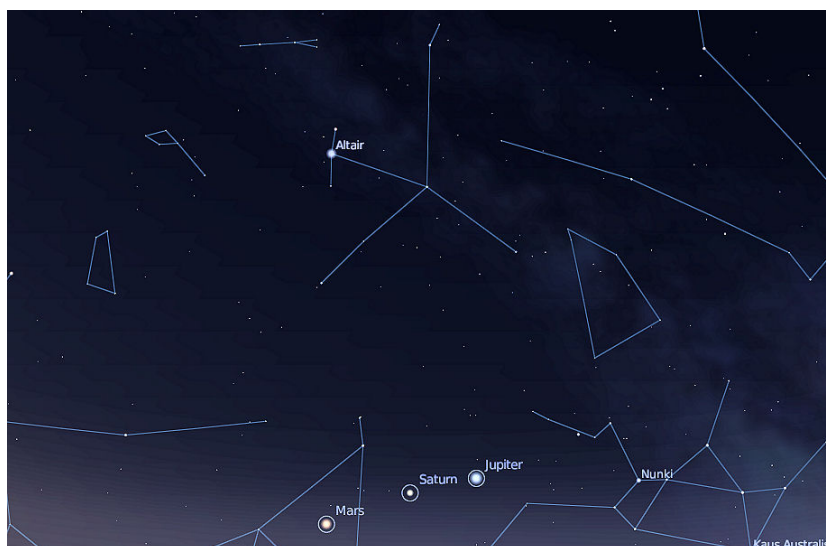
**Mercury** was at greatest western elongation on March 24<sup>th</sup>, and is now moving back in toward the Sun. As April begins it will be very low in the ESE in the pre-dawn glow, and very difficult to observe.

**Venus**' elongation from the Sun is now decreasing, but it is still the stand-out object in the evening sky. For most of April it will be shining at magnitude  $-4.5$ , and by the close of the month will be over 27 degrees north of the celestial equator. A crescent Moon will be close by on the evening of April 26<sup>th</sup>, making a beautiful spectacle if the sky is clear.



**Looking west  
at 9:30pm on  
April 18<sup>th</sup>**

April begins with **Mars** and **Saturn** in conjunction low down in the pre-dawn sky, with **Jupiter** a few degrees to the west. As the month progresses, **Mars** moves off eastward through the constellation of Capricornus, while **Jupiter** gradually moves closer to **Saturn**. All three planets make very challenging targets for observers, as they are far south of the celestial equator. You will need a low southeastern skyline in order to see them at all.



**Looking SE  
at 5am on  
April 12<sup>th</sup>**

*Three superior  
planets lurk  
close to the  
horizon as the  
pre-dawn  
glow begins*

**Uranus** is unobservable this month.

**Neptune** is a magnitude 7.9 morning object in the constellation of Aquarius, rising an hour-and-a-half before the Sun by the end of April.

## METEORS

The Lyrids put on their annual appearance in the second half of April, this year under very favourable conditions. Maximum activity is expected on the night of April 21<sup>st</sup>-22<sup>nd</sup>, when about 15 events per hour may be observed under ideal conditions.

## COMETS

Unusually, we have no fewer than three comets in the northern hemisphere that are currently around magnitude 8. Two of them are circumpolar, and one may become a bright evening object in May.

### 1. Comet C/2017 T2 (PANSTARRS)

This circumpolar comet this month moves out of Cassiopeia and into Camelopardalis, passing closest to Polaris around the end of April.

### 2. Comet C/2019 Y4 (ATLAS)

This comet, also circumpolar, will be moving westwards through Camelopardalis and brightening during the whole of April, then passing into Perseus by mid-May, when it may become a naked-eye object low in the west after sunset.

### 3. Comet C/2019 Y1 (ATLAS)

This comet passed through perihelion in mid-March, but its distance from Earth is still decreasing, and it will be closest to us (1.33 AU) on April 28<sup>th</sup>. It is currently in the constellation of Andromeda, between Cassiopeia and the Great Square of Pegasus.

Visit [www.heavens-above.com](http://www.heavens-above.com) for daily updates on the positions of these comets.

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## A Further Note on Comet C/2019 Y4 (ATLAS)

People are wondering if this might be the first bright naked-eye comet for some time. If this turns out to be the case, its display will be of much shorter duration than that of the great comet Hale-Bopp, over 20 years ago. It could reach naked-eye visibility in April, after which maximum brightness is expected in the third week of May, when the comet will be getting low in the western twilight sky. Thereafter it will plunge out of view as it heads toward perihelion, which will occur on May 31<sup>st</sup>.

**C/2019 Y4** is a recent discovery, dating from three days after last Christmas. It has a very elongated orbit, with a period of 5500 years.

**ATLAS** is an early warning system for detecting asteroids that might be a threat to Earth. It is funded by NASA and consists of two telescopes 100 miles apart, on Haleakala and Maunaloa in Hawaii. These automatically scan the sky several times each night. It has already discovered several dozen comets, of which C/2019 Y4 is one.

*(Systems like this have very much reduced the chances of a comet being discovered by amateur astronomers!)*

## DIARY DATES 2020

### Monthly Meetings of the Nottingham Astronomical Society

**There will be no meetings at  
Gotham or Plumtree until further notice**

*We nevertheless continue to display our pre-arranged programme of speakers below, in the hope that it may be possible to livestream some of these talks. These are very tentative ideas at present, but*  
***members of the Society will receive further updates  
each month in the form of an email from the Chairman***

<u>Date</u>	<u>Topic</u>	<u>Speaker</u>
May 7 <sup>th</sup>	Wonders of the Southern Sky	Professor Ian Morison Emeritus Gresham Professor of Astronomy
June 4 <sup>th</sup>	VENUS – why so different? New insights from our closest earth sized planet	Dr Richard Ghail Royal Holloway, University of London
July 2 <sup>nd</sup>	Live Long and Prosper The search for Vulcan and other hypothetical Solar System objects	Dr Ann Bonell Leicester Astronomical Society
August 1 <sup>st</sup> (Saturday, 5pm)	NAS Annual BBQ at the Observatory Subject to developments in the Covid-19 pandemic	
September 3 <sup>rd</sup>	The Plumes of Enceladus	Dr Chris Arridge Reader, University of Lancaster
October 1 <sup>st</sup>	FIAT LUX 3 - The LSST Jedi The Large Synoptic Survey Telescope, the greatest survey yet	Dr Steve Barrett Senior Research Fellow, University of Liverpool
November 5 <sup>th</sup>	Annual General Meeting followed by a Wine and Cheese Buffet	
December 3 <sup>rd</sup>	The Vikings at Barsoom - Part 1 Orbital Operations	Paul Money

### Social and Practical Astronomy, Plumtree

The **March** meeting at Plumtree was cancelled due to the ongoing issue with the Coronavirus pandemic. We are exploring options of how to potentially deliver online content relating to practical astronomy in the interim while face-to-face gatherings are being discouraged by the Government. I hope to be able to provide some news about this in the coming few weeks.

The Helpdesk remains available to offer online help and support and advice if needed. With many fewer aircraft in the sky during the day and night, it may be that the seeing and transparency conditions over the next few weeks become very good (weather permitting), so it may be a good time to get out into the garden and doing some observing.

**James Dawson**

NAS Helpdesk & Plumtree Meetings  
[helpdesk@nottinghamastro.org.uk](mailto:helpdesk@nottinghamastro.org.uk)

## Book review

### **Luna Cognita – a comprehensive observer's handbook of the known moon**

**ISBN 9781493916634**

Springer have just published a new three volume set on the Moon, called *Luna Cognita*. The author, Bob Garfinkle, is an American historian with a special interest in the Moon.

The chapter headings can all be viewed on the Springer website, and each show a free two page preview. The topics included include the theories on the origin of the Moon, the role it has played in history and lore, geology, methods employed to observe and image the Moon, and a comprehensive guide to the features which can be observed on any day in the lunar cycle, as well as chapters on the specific groups features observable on the lunar surface.

These chapters take up just over 1000 pages, and volume 3 contains about another 500 pages of appendices including data, catalogues of less common features, ephemerides of eclipses and bright occultations, tips on photographic techniques, lunar nomenclature, a glossary, extensive bibliography, and index of names associated with the Moon. The illustrations, photographs are reproduced with high definition, and the construction of the books is exemplary.

There have been several books published on the Moon in the last 24 months or so, I suspect timed to coincide with the 50th anniversary of Apollo 11 landing on the lunar surface. This is by far the most comprehensive of these books I have seen, but that should not belittle the others.

The book is currently a print-on-demand set, and from ordering to delivery can take 2-3 weeks, but the wait is worth it. The set is also surprisingly “cheap” [I use this term loosely] at about £68 for all three volumes. With it being a print-on-demand set, I suspect it will become a collector's item in the future as relatively few will enter circulation in the second hand markets.

If you love books, and love the Moon, then I would strongly urge you to order a copy of this magnificent set.

**James Dawson**

NAS Helpdesk & Plumtree Meetings

#### **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 link to the NAS Journal, and a copy of our SkyNotes, 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)*



## Our Aspiring Astrophysicist

***Sam Coupe** and her daughter **Rhiannon** are longstanding members of the NAS, and we have followed with interest Rhiannon's progress through her A-level course toward university.*

*Sam has written this piece for the Journal, bringing us good news for the future.*

Rhiannon and myself have been keen members of the Society since 2013. Rhiannon a keen astronomer. Watching programs such as Stargazing Live and attending the NAS monthly talks has sparked her interest further.

Over the years, Rhiannon made the choice to pursue a career in the physics world, and has since enjoyed work experience at Nottingham University, taking part in particle physics and cosmology. She also enjoyed her time at Biocity, doing work experience recommended by one of the other Society members and friend Scott. Since the work experience, Rhiannon has visited many universities and thoroughly enjoyed the 'Astrocampus' at York, which is well worth a visit. She applied to Oxford, Leicester, Lancaster and York, and has now received an unconditional offer from Lancaster University to study Physics, Particle Physics and Cosmology. Rhiannon has chosen a course that has elements of space science, quantum physics, particle physics, cosmology and relativity, and much more.

Hopefully we may get to visit the Society again for a monthly lecture before she departs for pastures new. And maybe one day, she will present a talk herself on the astronomical world!



Rhiannon at Lancaster University, just minutes after she had received her unconditional offer in person

***All the best Rhiannon, from all of us at NAS.  
Do please keep in touch and let us know how you get on!***



## **An Attempt at Imaging Stephan's Quintet**

Stephan's Quintet is a group of galaxies in the constellation of Pegasus. This is my first attempt at imaging them, using a Canon 450D camera at the prime focus of my 300mm Newtonian reflector.



The image is about 15 arcminutes across, and was obtained by stacking 96 x 30-second frames captured at ISO 800

Stephan's Quintet was originally thought to be a close group of five galaxies, designated as NGC 7317, 7318A, 7318B, 7319 and 7320. However, NGC 7320 (bottom-left in my image) is now known to be a foreground galaxy, 40 million LY from Earth, or about one-seventh of the distance of the other four, which are estimated to be 290 million LY away. The four gravitationally bound neighbours and may eventually merge to form one giant elliptical galaxy.

For a Hubble Space Telescope image see

[https://www.nasa.gov/mission\\_pages/hubble/multimedia/ero/ero\\_stephan\\_quintet.html](https://www.nasa.gov/mission_pages/hubble/multimedia/ero/ero_stephan_quintet.html)

**Roy Gretton**

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

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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 2020**

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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