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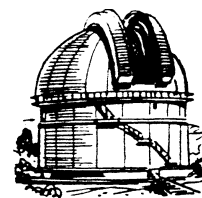
# Journal

of the

## Nottingham Astronomical Society

### July-August 2019

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**Thursday, 4<sup>th</sup> July**

Gotham Memorial Hall  
Gotham, NG11 0HE

8 pm (doors open at 7 pm)

Tonight we welcome our very own

**Dr Julian Onions**



of the University of Nottingham

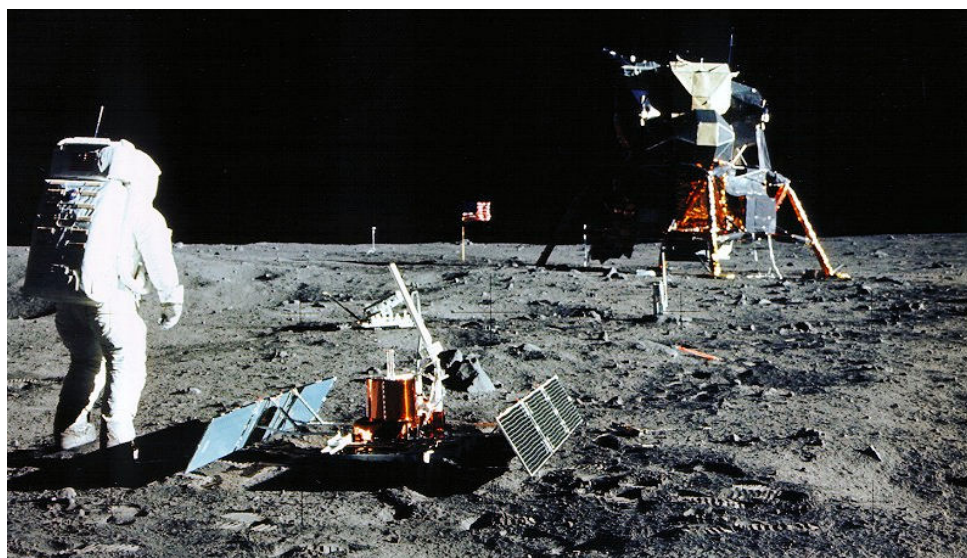
who will be speaking on

**Metal Detecting**

*What are metals to astronomers?*

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**CELEBRATING HALF A CENTURY SINCE THIS...**



Buzz Aldrin with the lunar seismometer and the Apollo 11 lander, July 1969

# Sky Notes

## July & August 2019

Compiled by Roy Gretton

*All times given below are in British Summer Time*



**Earth** is at **aphelion** late in the evening of July 4<sup>th</sup>, when the centres of the Earth and the Sun will be separated by a distance of 152,104,278 km.

### PHASES OF THE MOON

<i>Phase</i>	<i>July</i>	<i>August</i>
New Moon	2 <sup>nd</sup>	1 <sup>st</sup> and 30 <sup>th</sup>
First Quarter	9 <sup>th</sup>	7 <sup>th</sup>
Full Moon	16 <sup>th</sup>	15 <sup>th</sup>
Last Quarter	25 <sup>th</sup>	23 <sup>rd</sup>

### PARTIAL ECLIPSE OF THE MOON, July 16<sup>th</sup>

The umbral stage of this eclipse will be beginning as the Moon rises soon after 9pm. Greatest eclipse will be at 10:30pm, when the northern two-thirds of the Moon will be immersed in the dark shadow. The umbral stage will finish just before midnight. Look out for Saturn to the upper right of the eclipsed Moon.

### THE PLANETS

**Mercury** begins July as an evening object, 24 degrees from the Sun and shining at magnitude +1.1. Thereafter it moves rapidly in toward the Sun, passing through inferior conjunction on the 21<sup>st</sup> to become a morning object, and then heading for greatest western elongation (19 degrees) on August 9<sup>th</sup>.

**Venus** (magnitude -3.9) will still just be visible very low in the morning sky as July begins, but it quickly moves in toward the Sun until it reaches superior conjunction on August 14<sup>th</sup>.

The current apparition of **Mars** is effectively over, as it heads for conjunction with the Sun on September 2<sup>nd</sup>.



**Looking south  
at 11 pm  
on July 30<sup>th</sup>**

**Jupiter**, shining at magnitude  $-2.6$  in the constellation of Ophiuchus, is the brightest object in the night sky other than the Moon. As July begins it will be setting at about 3 am, but by the end of August it will be disappearing before midnight. Throughout this period it will remain more than 22 degrees south of the celestial equator.

**Saturn**, also about 22 degrees south of the equator in the constellation of Sagittarius, reaches opposition to the Sun on July 9<sup>th</sup>, when it will be due south at about 1 am.

**Uranus** (in Aries) and **Neptune** (in Aquarius) are both early morning objects. Uranus will be rising over four hours before the Sun in mid-July. Neptune rises about an hour earlier than Uranus.

## METEORS

There are three meteor showers visible during this period: the **Alpha Capricornids**, which peak on the night of July 30<sup>th</sup>, close to New Moon, so conditions will be very favourable; the **Southern Delta Aquarids**, which peak on July 31<sup>st</sup> (also very favourable); and of course the **Perseids**, which this year will peak under very unfavourable conditions, with a 13-day old Moon on the night of August 12<sup>th</sup>-13<sup>th</sup>.

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**AUGUST 3rd** ( SATURDAY AFTERNOON/EVENING)

*from 5pm onwards*

## SOCIETY BBQ at the OBSERVATORY

**Bring your sausages and mingle!**

Get to know our big scope. Solar observing if sunny.

Telescope surgery – sort your scope problems.

Evening observing, weather permitting.



( Members and guests only )

Please bring your own sausages/burgers etc for the barbecue.  
We will provide the bread buns, onions, sauces etc, and tea/coffee/soft drinks, cups, plates etc.

## 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>
July 4 <sup>th</sup>	<b>Metal Detecting</b> <i>What are metals to astronomers?</i>	<b>Dr Julian Onions</b> University of Nottingham
<b>August 3<sup>rd</sup></b> (Saturday)	<b>Annual Barbecue at the Observatory</b> (Members and their guests only)	
September 5 <sup>th</sup>	<b>Where Are the Aliens?</b> <i>Might we be alone?</i>	<b>Prof Brad Gibson</b> University of Hull
October 3 <sup>rd</sup>	<b>The 200 at 70</b> <i>The Hale Telescope</i>	<b>Dr Steve Barrett</b> University of Liverpool
November 7 <sup>th</sup>	<b>Annual General Meeting</b> with a Wine and Cheese Social	
December 5 <sup>th</sup>	<b>Voyages to the Sun</b> <i>Probing our nearest star</i>	<b>Prof Lucie Green</b> 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 July 18<sup>th</sup> (see further details below)**



## Social and Practical Astronomy, Plumtree

The **June** meeting at Plumtree saw NAS member Sam Boote give us a talk on “my journey in telescopes”.

Sam described how he first became interested in astronomy, encouraged by his father, and soon was the proud owner of an army surplus 2 inch refractor; Sam is pictured here with a similar telescope to that first telescope.



Since that first telescope, Sam has acquired and purchased a number of telescopes and mounts and we were shown images of many of these and the rationale behind changing from one to another. The talk struck a chord with many in audience who have swapped and changed telescopes over the years. It was equally as inspiring and informative for others yet to even buy their first telescope.

About a month ago Sam picked up his latest telescope, an 11 inch Schmidt-Cassegrain, on a fork mount. I've been lucky enough to see the set up, but not yet had an opportunity to look through it at night.

There were many things I took away from Sam's talk and from seeing the set up in his garden at home, but the value of having a permanent set up stands out to me the most. Being able to go outside and commence observing in a matter of minutes is most attractive concept and really is the most significant step I should take to improve my own enjoyment of amateur astronomy.



Chris Sneddon made some lovely fruit punch (alcoholic and non-alcoholic version) and a scrumptious strawberry cake to accompany the event and to celebrate mid-summer. This was all very well received and thank you Chris for this; Chris seen here cutting the strawberry cake.

The **July** meeting is discussed below.

The **August** meeting is going to be an opportunity to hear about the astronomy events in and around Nottingham and about the various national amateur astronomy societies.

**James Dawson**, NAS Helpdesk  
[helpdesk@nottinghamastro.org.uk](mailto:helpdesk@nottinghamastro.org.uk)

## **Plumtree 18<sup>th</sup> July 2019**

As it will be 50 years since man first stepped onto the Moon, we thought we would dedicate the July Plumtree meeting to the Apollo missions and the space race in general.



We are looking for members to come along with any memorabilia they may have from that time, or simply to offer to give a 5 minute talk on their memories of the occasion, or to undertake some research and give a brief talk on any aspect from that era: rocket science; lunar maps; geology; conspiracy theories; astronauts; early rocket missions; formation of NASA; literally anything.

If you would give a very short talk, or if you have something to bring along, please let Richard Severn know as he will be planning and chairing the evening:  
<[membership@nottinghamastro.org.uk](mailto:membership@nottinghamastro.org.uk)>

**James Dawson**  
NAS Helpdesk

## **Noctilucent Clouds**

We are now in the season when noctilucent clouds (NLC) are often visible. On the night of 21<sup>st</sup> June there was a great display of these magnificent clouds. I was fortunate to capture them with my Canon 6D using a 24mm lens from the observatory site; this is a 1 second exposure at ISO 800, f/4 taken at 23:59 (GMT).

**James Dawson**



## To GOTO or not to GOTO

.... *that is the question*

(as Shakespeare might have said if he'd been able to get to grips with the telescope between its invention and his passing away a few years later).

During my recent talk to the Society's Plumtree meeting about my experiences in acquiring and disposing of telescopes over the years, there was a short discussion about the merits and demerits of using GOTO capabilities on modern telescopes.

My firm belief is that, apart from our one member who is a professional astronomer, the rest of us pursue astronomy as a hobby. That means that we can do exactly as we like without anyone telling us how we should spend our leisure time. If you prefer looking at celestial objects without agonising over how to find them, that's fine. If you prefer finding those same objects with the aid of a star atlas and your star-hopping skills, that's fine also. At the end of the day (or night), it's what gives you the most satisfaction from your hobby that counts most of all. So don't be discouraged if anyone tells you that you're going about your favourite leisure pursuit in the wrong way!

As I said at the meeting, I'm happy to entertain visits by Society members to my observatory by arrangement.

**Sam Boote**

[sam@boote.myzen.co.uk](mailto:sam@boote.myzen.co.uk)

### **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)*

# 1969

## *What is so special about 1969?*

Of course, for those that are space nuts, it is the first of what proved to be 6 moon landings in all, but for others it might well be:

The last public performance of the Beatles on top of Abbey Road Studios and the famous zebra crossing photograph of the group is taken.

The Boeing 747 makes its first commercial flight.

The half-penny is withdrawn.

Chappaquiddick & Mary Jo Kopechne add more colour to Senator Edward Kennedy's life.

The Harrier enters RAF service.

Woodstock.

Richard Milhouse Nixon and Muammar Gaddafi came to power.

Monty Python's Flying Circus and Sesame Street first air.

For anybody reading this article and were around at the time their particular choice might include more astronomical events such as an eclipse.

For me, a fifteen year-old sprog, 1969 had one event (of many) during the summer school holiday that was to come back to haunt me 22 years later – I met my future wife though neither of us knew it at the time and we 'clicked', as they say, on what turned out to be a rather unusual blind date – don't ask and I'll not tell!

Politically, in 1968, America was having a very rough time with a liberalising President Johnson about to be replaced by Nixon in early 1969 having had to deal with three assassinations – President Kennedy, Dr. Martin Luther King & Robert Kennedy – along with growing popular unrest with his presidency mainly due to the excessive establishment reaction to civil rights disruptions and the Vietnam war increasingly being seen as an expensive military (mis-) adventure in terms of material, money and life. A proposed Equal Rights Act abruptly floundered when it was pointed out that the rather broad legislation would expose women to the Draft – a much hated conscription lottery.

Just to make the comparison, from late December 1968 through to the end of April 1970 – a period of less than 17 months – we were treated to six fully-stacked Saturn V launches (Ok, there were internal differences on two of them) with the first four taking place in the eight months between late December 1968 and July 1969. No wonder that funding began to be questioned once the original justification and prime objective of getting (and returning) a (hu)man to the moon had been achieved in the minds of the US taxpayers by the time Apollo 13 returned. Whilst on this particular topic, '69 saw four crewed launches, five in one year if you start it with Apollo 8, which I think still counts as some sort of record if not equalling Gemini's.

For NASA 1968 ended with a great high – **Apollo 8**. The original flight schedule lost one flight to achieve Kennedy's timetable with enough flexibility to delay (or repeat) the moon landing should the need arise after the near two-year crewed flight hiatus following Apollo 1's cabin fire. As it happened, the first flight worthy LEM was not going to be ready for its low earth orbit test flight scheduled for December '68 and there were two crewed LEM-less Saturn V flights to be accomplished before the main event – the first flight of a moon-capable Saturn which also was slated to test the projected 'free-return' transit to the moon and a second flight to do a circum-lunar flight. As all the rocket stages had been tested on previous launches, the risk of equipment failure was minimal but the selected launch window for the now combined flight would put NASA in a very difficult political situation if the SPS rocket motor failed to fire during Christmas Eve for the return journey.



As we all now know the flight was an unmitigated success right down to the combined apt reading of the opening verses from Genesis and the 'Earthrise' picture. For a few months the crew (Borman, Anders & Lovell) became the three people who had travelled the furthest from Earth – a feat Jim Lovell was to repeat when the ill-fated **Apollo 13** swung by the moon 16 months later slightly further out.

**Apollo 9** was not a great media event as it was constrained to low earth orbit testing the LEM. **Apollo 10** largely repeated the previous lunar flight with the addition of a non-landing LEM excursion to 15.6 miles above the surface becoming largely relegated to a 'mentioned in despatches' type of event in the media.

However, the next flight couldn't be much different with every detail pontificated and dissected to death. The landing commenced from a position behind the moon which, in spaceflight terms was 'nominal' except for the guidance computer throwing out two ignored 'wobblies' (the computer overloaded and automatically reset itself due the operational but unrequired ascent radar demanding attention.) NASA had set the schedule for prime-time US TV consumption for that Sunday (20<sup>th</sup> July 1969) – the UK was some six hours ahead of NASA-time which meant that the UK saw the landing coverage during the late evening and the subsequent moon walk from just before 03:56 the next morning.

**Apollo 12** launched in November and suffered a lightning strike during launch causing communication problems which were resolved whilst in the parking orbit before firing the S-IVB to go to the moon. Media-wise the flight was an early victim of what is now referred to as the 'T-Shirt' treatment (been there, done that, bought the T-Shirt) as far as I remember along with coverage of the launch of the next mission, which attracted even less media other than reporting problems with second stage's centre engine during launch – so much so the scheduled broadcast from space about 54 hours into the mission wasn't carried on any US channel. Boy, was that to change a few minutes later! Europe woke up to the news on April 14<sup>th</sup> of the SM's problems that occurred in our early hours.

For the following three and a half days NASA increasingly dominated the news to the point that most of the world stopped for the re-entry and splash down.

The Apollo flight program finished with **Apollo 17's** splashdown on December 19<sup>th</sup> 1972. However, the 5 ALSEP experiment/sensor packages left by **12, 14, 15, 16 & 17** lasted until September 1977 when they were finally turned off. Amongst the varied and varying sensors was a seismometer which were used to record the 5 S-IVBs from **Apollo 13** sent onwards to lunar impacts. The spent upper stages from **Apollo 8, 9, 10, 11, 12** entered heliocentric orbits as abandoned space junk – not quite, however. **Apollo 12's** S-IVB came back into high earth orbit during 2002/3, alternating with a heliocentric orbit approximately which looks like being repeated every 40 years and got issued with the asteroid designation of J0023E before anybody realised that it originated from launch complex 39.

Looking quickly at the available data, in order to get six craft to the moon Nasa launched some 62 moon-related vehicles over the 15 years from 1957:

Mercury:	27 (6 manned)
Gemini:	17 flights, consisting of 12 crewed and 5 Agena target vehicles.
Apollo:	36 (excluding Skylab & ASTP), 14 of which were crewed plus
Apollo 1.	

To tidy the above figures up a bit, Mercury and Gemini flights were launched with man-rated variants of existing military hardware except 'Little Joes' which were largely employed in testing the escape rocket system.

Did NASA get to the moon? My personal opinion is an unequivocal 'Yes' simply because there are far too many variables outside the direct control or responsibility of the necessary tight cadre of NASA executives for any serious attempt to fake any part of a flight and keeping it secret for fifty years especially as loyalties do change with time, change of employer (especially when involuntary) and often with death. It must be noted that NASA

heavily relied on ex-US assets such as Parkes, Jodrell Bank, Madrid etc – who would have had no qualms about publicly challenging incorrect statements (or simply withdraw from future co-operation) and possibly releasing a self-congratulatory press release that inadvertently gave the game away. Also, there would be many physical requirements to insert the astronauts back into the capsule after splashdown without alerting seasoned operatives' attention to deliberate anomalies or media coverage just waiting for their 'main chance'. Where would you hide such a large spacecraft in earth orbit? Indeed, during the sixties one school in Kettering was repeatedly reporting Soviet activity long before official (frequently post-flight) announcements and discovered the location of two Russian launch sites (Baikonur and Plesetsk). The school went on to independently detect the lunar orbit path of Apollo 17. NASA might have got away with it once, but not for a total of nine times – that really would be pushing their luck in my view.

For those who are wondering why there were no women selected for Astronaut training until after Apollo the answer is simple: NASA insisted on early applicants having significant jet flight testing experience before joining with some justification – the assigned roles did have either 'Commander' or 'Pilot' in their titles and the environment was rather experimental. Some male scientists were recruited and given pilot training towards the end of Apollo, which put them a year behind those that were pilots and recruited in the same draft. They mainly flew on Skylab and Shuttle missions.

Nearly every treatment of the 'space race' starts with President Kennedy's famous 'by the end of the decade' speech to Rice University in September 1962. In fact, the new president Kennedy first committed the US to the project in a speech to Congress the year before in May 1961, to drum up support for the moon project shortly after Gagarin orbited the earth – the fact was that the US were ready to send Sheppard up in April 1960 but unforeseen problems delayed it till after Gagarin flew just before Kennedy's Congress speech.

## **Advertisement**

### **FOR SALE**

#### **Celestron CPC 800 Deluxe Edge HD telescope**

8-inch Schmidt-Cassegrain with tripod

including various extras

Full details at <https://www.astrobuysell.com/uk/propview.php?view=151100>

Price £1150

#### **Kendrick 8-inch solar filter**

with custom-made box

Full details at <https://www.astrobuysell.com/uk/propview.php?view=151101>

Price £50

Please contact Sam Boote

**[sam@boote.myzen.co.uk](mailto:sam@boote.myzen.co.uk)**

or at Society meetings

# 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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## **CHAIRMAN:**

**John Hurst**

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

## **VICE CHAIRMAN:**

**Roy Gretton**

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

## **SECRETARY:**

(vacant post: )

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

## **TREASURER:**

**Mike Provost**

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

## **JOURNAL EDITOR:**

**Roy Gretton**

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

## **MEMBERSHIP SECRETARY**

**Richard Severn**

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

## **CURATOR OF INSTRUMENTS:**

**Leigh Blake**

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

## **DIRECTOR OF OBSERVING:**

**David Buxton**

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

**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 2019**

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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