

# Federation of Astronomical Societies



Editor: Michael Bryce  
Carolian Astronomy Society  
Bromsgrove Astronomical Society

## Newsletter

[www.fedastro.org.uk](http://www.fedastro.org.uk)

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*Note: The FAS Council Reserves the Right to publish articles, events and reports submitted to the Newsletter by FAS Member Societies*

### President's Spot: Dr Paul A. Daniels FRAS

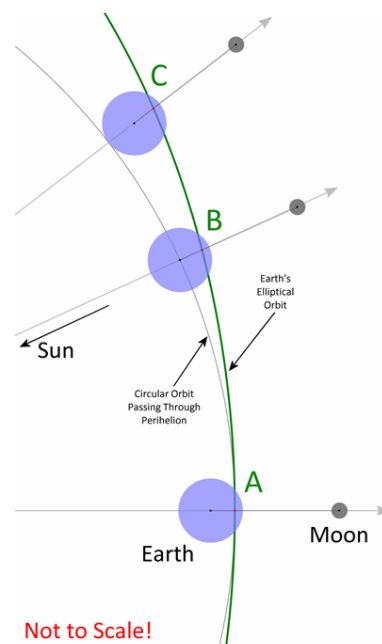


Nearly a decade ago, when I became President of the Guildford AS and the annual calls came in for a society Xmas meal, I took the <sup>TM</sup>Real Astronomer's approach eschewing the artificiality of the human calendar and moving to something that truly signified the start of a new astronomical year – perihelion! The dinners were called 'Perihelion

Repast' (note the smart aleck pun – nearly sharp enough to slice that turkey) and we celebrated the new astronomical year in early January close to perihelion when the pubs and restaurants were both easier to book and when many venues would dig out their recent Xmas menu as one of our menu options.

Back then it got me thinking about the precise time of perihelion. I talked to my old PhD supervisor, Prof David Hughes (Sheffield), about it and he commented that it was difficult to determine *exactly* when perihelion occurred. I was quite sceptical of that at the time; I mean, we know Earth's orbital elements fairly accurately so it should be a simple matter of just doing the orbital calculations relying on Kepler's method as a first approximation and then refining by taking the perturbations due to the other planets into account. Well, as you might suspect – it's not that simple!

Most of you will know the computer motto of 'Garbage In Garbage Out' so I should have known better than to pose a daft question if I wanted a sensible answer, *i.e.* one I could agree with! The problem isn't so much the orbit calculations as asking exactly what's meant by 'perihelion'. Okay, so we should all know it generally means the point when the Earth in its orbit is closest to the Sun (it is what it says on the tin – *peri*=near & *helion*=Sun) but for a few days it's actually possible for the centre of the Earth to be closer to the Sun than the closest point of the Earth's slightly elliptical orbit!



We shouldn't forget that the Earth has *only* 81.3 times the mass of our Moon which means that the two bodies pirouette around their common centre of mass, the barycentre, and it's that barycentre that follows the orbit around the Sun not the centre of the Earth. The barycentre is actually inside the Earth about three-quarters of the radius out from the Earth's centre to the surface so, when the barycentre is at perihelion, the Earth's centre may sometimes be closer to the Sun (see **A** in diagram). With some calculation, the diagram shows that there's a window of about 7.0 days straddling perihelion (**B**) when this *could* be true and (**C**) a wider window of about 10.8 days when at least *some* portion of the Earth's sunward surface could be closer. Clearly none of this applies if perihelion occurs near a New Moon when the Earth's centre lays outside its orbit.

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As if that weren't enough to muddy the waters, the ellipse of the Earth's orbit rotates completely on its axis (known as apsidal precession) approximately every 112,000 years (11.6" per year) so that the direction of perihelion slowly changes. After that's combined with precession of the Earth's axis, by the year 6430 CE perihelion will occur at the March equinox and the Xmas turkey will have gone cold! With so much scrutiny of a simple pun this should really be named Pedant's Spot!

## Okay, Down to Business:

### The FAS Webinar on 'Outreach after Covid' – Saturday, 9<sup>th</sup> January 2021

This webinar discussed ways to do online meetings and outreach whilst we're still unable to meet in-person and how to decide, for any proposed in-person meeting or outreach event, when and how we might safely go about it. The webinar went very well with more than 140 attendees during most of the event including several from overseas. The recording of the meeting is available on YouTube at <https://www.youtube.com/watch?v=1hC-kqfDSOI> and the Q&As on the FAS Website at <http://fedastro.org.uk/fas/covid-conference-question-answer>.

## FAS April Online Convention

On Saturday afternoon of 17<sup>th</sup> April 2021 we'll be organising a webinar convention with four invited online speakers and a Q&A after each talk. We're also arranging some short talks by sponsors showing their latest products. The details are still being finalised and we'll keep you updated.

## Seeking someone to join Council to promote Diversity and Inclusion

In the last Newsletter we appealed for someone to join the FAS Council in the new *Diversity and Inclusion* post. So far we've had no response to this appeal but are still very keen to do so. Many organisations now see implementing diversity and inclusion policies as a commitment to a modern, civilised society and the FAS is no different. The person joining the FAS Council would be appointed in the first instance but would subsequently be subject to election at an AGM in common with the other Council positions.

The person taking on this new role would, for example, review the FAS constitution to recommend updates to make explicit our commitment to diversity and would create and maintain guideline documents for our members advising them on best practise for organising meetings, observing sessions, outreach, etc, that did not discriminate. See the advert in this issue of the Newsletter.

If you have any comments or good ideas we're always ready to listen and I can be contacted at [president@fedastro.org.uk](mailto:president@fedastro.org.uk) or on 07802 324697.

Clear skies!

Dr Paul A Daniels FRAS  
FAS President  
17<sup>th</sup> February 2021

# The Sky is not the Limit: Could you be the UK's next Astronaut?

For the first time since 2008, The European Space Agency (ESA) is on the lookout for new astronauts, and UK citizens of any walk of life are invited to apply.

Following an intensive period of training, which will include a 3-week course in caving and a course in practical geology, the new astronauts will take their first flights into space when they are deployed to the International Space Station. They are likely to be part of the crew on the next missions to the Moon in the late 2020s and through the 2030s.

ESA is also issuing a special call for candidates with physical disabilities to apply to its astronaut reserve. The pilot project aims to open the astronaut career path to people who, until now, have been excluded from space flight. Those with a lower limb deficiency or who are considered to be of short stature and meet other recruitment criteria are invited to apply. ESA will invest in the necessary adaptations of space hardware to enable these otherwise excellently qualified professionals to serve as crew members on a safe space mission.

The UK Space Agency expects the next professional UK astronaut to be selected through this recruitment drive and encourages all eligible applicants to apply.

Experience of the space sector is not essential, but candidates will need a master's degree (or higher) in Natural Sciences, Medicine, Engineering, Mathematics or Computer Sciences or be qualified as an experimental test pilot. Fluency in English is essential along with other requirements. The right person for the job will also be calm under pressure and be willing to participate in life science experiments - past experiments have included studying the effects of microgravity on human bone and tissue.

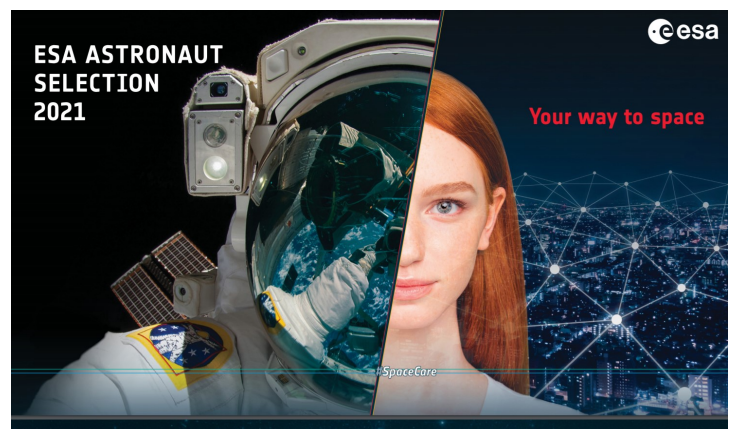
Prospective applicants should visit the European Space Agency's Careers website at the link below and click on ESA Astronaut Selection.

### European Space Agency:

[https://www.esa.int/About\\_Us/Careers\\_at\\_ESA](https://www.esa.int/About_Us/Careers_at_ESA)

### UK Space Agency:

<https://www.gov.uk/government/organisations/uk-space-agency>





# FAS Convention 2021

**We are delighted to invite you to our Online Convention**

**Saturday 17th April**

Unfortunately it wasn't possible to hold a physical event at the Institute of Astronomy in 2020, though we hope to be able to do so sometime this Autumn.

In the meanwhile, we are holding an online Convention, **consisting of Talks only**, on **Saturday, 17th April**, from noon until 4:30 pm.

This will be free and open to all, and we are planning an impressive line-up of speakers for you.

If you are interested in arranging for a short presentation during the lunch break, either as an exhibitor or an event sponsor, please contact Jerry Stone at [publicity@fedastro.org.uk](mailto:publicity@fedastro.org.uk)

**This Convention is Free to FAS Members!**

**Speakers, Topics and registration details will be emailed separately to societies shortly.**

**STOP PRESS \*\*\* STOP PRESS \*\*\* STOP PRESS**

**We are pleased to announce that Highly Acclaimed Astro-photographer Nik Szymanek is confirmed as a Speaker**

Nik will be well known to many of you as one of the UK's foremost astro-photographers. His images of the cosmos are stunning, and may lead to the impression that professional observatories, expensive equipment and huge experience is needed to enter this aspect of astronomy. However, Nik will show that there is a lot that beginners can do, and that this can be a very worthwhile activity in these current times, when gathering for observing sessions may not be possible.

**Look out for further announcements about additional speakers in due course.**

**This event is free and open to all but you are required to Register via the following link:**

**<https://fasaprcon.eventbrite.co.uk>**

Jerry Stone FBIS  
FAS Meeting Organiser and Publicity Officer  
[publicity@fedastro.org.uk](mailto:publicity@fedastro.org.uk)

# Member Society Reports

## Coventry and Warwickshire Astronomical Society

By Irene Rogers

The Coventry and Warwickshire Astronomical Society (CAWAS) was formed in May 1974 from a merger of two already existing societies; the Coventry Astronomical Society (founded in November 1939) and the Warwickshire Astronomical Society (founded in November 1959). November 2019, therefore, marked a significant birthday for both; the 80<sup>th</sup> for the Coventry Society and the 60<sup>th</sup> for the Warwickshire Society.

### The Coventry Astronomical Society

The inaugural meeting of the Coventry Astronomical and Meteorological Society was held in Room A5 of the Coventry Technical College, formerly at The Butts, Coventry, on Friday 20<sup>th</sup> November 1939 at 6.30pm. The location was due to the fact that many of the founder members were college staff. The meteorological element was apparently so that amateur meteorologists could contribute information to the "Air Ministry".

That the Society began its existence some 2½ months after war had been declared reflects the prevailing belief at the time that "it (the war) would be over by Christmas" but, as we all know now, this was not to be the case and after a meeting of the Junior Section on Friday 6<sup>th</sup> October 1940 had to be "cancelled owing to air raids", an entry in the minutes book the following week - Friday 13<sup>th</sup> (what else!) - states, "meetings abandoned for duration of war."

It has since been remarked that "viewing conditions in the blacked out city must have been marvellous compared to those prevailing today". It is not known how many members had their own telescopes, certainly nothing like the approximately 80% of current members, but it is documented that, at the Society's second meeting of 30<sup>th</sup> November 1939, a Captain G. T. Smith-Clarke of Gibbet Hill, Coventry, expressed an intention to donate his own Solar Observatory complete with a telescope "a superb 6½" Cooke refractor on an equatorial mount with clock drive" to the Society but, until that could be installed on the roof at the Technical College, observing sessions were arranged at his home.

After the war, meetings of the Society were resumed in the same room, at about the same hour, on Friday 7<sup>th</sup> November 1945 and the following year, Capt. Smith-Clarke became its President. In his address at the AGM of 4<sup>th</sup> October, "he stressed the necessity for members to possess their own telescopes however small and hoped that some members would be stimulated to make their own".

He made good his offer of his telescope to the Society; its installation in its new location was duly completed and on Thursday 20<sup>th</sup> April 1947, it was declared open.

### The Warwickshire Astronomical Society

In 1959, a member of the Coventry Astronomical Society – a Mr M.J.O. Green who "was extremely knowledgeable on the subject of astronomy, optics and design" advertised in the local press for people interested in astronomy, particularly in the building of telescopes. It attracted a small number of like-minded individuals and effectively became an Astronomical Workshop interested in the "construction of astronomical telescopes (for the) study of Astronomy in all its aspects". Interestingly, at that time, building your own telescope was popular enough for the magazine, "Practical Mechanics" of January and February 1958, to produce instruction on how to do it; the February edition being headed, "A 6" Telescope Mirror – grinding the mirror disc; testing for accuracy; polishing and figuring."

The 6½ inch Cooke remained on the roof of the Technical College until 1994 when the College revised its conditions for access to and use of the observatory. The revised conditions included: access to it only up to 9pm Mondays-Thursdays in term time; named persons to give reasonable advance notice to Reception before their visit; visitor's passes to be obtained and signed for at each visit; no Society member should have their own key, and each person should pay £5 per hour or part hour. These revised conditions were not acceptable to the Society and, after some further debate as to the actual ownership of the telescope, CAWAS moved their meetings to Earlsdon Methodists' Church hall and have been there ever since. A small team from CAWAS disassembled the telescope and it was put into storage. The dome of an about-to-be-demolished newspaper kiosk was acquired for free and put into storage too – then they ran out of enthusiasm!

In 1995, the telescope was then loaned to Warwick University who had plans to build an observatory for it but this never came to fruition. For several years, it was on display in the foyer of the Physics Department until CAWAS decided to put it on auction. It was bought by the Oxford Mills Observatory in Ontario, Canada and shipped there. The Oxford Mills Observatory is part of a hotel/homestead and the owners were keen for it to be used regularly by guests and others. <http://www.oxford-observatory.org>.



## FAS Outreach & Covid Conference (January 2021)

In January we held a successful **Outreach & Covid Conference**. Thank you to the large number of people that attended and made it worthwhile.

Many of you may have already found the webinar recording on YouTube. If not, please read on for that and other website updates.

The Webinar is on YouTube at <https://www.youtube.com/watch?v=1hC-kqfDSOI> or search for Federation of Astronomical Societies. The conference page has been updated with links to the speaker presentations in the right hand column.

<http://fedastro.org.uk/fas/outreach-and-covid-19-conference-jan-2021/>

The Q&A sessions written questions have been collated onto the page <http://fedastro.org.uk/fas/covid-conference-question-answer> and can be found under the conference menu item on our website. Some of the questions have direct links into YouTube at the point (hopefully!) where the subject was discussed.

Best wishes

**Martin Baker**

Webmaster, Federation of Astronomical Societies

## FAS Council: New Diversity & Inclusion Post

The Council of the Federation of Astronomical Societies is looking for a person to take up a new position of **Diversity and Inclusion Council Member**. Ideally they should be a member of an FAS affiliated society.

The post holder will be a full member of the Council and advise Council on BME and disability matters as well as promoting and advising on social inclusion amongst member societies.

Interested individuals are encouraged to contact the FAS President, Dr Paul Daniels, at [president@fedastro.org.uk](mailto:president@fedastro.org.uk) or on 07802 324697.

*from previous page...*

### Present Day

The CAWAS tries to cater for all levels of knowledge and ability. It does have equipment that can be loaned to members – including, currently, a solar telescope – most members (approximately 80% of them) have their own instruments. The Society organises regular observing sessions from reasonably dark sites and occasional public events on eclipse or transit days. There are twelve monthly meetings a year in which guest speakers are invited, Sky Notes are presented and a tea break enables members to chat informally. The society produces its own irregular publication, called MIRA, appropriately named as MIRA is an irregular variable. To celebrate the 80<sup>th</sup> and 60<sup>th</sup>

anniversaries of the two societies a special meeting was held in November 2019 with three cakes, and other refreshments. This was followed by an excellent lecture by Julian Onions “One Giga Year at a Time”.

**Irene Rogers**

### Note from the Editor

Your FAS Newsletter Editor would like to apologise to the Coventry and Warwickshire AS for not including this article in the Newsletter during the first half of 2020.

**Michael Bryce**

## Coventry and Warwickshire Astronomical Society

<http://www.covastro.org.uk>

# Is your Astronomical Society a Secret Society? ...Or a Friendly Society?

By Graham Bryant

I hope the headline drew your attention and piqued your curiosity.

I have been involved in the amateur astronomical world for some 50 years and in that time have visited and met many 1000s of amateur astronomers. Much of that time has been through the local Southern Area Group of Astronomical Societies (SAGAS) of which I am still a member. For fun, I co-edited a SAGAS publication called '*Nightlife*' which we produced over several years. In it we would write about the astronomical happenings around the south of England. More recently I meet many people as a Council member of the Federation.

Sometimes I have a need to contact another astronomical society for information or to simply discuss an issue or two. Naturally, those I speak to regularly I have their contact details and communication is straightforward. But, and dare I suggest, it appears that some societies are retreating behind a wall of 'security'.

In the pre internet age many societies would simply put an advert in their local newspaper advertising a particular lecture or have a regular feature in their local 'what's on' spot or similar in the local paper, indicating where the society met and times etc. etc. Telephones were less common but people got the message in what was the most convenient way to communicate back then. But everything regarding communication has changed.

I cannot think of an astronomical society that does not have some form of on-line presence. Mobile phones are pretty much ubiquitous these days. Communication could not be easier – or so I thought.

It has become apparent to me over the years that there are a small number of astronomical societies who make it exceptionally difficult for an enquiring member of the public to talk to them regarding a forthcoming meeting or event. You may think you have it all covered in your webpage, but what if the visitor has hearing difficulties and wants to know if there is a hearing loop installed in the hall?, or does the hall have disabled access?, what is the local parking like by the venue at that time of day?, or maybe they want to talk through the level that the talk is aimed (expert or layperson) or can they bring their young teenager? – these are but a few reasons that a member of the public may wish to seek further information that is frequently not described in advertising material.

As I have intimated above, sometimes, astronomical societies make trying to contact them very difficult – what message is this conveying to prospective members about your society?

I'll give some examples of my experiences over the years:

- One society advertised that they met regularly in town, held talks, meetings etc. etc. On their website they stated that if you wish to attend then fill in the contact form and they would let you know where the meeting was being held and the times etc. !!
- On another occasion, I wrote an article on an astronomical society's observatory (with their full knowledge and permission). A couple of years later I received some incredibly angry communication from this society accusing me of having publicised their observatory and this could now become a problem for them because of 'security'. This seemed quite strange to me for when the observatory was officially opened, in a very high-profile event, it was covered by the local press (circulation of 1000s to the local public) and the observatory was also based in a school where over the many years of the observatory's existence, 1000s of children and their families would have been very much aware of its existence. My circulation of this article was amongst a few hundred amateur astronomers who I think could be classed as benign when it comes to security of a fellow society's observatory.
- When undertaking some research for a policy document for the FAS, I contacted several societies up and down the length of the UK. Some were quick to respond, but interestingly there were a few who responded to me only several months after my initial enquiry. They were very friendly and apologised for the delay, but I make my point.
- More recently I have been contacting (or trying to at least) some societies regarding various issues. Trying to find an e-mail address is okay, but often it is to **Secretary <AT> astrosocietyname ....** or something similar. I'd rather like to be able to contact a name – why so many societies do not given names of a contact person is beyond me. Is this the genesis of becoming a secret astronomical society?
- Once again, my experience has been that there are occasions when there is no reply at all to an inquiry – I am still waiting for the response to several societies which are now 3 months old. If I were a prospective member, would I attend that society or try to find another?
- On occasions I have tried to find a telephone number of a contact for some societies as frequently a query can be quickly solved in a few minutes discussion which may otherwise take up several e-mail exchanges – mobile phone numbers on astronomical websites appear to be rarer than hens' teeth. I am unsure as to why this should be so – what are people afraid of? One can always state "please ring outside office hours" or something similar.



When I have spoken to some amateurs about this issue; some, like me, cannot understand why some societies make it hard to have any meaningful communication with them; and some acknowledge that they do not want lots of unwanted phone calls. Would you really get a lot of unwanted calls by having your mobile number published on your website? You can easily block numbers these days if you have a local who insists on telling you every week that the Earth is really flat and they never went to the moon.

I know many who do publicise their mobile contact numbers, and they have no problems – I suspect this is an issue of perception rather than reality.

Lastly what of an address to write a good old-fashioned letter? I understand that if you are a Charity you are required by the Charity Commission to publicise a registered address on your website. I have come across a few who did not.

Well, from the above you may be forgiven for believing that personal security is the big issue, and this is why your society takes the approach of making contact difficult.

The experience I have with my local society is that there is a contact address; there are mobile and landline numbers publicised, names of all the committee with an e-mail address associated with that post holder is published. When e-mails are sent to them, they can be named in the e-mail "*Dear Fred, please could you.....*" rather than '*dear sir*' or '*hello*'.

We have spam filters on our website so do not receive spam from publicising the address. It is relatively straightforward to put e-mail addresses into webpages that can make phishing more difficult. Indeed, one can also spell the phone number – (zero, seven, seven zero etc. etc..) rather than have it publicised numerically if you are that concerned.

There is a fantastic upside of having ease of communication.

Because we advertise contact details, my local society receives calls from the local print media and radio stations often asking for an opinion about some astronomical happenings or upcoming event. Excellent publicity for our society and we have no shortage of members wanting to join. We also find ourselves well connected with other local organisations who want to collaborate on local issues – light pollution, campaigns, environmental issues, local councils and the like.

Also when one has spoken to a new prospective member,

when they arrive at the venue, they will be looking out for a particular individual and vice versa; you have already broken the ice and this can make coming to a room of strangers much less daunting.

So, I ask you to look at your society webpage. If you were wanting to contact your society, how easy would it be? – perhaps try it for yourself.

Having stated the above, I do know that some societies are very diligent and do respond quickly – but sadly not all.

## Check List:

Do you have a mobile number advertised for answering queries?	Yes / No
Do you monitor how long a query is taken to be answered when posted via a query page?	Yes / No
Is there a named person for a person to contact? (only needs to be a first name)	Yes / No
Are you a Charity? Is your Registered address on your website?	Yes / No

**Graham Bryant**

**Vice-President: Federation of Astronomical Societies**

Graham says he can be contacted via:

Email: [Vice-President@fedastro.org](mailto:Vice-President@fedastro.org)  
[graham.g.bryant@btinternet.com](mailto:graham.g.bryant@btinternet.com)

Landline: 02392 241 741

Mobile: 07585641741

Or

Address: 20 The Smithy  
 Denmead  
 Hampshire  
 PO7 6YS

## Articles for the FAS Newsletter

Any FAS Member Society can send articles to be published in the FAS Newsletter. At the discretion of the Editor, Articles will be published as space allows. Articles should be emailed to the Editor at [newsetter@fedastro.org.uk](mailto:newsetter@fedastro.org.uk).

# Fed up with cloudy nights spoiling your Astro-Imaging fun? Try Telescope Live

By Marco Rocchetto

## As seen on Astronomy Now magazine

The famous Essex-based astrophotographer Nik Szymanek has recently reviewed for the March issue of Astronomy Now magazine the services offered by Telescope Live, a UK start-up, one of the leading remote imaging platforms on the market. As we all know, bad weather is increasingly becoming a problem, and it seems that clear nights are becoming rarer over and over. Now, though, our constantly evolving hobby has a relatively new option, which is to use remote telescopes located in dark spots, free of light pollution and offering imaging with premium-grade telescopes. Szymanek started using Telescope Live at the end of 2019 and has seen a constant evolution of the platform where new features and observation modalities have been added and improved over time. In his six-pages long article, he shares his excitement for the many advantages of using a remote imaging service to produce his own images. He said *“Even as a long-standing astro-imager myself, I’ve been astonished by the high quality of the data and instrumentation supplied by Telescope Live. It has opened up a new vista of the southern sky and the marvellous targets that are always below our horizon in the UK.”*

## Top-notch Locations & Professional-Grade Quality Gears

Telescope Live owns three observatories located in Chile, Australia, and Spain, offering excellent viewing of southern and northern deep-sky objects. The telescopes range in size from small wide-field refractors, to large 1-m reflectors and are all equipped with top-notch gears.

## Free Trial & Plans

Telescope Live offers a four-week-long free trial period (they don’t even require the credit card details for starting the free trial), and the different observation modalities have been carefully tailored to suit all levels of expertise, from complete beginner to advanced astro-imager. The whole service is accessible through three different plans: Bronze (£4/month), Silver (£19/month) and Gold (£49/month). Each plan gives you different access to the various observing modalities.

## Three Observing Modalities

The whole platform has been built around the different needs and wants of astrophotographers, and you can really see this by simply understanding how the three different observation modalities work. The first one was thought for the novice and beginners and it’s called “One-Click Observation”. Here you can select the object you wish to observe and, with just one click of the mouse, you have scheduled an observation. After a few hours/days (depending from different factors such as weather) you receive a coloured image of the object chosen and also the raw data captured and used to create the coloured picture submitted to you. In this way, Telescope Live gives you the chance to practice your post-processing skills with some data captured in a quick and pre-set way. But, if you are eager to work with some premium raw data and you want them immediately, then you should test your abilities with the “Pro Dataset”. These are sets of raw data captured by the network of telescopes after hours of observations, and they can be downloaded at any time, allowing you instant access to data with stunning quality. The







**Image left:** Officina Stellare 70-cm (27.5 inches) F6, situated in Oria, Spain

**Image Right:** ASA 1000, a 1-m telescope, situated in the Rio Hurtado valley, Chile

**Image on Previous page:** El Sauce Observatory, Rio Hurtado Valley, Chile



third and last observation modality is the “Advanced Request”. Here you can tweak each and every aspect of your observation: from the choice of the telescope you want to use up to the specific filters, moon avoidance, exposure time, dithering, time of the observation, etc... Once you have set all the parameters for your observation, you just have to wait for the image to be taken. For this observation modality, you need to buy credits but, thanks to the discount on the first purchase (20 to 40% off), you can try it without investing too much.

## Quality Control Guarantee & a Reliable Customer Service

Another crucial aspect of this platform is the fact that each picture or set of data goes through a quality check before being submitted to you. In this way, you have a guarantee that your money won't be wasted on some unusable data. Moreover, the customer service is always very quick and helpful in answering all the various questions and tackling the possible issues. They also offer a “review” of your observation before you submit it - so you can be sure not to waste a single dime.

## A Platform that will Improve your Observation Skills

Telescope Live doesn't end up being a new means for observing the night skies. In fact, it offers many learning resources focused on astronomy and astrophotography; thanks to the articles and tutorials curated by some famous astrophotographers, you will have the possibility to learn new tricks for improving both your observation and post-processing skills.

## A dedicated offer available only to FAS members

This year the FAS and Telescope Live decided to partner to bring remote imaging to your homes at an affordable price to help you face the difficulty of our national lockdown.

If your astronomy club is a FAS member, you are automatically entitled to a 35% discount to the Telescope Live Silver and Gold plans, at no extra cost!

We invite you to visit the plans page at <https://telescope.live>, and start your 30 days free trial. Once you get acquainted with the whole platform you can subscribe to their services with a 35% discount lasting one year. FAS will soon be in touch with your society to deliver the exclusive promo codes created for you.



Marco Rocchetto is the co-founder and director of Spaceflux, the company behind Telescope Live. He is the main creator and founder of Telescope Live, which he developed when he was a research manager at Konica Minolta. He is also a researcher in Astrophysics at University College London. He is a Coordinator of the Ephemerides Working Group for the European Space Agency ARIEL mission, for which Telescope Live provides follow-up data for transiting exoplanets.

Visit the website at:

<https://telescope.live>

# The Story of O'Neill's Bridge, a Lunar Arch or Not?

## With a Liverpool Astronomical Society Connection

By Gerard Gilligan

The Lunar surface has been studied, observed, and explored, for hundreds of years, visually, telescopically and from lunar orbit, plus recently on its surface. Over these years many different features have been discovered and observed, features which are only seen with the Clair-Obscure events. They are dependent on light and shadow effects, sometimes only being seen at the lunar terminator. Good examples of these are The "Moon Maiden" seen in *Sinus Iridium*, and there are number of letters seen on the terminator, the best and most well know of these is the "Werner X".

During the very detailed photographic survey conducted by NASA's Lunar Reconnaissance Orbiter (LRO) spacecraft, it appeared to image a bridge or arch over an in filled elongated pit seen on the NW rim of the far side crater "King". However due to the imaging technology used on the spacecraft, details of the arc and the sunlight being able to pass under have been confirmed. So no question that it has been caused naturally, most probably caused by a lava cooling effect.

However the story of O'Neill's bridge was at the time, the early 1950's, dependant on the observing skills and instrumentation used, but even today the tale can produce a certain degree of speculation, which may never end. However the story caused turmoil within the world of lunar selenography.

In the early hours of July 29<sup>th</sup> 1953, an amateur astronomer, and the Science Editor of the *New York Herald*, John J. O'Neill, observed with his 4-inch refractor what he described as 'a gigantic natural bridge'. His observations were transmitted worldwide to other lunar observers via a copy of the Association of Lunar & Planetary Observers (ALPO) journal *The Strolling Astronomer*. This bridge was estimated to have a massive 12 mile span from pediment to pediment in the region of *Promontorium Lavinium* and *Olivium* on what is the Western shore of Mare Crisium.

In time O'Neill alerted other observers, one



6-8 day old Moon with Mare Crisium at top right. taken by ©Brendan Martin



John J.O'Neill (1889 – 1953) ©  
johnjoneill.com

being the Director of the Griffith Observatory in Los Angeles, Dr Dinsmore Alter, also a very good lunar observer, who indicated his doubts as to the observation, and could not confirm either visually or photographic using the Griffith Observatories 12 inch refractor. However positive observations of the bridge slowly started to be reported, one of which was from the Director of the BAA lunar section, the highly respected Hugh Percy Wilkins who used his own 15 inch Newtonian reflector at Bexleyheath in Kent to verify the arch's existence. Wilkins, a close friend of Patrick Moore, first made his observation at the end of August 1953, using powers up to 300 and recorded ".....Well, there it was! At least, there was the appearance of the bridge with the sunlight streaming under it....."

H. P. Wilkins was a world renowned lunar observer, publishing many guide books on observing the Moon and obtained major attention from his detailed lunar maps that were hand drawn, one 100 inches in diameter and a much large one measuring 300 inches in circumference. So his respect and reputation could not be brought into question, and once the exists of O'Neill's bridge was confirmed by both Wilkins and by Patrick Moore (Before he became Sir), then questioning and publicly expressed doubt on the bridge soon came to an end. However this was soon to dramatically change, and Wilkins soon lost his well known reputation.

During a BBC radio interview with Bernard Forbes, aired on December 21st 1953, Wilkins confirmed that the bridge and arch between two points had been confirmed by other observers, worldwide, and that it looked "artificial" and "engineered". Wilkins estimated that the bridge was 20 miles wide, and 5,000 feet tall but he later changed this estimate to only 2 miles, but again confirmed that he did believe the bridge to exists "....There does seem to be a natural arch there, but it is quite small.....".

Wilkins' controversial views, which were



now in the public domain, horrified members of the BAA lunar section. Several could not understand why their director of many years standing was making such wild claims, without clear evidence. The then editor of the BAA Lunar Section, *The Moon*, F. H. Thornton made a clear distinction between O'Neil's observation and Wilkins remarks, calling this new bridge the 'Wilkins Bridge'. A very good example of editorial politeness, but at the same time a clear attitude of scepticism! It was clear that Wilkins report and observation was a curved shadow being thrown by the arch joining the Promontorium Lavinium and Olivium, whereas O'Neil's observation indicated a fan of sunlight thrown onto the mare surface to the east of promontoria. This difference in what was seen was part of the great debate that took place at the BAA meeting held in November 1954. Despite more observations and drawings from Wilkins using the Mount Wilson 60 inch (150cm) reflector that he also submitted into the debate of the "arch" observation, many well-known contemporaries like Ewen Whitaker, W. H. Stevenson and also F. H. Thornton were unable to confirm the shadow from an arch. Keith Abineri was yet another observer who could not confirm Wilkins' observation, and concluded in his view that the illusion was caused by the sunlit rim of crater Proclus PA. Sadly by 1956, H. P. Wilkins and the BAA had departed company and Wilkin's resigned his membership. It should also be noted that Wilkins had indicated that Patrick Moore had confirmed his bridge, Moore later denied having seen it., and in later additions of his lunar books, Wilkins hardly gives the bridge a mention.

However as instrumentation, photographic techniques and associated technology has improved since the 1950's the evidence is clear that the appearance of a bridge or arch is the effect of a combination of shadows cast and were sunlight falls. But it was imaging from a combination of unmanned and manned lunar orbital spacecraft that have finally put an end to any more doubts.

The lunar mapping mission carried out of NASA's Lunar Reconnaissance Orbiter since 2010 has in fact uncovered many features that have been over-looked by the Earth based observer, like caves, tunnels and volcanic related bridges, but obviously only due to the proximity of the camera lenses to the lunar surface. But the amount of information being returned is still being pored over by lunar scientist and geologist's, and will be for many more years. So our nearest neighbour in space is I would imagine hiding many more secrets. – Gerard

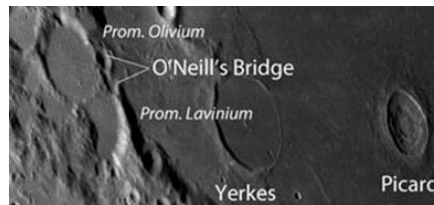


Image © ALPO

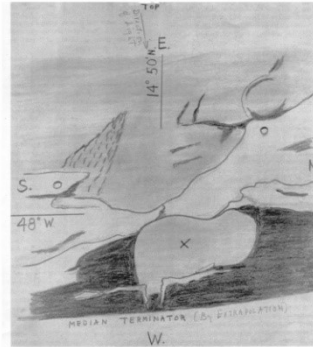


Figure 7. Natural Bridge on the Moon discovered by John J. O'Neill, July 29, 1953, 4° 30' N, 14° 50' W, 4-inch refractor, 100x, Colonghade 127.95.  
X-axis are illuminated by light passing underneath bridge. Page 140

John J. O'Neill's drawing of the bridge  
1953 July 29<sup>th</sup>. From *The Strolling Astronomer*: JALPO 7(10) 147-50 (1953 Oct)



Hugh Percy Wilkins (1886 – 1960) at the eyepiece of his 15 inch. Single image from BBC Newsreel.

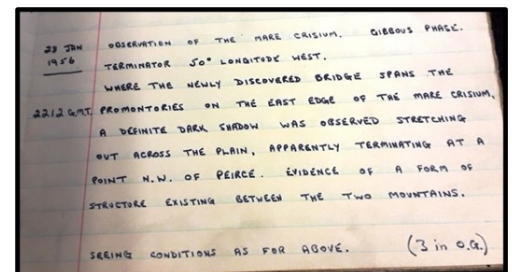


Wilkins being interviewed by Forbes. Newspaper Cutting from *The Times* 22<sup>nd</sup> December 1953.

Gilligan (September 2020 LAS Newsletter)

Following a visit to Liverpool Local History Library, by members of The Society for the History Astronomy in the summer of 2017, one SHA member, Alex Pratt, points out that amongst a bundle of observations on display was an intriguing lunar observation. It later transpired in an exchange of emails with Alex and Bill Leatherbarrow, the present director the BAA lunar section that it appeared to an observation of the O'Neill's bridge.

An observation (Ref 520.6 AST) contained within the archives of Liverpool Astronomical Society. The observation is recorded and dated 1956, 28<sup>th</sup> January at 22:12 GMT. But sadly the identity of the observer is not recorded but a 3 inch refractor was used. The observer had recorded the fan of sunlight as seen by O'Neill just three years before. The drawing is not that detailed but the sunlight/shadow observation is recorded nonetheless. The original hand-written text accompanying the drawing is reproduced and transcribed below. The drawing can be found overleaf.



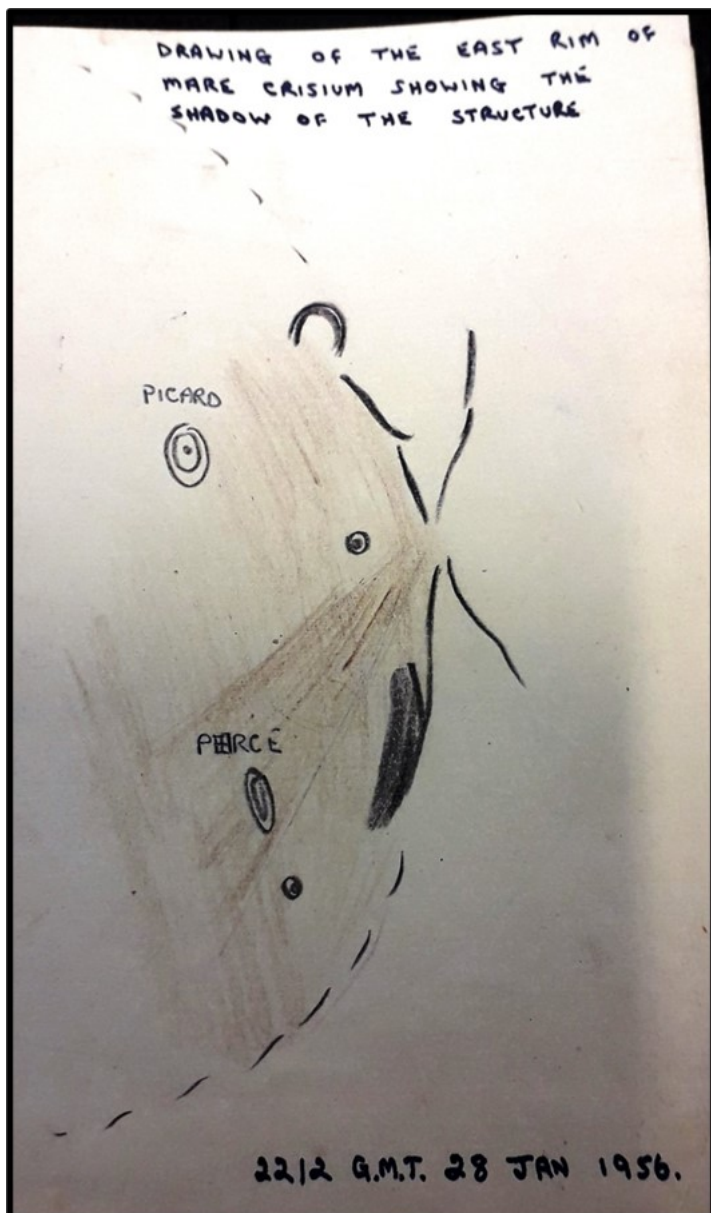
"Observation of the Mare Crisium. Gibbous phase. Terminator 50° Longitude West.

Where the newly discovered bridge spans the promontories on the East edge of the Mare Crisium, a definite dark shadow was observed stretching out across the plain, apparently terminating at a point N.W. of Peirce. Evidence of a form of structure existing between the two mountains."

Seeing conditions recorded as "Frequent moments of good definition through a heavy haze showed the satellite to be of 9<sup>th</sup> or 10<sup>th</sup> magnitude."

Instrument used "3 in O.G."

"22:12 G.M.T. 28 Jan 1956"



## 20-MILE "BRIDGE" ON THE MOON

5,000FT. ABOVE PLAIN LEVEL

DR. H. PERCY WILKINS, Director of the lunar section of the British Astronomical Association, in a broadcast last night told of seeing on the moon a bridge across a mountain barrier which looked like "an engineering job." He said that it was 20 miles in span and 5,000ft. above plain level.

Dr. Wilkins, who was speaking in the feature "Radio Newsreel," said that he had confirmed the discovery in August, a month after the feature was first seen by another observer. "It is a gigantic arch. Its width is about a mile and a half to two miles. It looks artificial, and it is almost incredible that such a thing could have been formed in the first instance and lasted during the ages which the Moon has been in existence. It is absolutely regular in outline, which makes it all the more remarkable. It is the most extraordinary feature known on the Moon to-day," he added.

Dr. Wilkins stated later that the feature had first been observed by Mr. John O'Neill, science editor of the *New York Herald-Tribune*, on July 23. "The bridge is, of course, not artificial," he added. "Although the span of the actual structure is 20 miles, the arch is probably only two miles across." A possible explanation of the formation was that a meteorite might have crashed through a molten lava barrier, and as the barrier solidified an arch was left.

## Recommended Additional Reading

- John J O'Neill, 'Gigantic Natural Bridge Found on the Moon' *The Strolling Astronomer: Journal of the Association of Lunar and Planetary Observers* 7 (10) pp147 – 50 (1953 October).
- Bill Leatherbarrow, 'Hugh Percival Wilkins, 1896-1960 an appreciation' *JBAA* 120(1) pp 39-42 (2010).
- Thomas A.Dobbins & Richard M.Baum 'O'Neill's Bridge Remembered' *Sky & Telescope* 95 (1), pp 105-8 (1998).
- Stephen James O'Meara 'O'Neill's Illusion?', *Astronomy*, 2010 July pp14-15.
- Bill Leatherbarrow, A 'Honeycombed Moon': O'Neill's Bridge and other lunar arches and tunnels. *AA* 122(1) pp42 -48 (2012).



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