



Contents:

- p.1 From the Director – Mike Frost
- p.4 The Story of O’Neill’s Bridge, a Lunar Arch or Not? - Gerard Gilligan
- p.13 W. Ottway & Co., Ltd, Optical & Scientific Instrument Makers – Alan Thomas
- p.20 The Reverend Richard Rouse Bloxam (1765-1840) and a Box of Stars - Mike Frost
- p.23 The Origin of the Term ‘Zenithal Hourly Rate’ – Bill Barton & Philip Bagnall
- p.24 The AAS History of Astronomy Calendar – Mark Marrotta
- p.25 Odyssey Presentations by Andrew Lound

From the Director

Mike Frost

I hope you enjoyed the Zoom presentation we gave to the Historical Section on Nov 21st – I certainly did. Dr Geoff Belknap, head curator at the National Science and Media Museum, Bradford, spoke knowledgeably on the history of astrophotography. The talk provoked a considerable number of questions and a discussion which went on for some time after the formal proceedings had concluded.

We had an audience on Zoom and YouTube of around 75 people, which is slightly more than we average for real-world section meetings. The talk will be available for a limited time at <https://www.youtube.com/watch?v=5EJNa4053eU> along with other BAA webinars, including those presented by the Director and Deputy Director. These many webinars are a great resource for the BAA membership. I’m sure that many of our members find it difficult to attend meetings in person, even when there isn’t a pandemic, so the live webinars and YouTube channel are a real boon.

Nonetheless, I’m looking forward to re-starting real-world meetings once the coronavirus situation allows. My plan at present is to re-schedule a meeting at the Birmingham Midland Institute in late autumn of this year, hopefully featuring our original keynote speaker, Andrew Lound (whose Odyssey presentations we advertise later in this newsletter). I don’t think we’ll be able to livestream, but we will see if we can record some of the talks (we’ve tried this at previous meetings but have been foiled by technical problems). But clearly this is contingent on restrictions lifting, so we will not make a decision just yet. More details will follow in our next newsletter.

I have written before that one of the pleasures of being Section Director is reading the correspondence that I receive. You never know where the conversation will lead. For example, one of the best concluded with an invitation to visit the writer and their family in Provence and sample the local wines. I wish all my emails resulted in similar invitations!

I can't always answer the queries that come in, and so the next step is usually to put an enquiry into the newsletter. Not all enquiries are answered, but I continue to be impressed by the breadth of knowledge of the newsletter readership. And, indeed, with their tenacity. In this edition of the newsletter, we finally get an answer to a question posed in the very first edition of this newsletter, eleven years ago, about the provenance of the Ottway Telescope Company. Well done to Alan Thomas for his research.

Most of my correspondence arrives by email, but there are still one or two souls who prefer more traditional means of communication. I have exchanged several letters with Peter Shimmon, who is interested in the whereabouts of the instruments left behind in the estate of Revd John Flamsteed, the first Astronomer Royal. One of the reasons I enjoy historical research is the way in which new evidence and new "witnesses" can change the story. Flamsteed spent much of his tenure as Astronomer Royal at Greenwich, but he was also the Rector of Burstow, Sussex (now close to Gatwick Airport), and this was where he was buried. At his death, Flamsteed's observing instruments went missing. Peter initially made the intriguing suggestion that they might have been buried with Flamsteed in Burstow Parish Church. Before any section members rush off to dig up the floor of the church, or arrive in Burstow with metal detectors, I will add swiftly that Peter then discovered papers by my predecessor Commander Derek Howse (section director 1985-88), suggesting that the instruments may have gone to Christs Hospital School in Sussex. It would be good to find out if the whereabouts of the instruments are known for certain.

Another theme from Peter's thoughtful letters struck a chord with me. "Should modern history be in your remit?" he asked, "I have lived right through the space age and other members of my vintage can say the same. Would their memories of how the media reported it all, as well as how they developed their interest in astronomy generally, be worth putting down in words?"

This one I can answer without hesitation. Yes! We would love to hear all your stories of the space age, and your introduction to astronomy. There is an open invitation to you all to share your memories of your lives in astronomy.

It is also satisfying to see the attention being paid to one of the prime movers of our Association, the solar astronomer Elizabeth Brown. You will I'm sure recall John Harris's account of her life and achievements in newsletter 19, and perhaps you will remember me pointing out in newsletter 20 that the BBC had run a segment on her in their *Antiques Road Trip Show*.

I was even more impressed to hear that David Elder had written a play about her life, *The Making of Miss Brown*, which premiered at the Stroud Theatre Festival in October 2020. Ordinarily this would have been a local event, difficult to travel to – but we live in a different world these days, and so the entire festival went online. This meant that anyone anywhere in the world could see the play. I paid my three pounds to watch, and thoroughly enjoyed it! (alas, it's no longer available to view, as far as I know). The play is essentially a monologue performed with some gusto by Marianne Gaston.

Another email correspondence, with Kenelm England, opened up new lines of enquiry. Kenelm, who has lectured to the section about Berkshire astronomers, was

interested in what I knew about Jane Lassell, a founder member of the Association. Jane was a daughter of William Lassell, the Liverpool brewer and astronomer who was one of the first people to observe Neptune and discovered its largest moon, Triton. William Lassell observed for many years from Malta using a 48-inch reflector he had built, and when he and his family returned to England they set up in Maidenhead.

I was able to confirm that Jane Lassell was a founder member of the BAA; also, that another daughter, Caroline, joined the BAA in March 1896 (proposed by Jane Lassell, seconded by A M W Downing, the second BAA president). But I also had a memory of being told that one of the two sisters was a travelling companion of Elizabeth Brown. Elizabeth wrote two books, accounts of her travels around the world to see solar eclipses. The first of these, *In Pursuit of a Shadow*, is about her trip to Pogost in Russia to see the solar eclipse of 1887. Modern reprints of this book are available, and as an eclipse chaser myself, I acquired a modern copy and can recommend it. Brown wrote the book anonymously as “a Lady Astronomer” and the traveling companion is also unnamed.

Does anyone know if Elizabeth Brown’s companion was one of the Lassell sisters? If so, which one?

And has anyone come across Elizabeth Brown’s second book, *Caught in the Tropics*, detailing her trip to Trinidad to see the solar eclipse of 1889? I’d love to read it.

And finally... I received an email from Chris Heal, asking about the observatory which existed at Four Marks in Hampshire during the early 20th century. Fortunately, I remembered that Martin Mobberley had written a paper about the observatory [1]; it was founded by James Henry Worthington, a wealthy merchant who had become interested in Percival Lowell’s Martian canals. Between 1909 and 1913 Worthington travelled the world, taking in four solar eclipses and visiting many observatories including Lowell’s in Flagstaff, Arizona. On his return, he set up the Four Marks observatory, equipping it with some of the best telescopes in the country including a 10” Cooke refractor which is now at the Mills Observatory in Dundee. Worthington joined the BAA, and he invited many of the leading members of the association to use the observatory. I also passed on to Chris a letter to the Journal by Rob Mosely and Denis Buczinski [2], detailing observations made from the observatory.

Chris thanked me for my help. He emailed me again a few weeks later to tell me that his enquires were because he was writing a book. This was published late in 2020, and I am listed “With Thanks” for my contributions, as are Martin Mobberley and indeed Professor Nick Lomb of Queensland University.

The book is called *The Four Marks Murders: Twenty grisly tales from a sleepy corner of Hampshire between the years 400 and 2020* (Chattaway and Spottiswood, 2020)

Not quite what I expected!

Chapter 3, *Pathways to Heaven*, details events at the Observatory in the winter of 1918-19. Heal alleges that a murder took place there - he claims that he was told the story by the daughter of a witness. I won’t spoil the fun by revealing detail, but astronomers observing from Four Marks are held to be responsible for, or complicit in, the crime. No-one is named directly as a suspect, but eminent BAA members make appearances in the story.

What are we to make of the book? At face value, the village of Four Marks is second only to Midsomer as a hotspot of rural homicide. Chris Heal, who has published several books, is an accomplished writer; in this book he has an ability to weave residents of the village into wider stories, skilfully blurring the lines between fact and speculation.

So, I have my doubts as to the veracity of the story of murder in the observatory... but it's a fun read, all the same!

References:

(1) James H Worthington (1884-1980): A quest for totality, observatories & Martian canals, Mobberley M ([JBAA 128 \(2018\), p.331](#))

(2) R L Waterfield and the Four Marks Observatory, Mosely, R & and Buczinski, D G ([JBAA 98 \(1988\), p.164](#))

The Story of O'Neil's Bridge, a Lunar Arch or Not? With a Liverpool Astronomical Society Connection.

Gerard Gilligan

The Lunar surface has been studied, observed, and explored, for hundreds of years, visually, telescopically and from lunar orbit, plus recently 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 a number of letters seen on the terminator, the best and most well-known of which 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 it 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, dependent 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 selenography. In the early hours of July 29th 1953, an amateur astronomer, and the Science Editor of the New York Herald, John Joseph O'Neill, observed with his 4-inch refractor what he described as 'a gigantic natural bridge'. His observations came to the worldwide attention of lunar observers via the Association of Lunar & Planetary Observers 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 the western shore of the Mare Crisium. News of the discovery reached Dr Dinsmore Alter, the Director of the Griffith Observatory at Los Angeles, and also a very accomplished lunar observer, who indicated his doubts as to the observation,

but could not confirm it either visually or photographically using the Griffith's 12-inch aperture Zeiss refractor.

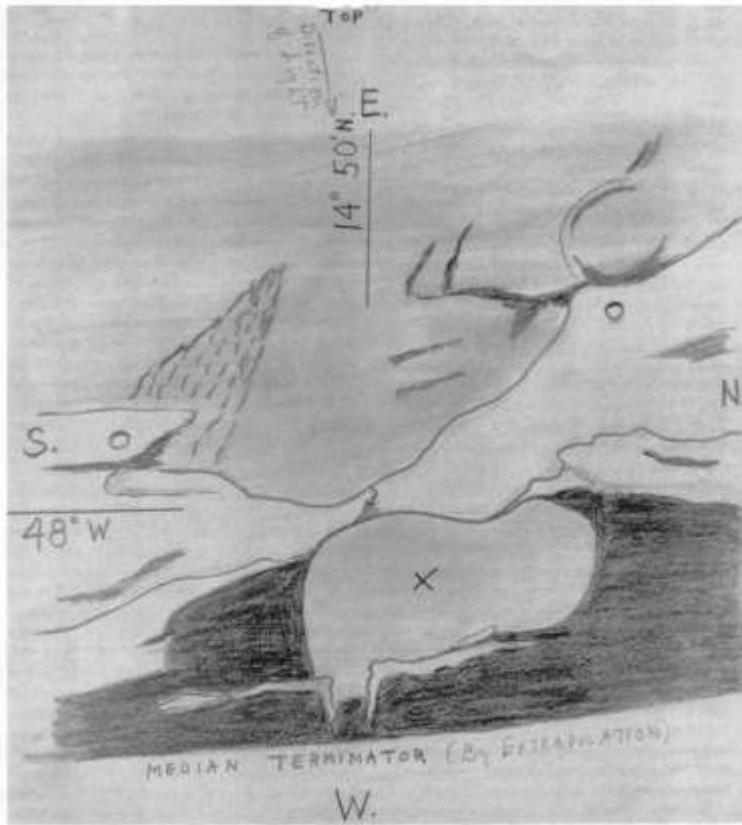


Figure 7. Natural Bridge on the Moon discovered by John J. O'Neill, July 29, 1953, 6^h 30^m, U.T. 4-inch refractor. 90X. Colongitude 127.°2.

X is the area illuminated by light passing underneath bridge.

Page 148

John J O'Neill's drawing of the bridge dated 1953 July 29th
(Note, north is on the right)
From *The Strolling Astronomer*: ([JALPO 7 \(1953\), p.147](#))



Image © ALPO.

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

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.

Newspaper Cutting from *The Times* 22nd December 1953.

However, positive observations of the bridge did start to trickle in, one of which was from the Director of the BAA Lunar Section, the highly respected Hugh Percy Wilkins. He used his 15-inch Newtonian reflector from Bexleyheath in Kent to verify the arch's existence. He used 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..." [JBAA 64 (1954), p.119] Wilkins' claimed his close friend Patrick Moore had also observed the structure, although Moore later denied this. O'Neill died only one month after making the initial observation (at his Long Island, New York home on the 30th August 1953). He was thus no longer around to contribute to the debate on the veracity of what he had seen.

H P Wilkins was a world-renowned lunar observer, publishing many guidebooks 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 larger one measuring 300 inches in diameter. So, his respect and reputation could not be brought into question, and once the existence of O'Neill's bridge was confirmed by both Wilkins and by Moore, then questioning and publicly expressed doubt on the bridge soon came to an end. However, this was soon to change dramatically, and Wilkins' reputation was to be in tatters.

During a BBC radio interview with Bernard Forbes, aired on the Light Programme at 7:00pm on December 21st 1953 (and appropriately just before '*Journey into Space*'), 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 reduced this

estimate to just 2 miles, but again confirmed that he did believe the bridge to exist: "...There does seem to be a natural arch there, but it is quite small..."



Wilkins being interviewed by Forbes © 1953 BBC archives – *Radio Newsreel*.
https://www.bbc.co.uk/archive/moon_bridge/zbwcbdm



Wilkins' controversial views, which were now in the public domain, horrified members of the BAA Lunar Section. Several could not understand why their director, in office since 1946, was making such wild claims, without any clear evidence. The then editor of the BAA Lunar Section's journal, *The Moon*, FH Thornton made a clear distinction between O'Neill's observation and Wilkins' remarks, calling this new structure the 'Wilkins Bridge'. A very good example of editorial politeness, but at the same time a clear attitude of skepticism! 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'Neill's observation indicated a fan of sunlight thrown onto the mare surface to the east of promontories. This difference in what was seen was part of the 'great debate' that took place at the BAA meeting held on 27 November 1954 [reported in JBAA 65 (1955), p.62] 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, WH Steavenson and Thornton were unable to confirm the shadow from an arch. Keith Abineri was yet another observer who could not confirm Wilkins' observation, and concluded that the illusion was caused by the sunlit rim of crater Proclus PA. Sadly by 1956, Wilkins had fallen out with the BAA and resigned his membership. In later editions 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 and where sunlight falls. But it was imaging from a combination of unmanned and manned lunar orbital spacecraft that have finally put an end to any doubts.

The lunar mapping mission carried out of NASA's Lunar Reconnaissance Orbiter since 2010 has in fact uncovered many features that have been overlooked 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 large amount of information being returned is still being pored over by lunar scientists and geologists and will be for many more years. So, our nearest neighbour in space is, I would imagine, hiding many more secrets.

The Liverpool Astronomical Society 1956 Bridge Observation

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

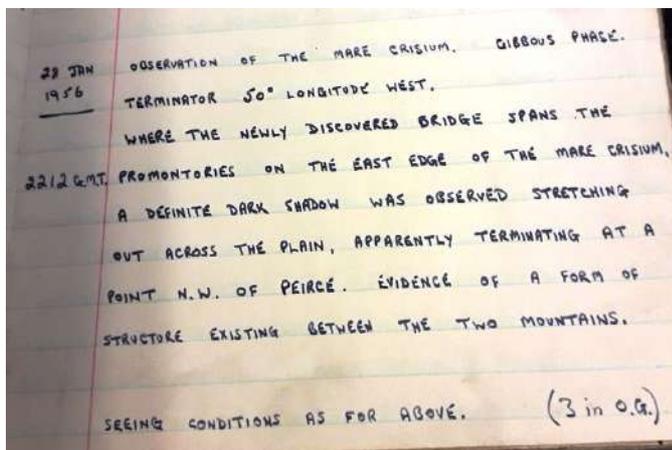
The observation (Ref 520.6 AST) is contained within the archives of the Liverpool Astronomical Society. It is timed and dated as the 28th January, 1956 at 22:12 GMT. Sadly, the identity of the observer is not recorded, but the instrument used was a 3-inch

refractor. The observation records the fan of sunlight as seen by O'Neill just three years before. The drawing is not highly detailed, but the sunlight/shadow is clearly recorded nonetheless. The text accompanying the drawing is transcribed as follows:

"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 9th or 10th magnitude."*

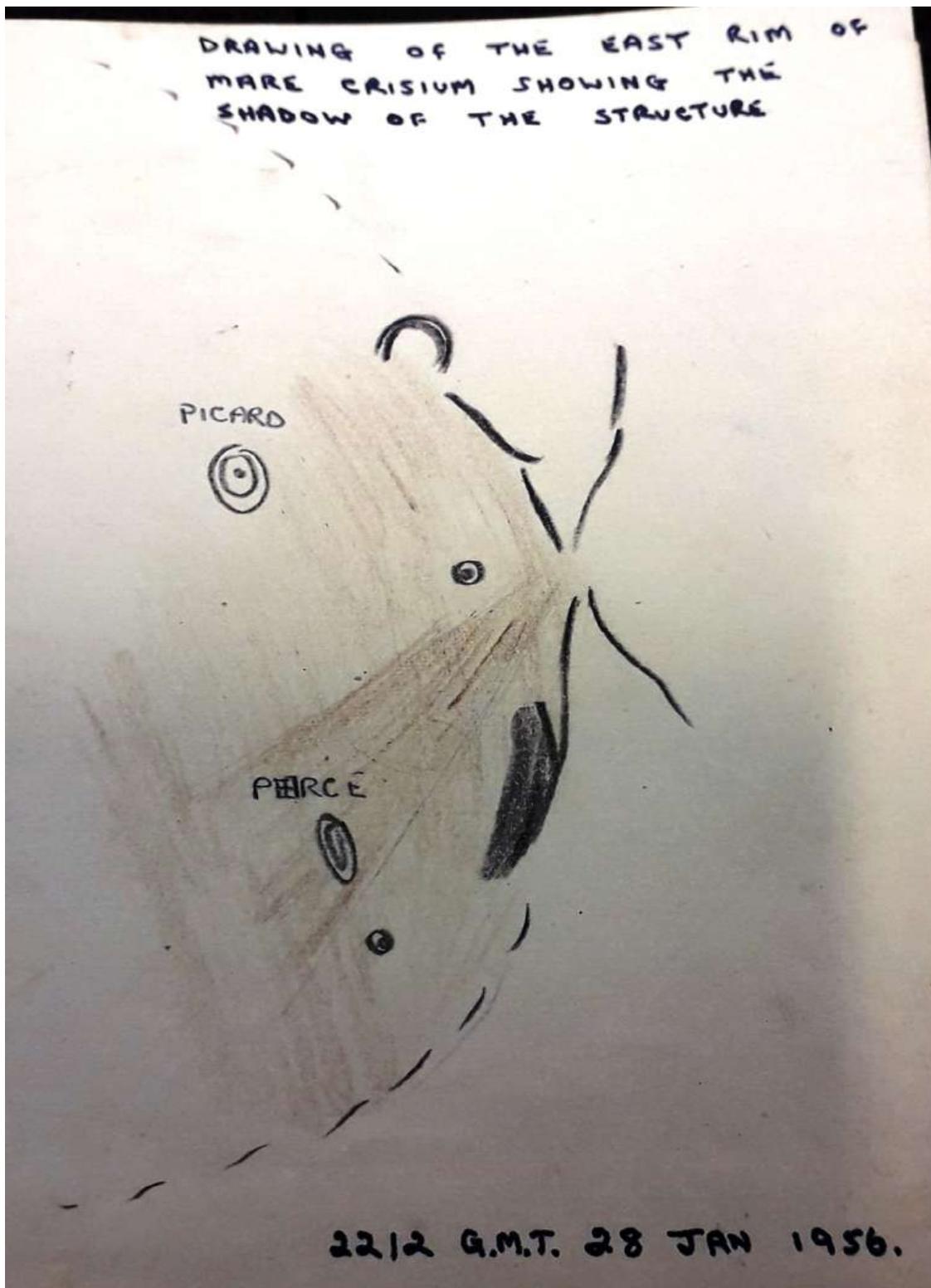


23 JAN
1956

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.

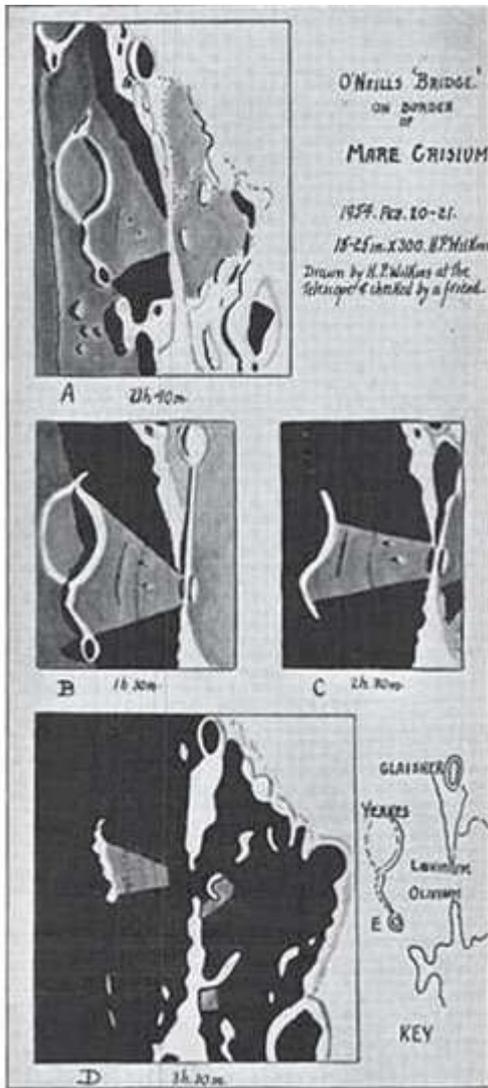
SEEING CONDITIONS AS FOR ABOVE. (3 in O.G.)



Instrument used "3 in O.G."

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

If you can help with the identity of the Society member who performed the observation back in 1956, I would be very happy to hear from you or any newsletter readers.



Wilkins own drawing of O'Neill's bridge dated 1954 February 20th – 21st ([JBAA 64 \(1954\), p.205](#))

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

Additional Reading

- Gigantic Natural Bridge Found on the Moon*, O'Neill, J J ([JALPO 7 \(1953\), p.147](#))
More About the O'Neill Lunar Natural Bridge, Wilkins, H P ([JALPO 8 \(1954\), p.1](#))
Hugh Percival Wilkins, 1896-1960: an appreciation, Leatherbarrow, B ([JBAA 120 \(2010\), p.39](#))
O'Neill's Bridge Remembered, Dobbins, T A & Baum, R M ([S&T 95 \(1998\), p.105](#))
O'Neill's Illusion?, O'Meara, S J ([Ast \(2010\), p.14](#))
A 'Honeycombed Moon': O'Neill's Bridge and other lunar arches and tunnels, Leatherbarrow, B ([JBAA 122 \(2012\), p.42](#))

W. Ottway & Co., Ltd, Optical & Scientific Instrument Makers

Alan Thomas

Introduction

At Christmas 1959 I was given my first telescope, a 4" Newtonian reflector sold as a kit by W. Ottway & Co. of Ealing. I have long been curious about this company, and when Mike Frost told me that the BAA knew little about it, I decided to embark on a research project.

In the very first issue of this Newsletter, N M Macnaughtan asked why so little was known about Ottway's. The company is of interest to the BAA as a manufacturer of astronomical telescopes, but it also played an important wartime role in equipping the armed forces with optical equipment. Moreover, it claimed an illustrious heritage as the oldest optical firm to be in the continuous ownership and management of the same family for over 320 years, tracing its origins to the mid-17th century.¹

Researching a company with such a lengthy history presents significant problems. Wars, political upheavals, disasters, decay and loss have taken their toll on the records, and even those that survive are not necessarily easily accessible. Genealogical records are particularly prone to gaps due to the illegibility of the original documents and only partial transcription and digitisation, and company records for Ottway's are described by Sambrook (2005) as "virtually non-existent". However, an article published over 70 years ago (Cronshaw, 1948), based on an interview with the then Managing Director of the company, W. T. Ottway (1883-1953), gives what is probably the only published historical account of the origins and development of the firm. This together with genealogical data and various documentary sources provides the main basis for this article.

It should be borne in mind that carrying out this work during the Coronavirus Crisis has meant that I have not had access to library nor museum services, so the project is incomplete. This article is therefore a progress report rather than a detailed account, although I hope to provide that in a subsequent BAA Journal paper.

Origins

Although no firm evidence exists of the date of the founding of the company, W. T. Ottway's description of the company's history (Cronshaw, 1948) and the firm's own

¹ In 1967 the company was represented at a dinner, attended by the then Prime Minister, Harold Wilson, celebrating companies established for more than 300 years (MCT, 1967, p.12).

publicity cites the year 1640, just a few years prior to the outbreak of the English Civil War. The Ottway family can certainly trace its origins to that date and earlier. A family Bible, now in the hands of Dr Michael Ottway, the last surviving family member to have worked in the firm, was in the possession of Richard Ottway² (c.1650-99) in 1672. We have no certain knowledge of his occupation, but he and his family lived in Streatham, London, a city the firm never left.

The firm was originally based at the Royal Exchange and made quadrants, theodolites and other scientific instruments. But the Great Fire of 1666 destroyed the workshop and any records. The firm later re-established itself in Carey Street and then King Street, Holborn. In 1800 it moved to Clerkenwell where it began to make optical lanterns, although an insurance record for 1839 shows that an 'optician', John Ottway, was still active in King Street. The earliest Ottway I have been able to link directly to optical manufacture is John Close Ottway (1777-1841) whose occupation is recorded in 1822 as a 'turner', and whose son of the same name (John Close Ottway, 1821-1904) became a Master Optician and Brass Turner.

Development

Perhaps the most significant development of the Ottway enterprise was to come under the leadership of William Close Ottway³, FRAS (1848-1915). Born in Clerkenwell in 1848, William started work with J. Hammersley & Co. of Islington at the age of fourteen. Hammersley's was a large wholesale-manufacturing opticians, and William stayed with the firm for more than thirty years, rising to become manager. During this time, he developed a strong interest in astronomy. He left Hammersley's in about 1897 to take up the reins at Ottway's following the death of his elder brother, John (1844-97), the firm then being based at the Tyndale Works in Islington, London.

In about 1876 William had met Andrew Common, an engineer with a passionate interest in astronomy and telescope building and the wherewithal to indulge his interest. Common had been born in Newcastle-upon-Tyne in 1841, worked in London and had moved to Ealing. Eventually he and William became business partners and collaborators on the invention and development of numerous optical projects.

Common was the son of a surgeon, but his father died when he was a child and he started work with his uncle in a London firm of sanitary engineers. In 1874 he acquired a

² Various spellings of the family name include Ottway, Otway, Ottwaye, and Ottoway.

³ William was the second son of John Close Ottway (1821-1904).

5.5" equatorially-mounted refractor, housed it in a dome at his home, and began to experiment with astrophotography, a technique then still in its infancy. By 1876 he had become a Fellow of the RAS and had set up an 18" reflector. Continuing his astrophotography, he was awarded the Gold Medal of the RAS in 1884, producing an outstanding image of the Orion nebula.

The next five years saw Common working on his most ambitious project, the construction of a 60" reflector, grinding the mirror and designing the mount himself. William Ottway was closely involved in this major project as well as in the construction of several other large telescopes: Common's 36" reflector, a 36" reflector at Cambridge and a 30" reflector for Sir Norman Lockyer's observatory at Sidmouth, Devon. Ottway also collaborated closely with the telescope maker, George Calver, for over forty years.

In 1890, Common largely retired from business and devoted himself to the design of gunsights and naval rangefinders. He turned to Ottway to help with the design and development of these projects and to put the successful designs into production. At the same time, Ottway was working on various inventions of his own. These included improvements in cinematograph machines, telescopic sights for sniper rifles, a variable power telescope for use by the Royal Navy, and an improved mechanism for driving equatorial mounts.

With the onset of the Second Boer War (1899-1902), Common built a large works in Ealing, next to the Town Hall, to facilitate the production of gunsights for the military. Ottway's transferred their works to this site shortly after. Common named the new site the 'Orion Works' in honour of his medal-winning photograph. William Ottway and Andrew Common became joint-partners in the enterprise, and after Common's death in 1903, Ottway continued the business alone, further developing the gunsight and expanding the works to become one of the largest suppliers of sighting equipment to the Navy (Sambrook, 2005, p. 11). Management of the firm passed into the hands of William Ottway's sons, William Robert (1871-1947) and Walter Thomas (1884-1953).

Continuity and Decline

At the end of the First World War, the company returned to its civil work, manufacturing a diverse range of optical goods. A directory published in 1921 (BOIMA, 1921) showed Ottway's as engaged in the production of lenses, mirrors, eyepieces, astronomical telescopes (refractors and reflectors), naval telescopes, binoculars, range finders, micrometers, surveying levels, hypsometers and numerous other instruments.

Further development of sighting equipment also took place, mainly for the Navy, including bomb sights, torpedo sighting equipment and telescopic gunsights. As before, this military work proved invaluable during the Second World War, and Walter Thomas Ottway was made a CBE in recognition of the firm's contribution to the war effort.

After the War, and with the cessation of military orders, Ottway's continued to develop and manufacture its wide range of optical instruments. By the late 1940s it was the largest supplier of astronomical equipment for amateur astronomers in Britain (Cronshaw, 1948).

In 1953, Geoffrey Ottway (1913-1992), the nephew of Walter Thomas, became Chairman and MD of the company.⁴ During the 1950s the works moved to a larger site on Northfield Avenue, West Ealing. Conditions were changing rapidly in the industry with growing competition from foreign manufacturers, so that traditional firms, such as Ottway's, were under increasing pressure. In 1961 the firm was sold to another optical company, Hilger & Watts. It traded for some years as their Ottway Division until Hilger & Watts was itself absorbed into the Rank Precision Industries Group in 1968. So ended a truly remarkable story.

Reflections

Ottway's is no more, but it survives in the numerous telescopes and other instruments which bear its name. The buildings of the Orion Works can still be seen opposite Northfields Station in West Ealing, but at the time of writing the site is about to be redeveloped for housing and commercial use under the name of 'Orion Park.'

Acknowledgements

Thanks for assistance to: Liz Williams/Ottway, Jill Coking/Ottway, Dr Michael Ottway, Mark Aston (Manager, Islington Local History Centre/Islington Museum), Myffanwy Bryant (Curatorial Assistant, Australian National Maritime Museum), Dr Richard Dunn (University of Leicester & Keeper of Technologies and Engineering at the Science Museum, London), Alec Forshaw (Board Trustee, Heritage of London Trust/Islington Archaeology and History Society), Dr Peter Hounsell (Chairman, Ealing Historical Association).

⁴ He was also to become President of the Scientific Instrument Manufacturers Association of Great Britain.

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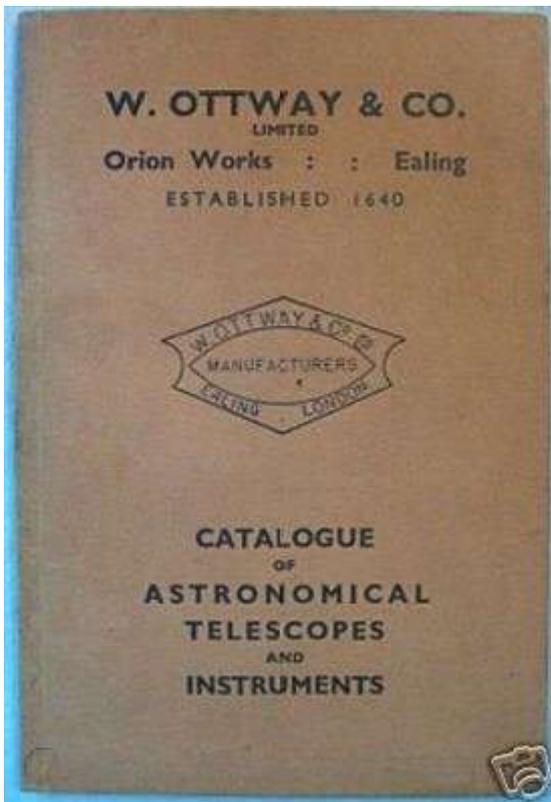
Shackleton, W., 'William Ottway', [MNRAS 76 \(1916\), p.267](#)



The Orion Works, Ealing, 1900. Courtesy of Dr Michael Ottway.



William Close Ottway (1848-1915) c.1900. Courtesy of Elizabeth Williams (née Ottway).



The Ottway Catalogue of Astronomical Telescopes and Instruments, undated.



Dr Michael Ottway working on a LIDAR (Light Detection And Ranging) instrument, c. 1972.

The Reverend Richard Rouse Bloxam and a Box of Stars

Mike Frost

A few years ago, I purchased a lovely and unusual astronomical object.

It's called *The Box of Stars: A Practical Guide to the Night Sky and to its Myths & Legends*, produced by Catherine Tennant. The Box of Stars is a collection of 32 coloured cardboard pictures of the constellations of the night sky, with the stars embedded into pictures of the mythological constellations. The source of the pictures is Alexander Jamieson's *A Celestial Atlas* (1822) engraved by Sidney Hall. Best of all, the stars are pinholes of varying size, larger for the brighter stars, smaller for the fainter. Hold a card up to the light, and the pinpricks show an approximation of how the constellation looks in the sky.

There's a very useful booklet accompanying the cards. This makes it clear that *The Box of Stars* is a reprint of a much older publication, *Urania's Mirror*, which was published in 1824 and was very popular almost 200 years ago. The pictures are all taken from *Urania's Mirror*, but I can understand the change of title – who nowadays would know that Urania was the Muse of Astronomy in Greek mythology? Probably not even astronomers! But we forget just how widespread classical education was 200 years ago. I suspect it's also true that the best way to use the cards is with candlelight, prior to going outside into pitch dark skies to see the real thing. [How many cards were singed from being accidentally held too close to the flame? Ed.]

Urania's Mirror was attributed, anonymously, to "A Lady", and for long after its publication, there was speculation as to who that lady might have been – perhaps Caroline Herschel or Mary Somerville. The speculation was ended by Peter Hingley, librarian of the Royal Astronomical Society, in a paper in the BAA Journal in 1994 *Urania's Mirror: a 170-year-old mystery solved*. I'm sure many of you will remember Peter, the former Royal Astronomical Society librarian. He was a popular and likable man whose sudden death, just before planned retirement, robbed the astronomical history community of one of its most knowledgeable members.

Peter was cataloguing the fellowship applications for the RAS, when he came across the application, in 1829, of Revd Richard Rouse Bloxam, rector of Brinklow, to the east of Coventry, a few miles from where I live in Rugby. On the nomination form, signed by his four proposers, it stated, matter-of-factly, that Bloxam was the author of *Urania's Mirror*. Bloxam may not have known that this was disclosed on the form.

So, what do we know about Bloxam? As often in my research, I turned to my friend Chris Hicks from the Rugby Local History Group. He was able to fill in a lot of gaps in my knowledge. It turns out that Bloxam was a schoolteacher, at Rugby School, as well as a clergyman. The registers of Rugby School record 12 members of the Bloxam family – Richard, his five sons, and other cousins and connections. According to his son Rev John Rouse Bloxam, the family migrated from Bloxam, Oxfordshire to Gloucestershire in the 17th century.

Richard Rouse Bloxam was born in 1765, the eldest son of Richard Bloxam, a medical practitioner in Alcester. He was sent to Rugby School in 1777. He paid 14 guineas a year for board, but had to provide his own towels, knife, fork and drinking horn.

However, he was always hungry. He decided to run away to Market Harborough. To do this, he had to cross the Clifton Brook, but could not face wading through it, so turned back (the Market Harborough road crosses Clifton Brook at a location called Butler's Leap, which suggests a difficult fording!). At the age of 12 he was already keeping a diary and his detailed record of Speech Day in 1777 provides the first complete surviving programme for the event. The diary also records the start of building a westward extension of the 1750 Big School on 3rd September 1777. (The school had moved from Church Street to the present site in 1750.)

Richard matriculated as a student of Christ Church College, Oxford in 1782. He was awarded his BA in July 1787 and was ordained a Deacon on the same day. He received his MA in September 1793 and was ordained priest at the same time. In November 1793 he was appointed rector of Brinklow. In 1790 he had been appointed an assistant master at Rugby School by the headmaster Dr James. In 1794, Bloxam was teaching the Second Form, when Henry Ingles became headmaster. Around 1800 he was listed as running a boarding house, when an assistant master taking in boarders was unusual.

In December 1802 he was appointed domestic chaplain to Charles Stanhope, 3rd Earl of Harrington. In January 1803 he was also appointed vicar of Bulkington. He was officially licensed as a schoolmaster with Rugby Free Grammar School in March 1804. In 1807 he bought Elborowes's House on the junction of Sheep Street and School Street – the house faced School Street with the property running down Sheep Street. After his death in 1840 it was bought by surgeon Bucknill. The main house was pulled down in 1926 and the Merry Minstrel pub built on the site – it now houses now a (very good!) Thai Restaurant.

On 10th March 1796 he married Ann Lawrence, sister of Sir Thomas Lawrence, who was president of the Royal Academy. They were married at St. Anne's Soho, Westminster, London. They had five sons and four daughters.

Their five sons were admitted to Rugby School as foundationers (attended for free as Rugby residents):-

Rowland aged 5 in January 1802,
Thomas Lawrence aged 6 on 17th February 1805,
Henry aged 7 on April 29th 1806,
Andrew on September 22nd 1808,
Matthew Holbeche aged 8 on May 12th 1813 and
John Rouse aged 7 in April 1814.

Three became praeposters (class monitors doing some teaching), and Andrew and John Rouse were Exhibitioners. Thomas gained a scholarship to Lincoln College Oxford, Andrew a scholarship to Worcester College Oxford. Henry and Matthew both became lawyers. Additionally, Matthew Holbeche Bloxam is well-known in Rugby as a local historian and antiquary. Lucy Bloxam (baptised 1804) married Revd Roger Bird, but Anne (baptised 1801) and Mary (baptised 1809) were still spinsters at the time of Bloxam's will; Susan (baptised 1803) isn't mentioned in the will and so may have died young.

In 1827 Richard resigned from the School, the year before Thomas Arnold was appointed headmaster. However, he was appointed to a School Fellowship (a form of pension for assistant masters) until he died in March 1840. The School Fellowship was created in 1826 and abolished in 1868 by two Rugby School Acts.

Because of Matthew Holbeche Bloxam's stature as a local historian, the name Bloxam is well-known in Rugby even today. There are roads called Bloxam Gardens and Bloxam Place, a Bloxam Room in the Town Hall, and a Bloxam Primary School close to the town centre.

There is an interesting connection between the Bloxam family and the family of another Rugby-based astronomer, Joseph Norman Lockyer, discoverer and namer of helium. Joseph Hooley Lockyer, Norman Lockyer's father, was a member of Rugby's Literary and Philosophical Society. On 11th March 1839 he made an application to register a printing press (registration of such dangerous devices was mandated by an anti-sedition act of 1799). The application was witnessed by Matthew Holbeche Bloxam, presumably in his capacity as a lawyer. The document was held in the archives of the late Ernest Timmins, another local historian. Amusingly, the indexing notes on the document state that "Bloxam was a well-known local antiquarian but nothing is known about Lockyer".

It seems that Richard Rouse Bloxam had a reasonable career as a clergyman and teacher – but there really doesn't seem to be much astronomy! Apart from *Urania's Mirror*, he doesn't appear to have produced anything. His will mentions "philosophical instruments", so perhaps these included a telescope.

However, Richard Rouse Bloxam does appear to have been part of a network of astronomically interested clergy living in the Midlands. It's instructive to carry on reading Bloxam's application form for RAS fellowship. At this time, four nominators were required. Bloxam's nominators were Revd William Pearson of South Kilworth, Revd Thomas Belgrave of North Kilworth, the leading instrument-maker Edward Troughton, and Dr John Lee, who had an observatory at Hartwell, near Aylesbury. The villages of South and North Kilworth are to the west of Market Harborough, 8-10 miles north-east of Rugby, and both Revd Pearson and Revd Belgrave stated they knew Bloxam personally.

As you probably know by now, I have written a lot about Revd William Pearson, the co-founder of the Royal Astronomical Society. He was born in Whitbeck in the south-west Lake District; Troughton was born not far away in Corney, so it is likely the two had known each other for some time. William Pearson's assistants included Thomas Pooley, who also went on to work at Rugby School; perhaps Bloxam helped him land a job. Dr John Lee was part of a circle of Buckinghamshire astronomers called the Hartwell Synod; he drew Moon maps on which he named several craters after astronomers he knew; for example, Smyth, honouring his friend Admiral William Smyth.

One last question remains. Why did Bloxam publish *Urania's Mirror* anonymously? Peter Hingley offered several solutions. The marketing of *Urania's Mirror* as by "a Lady" precluded the identification of a man as the real author. Perhaps Bloxam felt that the cards were unbecoming for someone with his status (although I doubt this, as they are surely a useful educational resource). Or perhaps he was just modest. Whatever the reason, Bloxam's anonymity set up an amusing mystery which Peter Hingley solved 170 years later.

Well done, Peter. We miss you!

Sources and Notes:

I acknowledge, as I often do, the assistance of Chris Hicks in providing local historical information.

A Box of Stars, by Catherine Tennant can be purchased from Amazon (and other retailers, including the SHA!) [Amazon Box of Stars](#)

Urania's Mirror – a 170-year old mystery solved, Hingley, P D ([JBAA 104 \(1994\), p.238](#))
Images of the full set of cards can be found [here](#)

Bloxam's nomination for RAS Fellowship reads (as far as I can decipher!) as follows:

The Revd Richard Rouse Bloxam D.D. Author of Urania's Mirror and Rector of Brinklow in Warwickshire now resident at Rugby being desirous of admission into the astronomical society of London [as the RAS was known before receiving its Royal Charter], We the undersigned propose and recommend him as a proper person to become a member thereof. Witness our hands this 9th day of November 1829.

W.Pearson } From Personal

T.Belgrave } Knowledge

Edw. Troughton

John Lee

The Origin of the Term 'Zenithal Hourly Rate'

Bill Barton

Philip Bagnall asked, in an email to the section director, "who first coined the meteor observing term 'Zenithal Hourly Rate'?" He cited a reference in *Visual Perseids 1956* by Z Cepelcha, published in the Bulletin of the Astronomical Institute of Czechoslovakia in 1958 ([BA/Cz 9 \(1958\), p.234](#)), although he also considered the BAA Meteor Section Director JPM Prentice as a candidate.

After a little researching, I turned up another reference in the same journal, but from four years earlier: L Kresák, *A Nomogram for Computing the Zenithal Hourly Rates of Meteor Showers* ([BA/Cz 5 \(1954\), p.120](#)).

Knowing the term is used in our Observing Handbook's meteor diary, I traced its use there too. The diary first appears in 1945 and up to 1950 the term used is 'H R at max' (i e see 1950, p.52). Oddly, there is no diary for the years 1951, 1952 or 1953, but the diary returns in the 1954 edition and uses the term 'Z H R' (see 1954, p.42). Members wishing to view these old *Handbooks* all the way back to 1923 can do so by logging in to the BAA website and then clicking Publications, Downloads, The BAA Archives. Additionally the BAA Meteor Section Director JPM Prentice submitted a paper to the JBAA *The Hourly Rate of the Quadrantid Meteor Shower at Maximum* ([JBAA 63 \(1953\), p.175](#)) and this, also, uses the ZHR term. So maybe the use of the term ZHR started in the BAA in 1953? Unless anyone knows of an earlier example.

PS: Can I recommend a feature film just out on the Netflix platform, it's called *The Dig* and centres on Basil Brown's excavation of the Sutton Hoo burial ship in 1938 & 39. Previous to archaeology, Brown was an astronomer and BAA member. The film makes occasional references to his astronomical endeavours.

The AAS History of Astronomy Calendar

From Mark Marrotta

The History of Astronomy Division of the American Astronomical Society is looking for entries for our calendar for 2021-2022. The column is open to amateurs and professionals at all levels. You do not need to be an AAS member.

Right now, we are looking to fill April and May 2021 and are open to consider October and November 2021, which we have now as place-holders. We are wide open for 2022. "This Month in the History of Astronomy" runs about 500 words and celebrates physical events, discoveries, inventions, and the birthdays of those who are associated with them. The range of topics can be broad, but subjects are always tied to the month of the publication date.

A Sampling of Recent Entries

- February 2021: Founding of the Astronomical Society of the Pacific
- October 2020: The First Hertzsprung-Russell Diagram
- September 2020: Bayer's Uranometria
- August 2020: America's First Woman Astronomer: Maria Mitchell (1818-1889)
- January 2020: The Birth of Stellafane
- October 2019: 50 Years of Charge-Coupled Devices
- August 2019: Reflections on 100 Years of the International Astronomical Union
- October 2018: Karl Jansky and the Discovery of Cosmic Radio Waves
- July 2018: Henrietta Swan Leavitt
- June 2018: The Bicentenary of the Birth of Angelo Secchi, SJ
- February 2018: One of America's Early African American Astronomers
- January 2018: The Discovery of Ceres
- July 2017: Solar Eclipse of 1878

The index of past entries can be found at <https://had.aas.org/resources/astro-history>

The column is open to amateurs and professionals at all levels. Submissions are reviewed by the editorial staff of the Historical Astronomy Division of the American Astronomical Society. Guidelines for contributors are here:

<https://had.aas.org/sites/had.aas.org/files/HAD-TMIAH-Author-Guidelines.pdf>



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<https://www.eventbrite.co.uk/e/britannia-sky-a-british-space-odyssey-tickets-138857587783>

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