



The British Astronomical Association Historical Section

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From the Director

Mike Frost

I will start this editorial by offering huge thanks to Lee Macdonald, the newsletter editor and Deputy Section Director, who offered me his resignation from both posts a few weeks ago, although he will stay in place until the end of the year. Lee has decided to concentrate on his work at the History of Science Museum in Oxford, known until recently as the Museum of the History of Science.

I am very grateful to Lee for all the work he has put in as Deputy Director for the past ten years. We have complementary skillsets and the combination has served the section well. I wish Lee all the best with his future endeavours. He has not left the history of astronomy field, so I'm sure we'll see him at future meetings of the section and the SHA. I hope to be able to announce a replacement Deputy Director in due course.

Another reason Lee gave for moving on was that he has been in the role for almost ten years, and a decade seems like a good time to take stock. I understand and agree with this sentiment. The mathematician in me points out that ten years is both the mean and median length of service for a Historical Section Director. So I feel I am still reassuringly average. But see my book review later on in this newsletter, which explains just how extraordinary at least one of my predecessors was.

I also empathise with the demands of work which Lee cites. My own job, engineering in the steel industry, takes me abroad at short and unpredictable notice. I have previously managed to avoid being caught overseas at an inconvenient time for the section, but this year my luck ran out and I had to be in Pittsburgh, USA, at the time of the section meeting in June. Fortunately Lee was able to step in and host the meeting – thank you once again, Lee – but I do apologise to the section membership, and to the speakers, for not being present at my own meeting.

By all accounts, I missed an excellent meeting. I'm grateful to Newbury AS, our hosts for the day, for looking after the section. Particular thanks go to Ann Davies and David Boyd for helping Lee out with the organisation of the meeting, and to Nicky Fleet for organising the buffet lunches. Sorry I couldn't be there to enjoy them!

I'm not going to announce our next section meeting yet, as my work commitments in the USA are still by no means cleared, and I want to make sure that I am in the country for the next meeting. Ideally I would like to

hold a meeting in the south-west or Wales, neither of which we have visited yet, but may settle for a location closer to my base in the Midlands.

Actually, I am sorely tempted to hold the next section meeting in Chicago, where I have been doing most of my overseas work recently. However, although there are some superb venues in the city to hold a meeting, including the Adler Planetarium, the Field Natural History Museum and the Museum of Science and Industry (home to the Apollo 8 command module), the travel costs for most section members would be prohibitive. One day, perhaps...

If the demands of work prove too overwhelming, I will stand down from the post of director. But at the moment, hopefully with the assistance of a new deputy, I hope I can carry on as before, and continue to be of service to the section.

Elizabeth Brown (1830-1899): The BAA's Extraordinary Lady Astronomer and Founder Member

John Harris



Figure 1. Elizabeth Brown (1830-1899). (Photograph courtesy of the Royal Astronomical Society.)

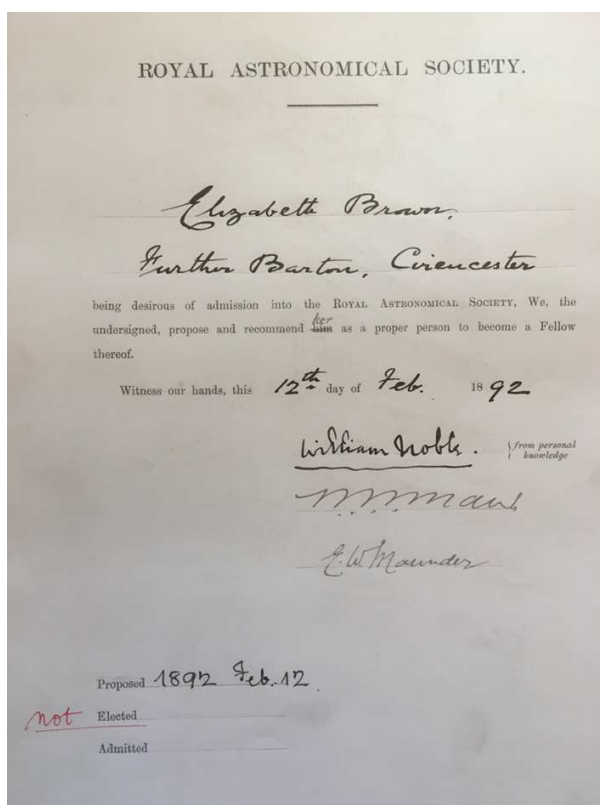


Figure 2. Elizabeth Brown's application for Fellowship of the RAS. (Courtesy of the Royal Astronomical Society.)

Figure 2 shows Elizabeth Brown's application for Fellowship of the RAS in 1892. Note that the word 'Elected' has been annotated 'not' and underlined in red, i.e. 'not Elected'. The names of two of the proposers were William Noble and E. W. Maunder. Unfortunately I cannot identify the second signature. (*Editor's Note:* This is almost certainly W. H. Maw, an early Treasurer of the BAA.) Captain William Noble was the first President of the BAA. Edward Walter Maunder is often affectionately referred to as the Father of the BAA and was also a past President of the Association. In 1895 he married Annie Scott Dill Russell, one of the other two applicants whose applications were turned down by the RAS. So Elizabeth had some very good backing to become a Fellow of the RAS, but this came to no avail.

Early Life

Elizabeth was born of a Quaker family in Further Barton, Hampton Road, Cirencester. It is known that she was originally trained by her father Thomas (note: some sources say his name was Isaac) as a meteorologist. Quakers in the nineteenth century did not study at universities and many were self-taught. She was known for her specific interests in the natural world around us, especially in the fields of botany, meteorology and astronomy. She overcame all known prejudices of that age by being elected one of the first women Fellows of the Royal Meteorological Society.

Elizabeth's journey into astronomy

Almost certainly it was her father who instilled her interest in astronomy. Regarding her equipment she wrote:-

When I first took up solar work, I possessed no observatory only an old refractor of 3 inch aperture, which had already seen a good deal of service

Her technique for observing the Sun was to project images from the telescope onto a white card in a darkened room.

Elizabeth is believed to be one of the first British Quakers to make a contribution to the study of astronomy. Her father was 91 years of age when he died in 1883. Elizabeth had cared for him all his life and this was no doubt shown in his will when he left her the not inconsiderable sum of £46,116 4s 6d, say 4 million pounds in today's money. This released Elizabeth to concentrate on participating in astronomy.

Elizabeth's observatories

Elizabeth Brown was to build two observatories at her home. It is known that in the observatories she had access to an equatorially-mounted refractor with a driving clock, a 6.5-inch reflector, an astronomical clock and her meteorology equipment.

Association with Liverpool Astronomical Society

Elizabeth joined the Liverpool Astronomical Society (LAS), which then operated as an association of amateur astronomers across Britain. It also accepted female members, unlike the RAS. She would travel a 140-mile round journey from Cirencester to attend its meetings and became the director of its Solar Section. This was her specialisation, especially sunspots and solar eclipses.

Elizabeth and her solar eclipse expeditions

1887 Pogost (Russia) This was a virtual non-event:-

For a second or so we had a view of the coronal light, making it look like an annular eclipse, and a glimpse of the rose coloured prominences, as they are called on about one fifth of the circumference. But it was over almost before we had realised it

However, she wrote and published a book of her adventures to observe the eclipse, of which digitised copies of the original print of 1887 are available on Amazon: *In Pursuit of A Shadow*. Note Elizabeth's name is omitted and the author's name is replaced – 'By A Lady Astronomer'. This wonderful title she borrowed from an earlier Quaker meteorologist Luke Howard, who used the phrase to describe his work on clouds. Elizabeth was accompanied on this adventure by a lady she only refers to as 'L'. I believe this to be one of the two sisters Jane or Caroline Lassell, who also accompanied Elizabeth on her second search for a solar eclipse. The book is beautifully written and they

must have been extremely brave travelling alone in unfamiliar countries with unknown languages.

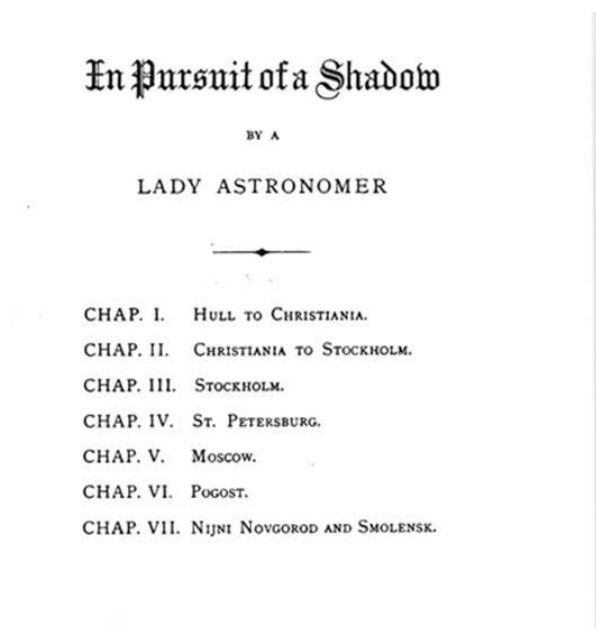


Figure 3. Title page of Elizabeth Brown's book about the 1887 solar eclipse.

1889 Trinidad This was a most enjoyable adventure with the added beauty of the exuberant flora, birds and insects of which no doubt she utilised her drawing skills. The eclipse was as clear as one could be, although totality was to last for only one minute and one second.

A second book was published in 1890 titled *Caught in the Tropics*. Unfortunately I have had no success in tracing a copy.

1896 Vadso (Northern Norway) By 1896 the BAA was well established and they pulled no punches with this solar eclipse, which 58 BAA Members travelled to see. It is no exaggeration to say that it was organised like an army exercise. Each and every person was allocated a place and a specific task to carry out. Regrettably it was not the most spectacular of eclipses, there being cloud interference. This was to be Elizabeth's final attempt at observing a solar eclipse.

Elizabeth Brown and the birth of the BAA

In addition her practical observations were that of recording sunspots, from which she produced meticulous drawings that earned her a renowned reputation among the astronomers of her day.

She was a founder member of the British Astronomical Association (BAA) and became the Director of the BAA's Solar Section. Bear in mind that she was also Director of the Solar Section of the Liverpool Astronomical Society at the same time.

This gave Elizabeth the opportunity of communicating with other solar observers around the world. She also worked closely with Edward Maunder and other professional astronomers and encouraged the

monitoring of the growth and decay of sunspot groups. From this research she developed a system for classifying sunspots and sunspot groups based on their appearance, dividing them into 11 types: Normal, Compound, Pairs, Clusters, Trains, Streams, Zigzags, Elliptical, Vertical, Nebulous and Dots.

In her first paper to the BAA in November 1890, she confronted head-on the then issue of projected viewing v. direct viewing. She accepted that direct viewing gave sharper definition, but argued that projected viewing was more simple and 'freedom from danger to the eyesight cannot be over-estimated'.

She also gave encouragement for ladies:-

Many of whom have ample time at their disposal and who are often skilful in the use of the pencil this branch of Observational Astronomy ought to have special attraction. The Sun is always at hand. No exposure to the night air is involved, nor is there any need for a costly array of instruments.

Looking at her list of requirements for observing the Sun, you could be reading a modern book to new astronomers. Her advice included such phrases as:-

- 'Roughly speaking, a small telescope'
- 'A window provided with curtains facing the Sun. Especially one with an East or South East Aspect'
- 'A large sheet of cardboard and easel'

Her detailed instructions to members of the Solar Section included:-

- 'Use the method of projecting the Sun's image on a screen in a darkened room in preference to direct vision (a method admirably adapted for small instruments).'
- 'Date and time of observation.'
- 'Conditions of atmosphere.'
- 'Size of paper to be used.....'
- 'Photographs are accepted.'
- 'All contributions to be sent on the 1st day of each month.'

Elizabeth also assisted other sections, notably the Lunar, Variable Star and Star Colour Sections.

The First Reports

The first report by Elizabeth as Director of the Solar Section was published in Volume 1 of the BAA Memoirs for the year of 1891, published in 1893. This will give one a taste the detail and complexity of Elizabeth's report which covers some 37 pages in all. There were 14 people doing observations. The places where the observers lived varied from Constantinople, Cadiz and Hastings in the south of England as well as Stirling in Scotland. The reports contained detail for every day of the year. Drawings of sunspots were submitted by the observers.

Conclusion

Still an active member of the BAA and LAS, Elizabeth died suddenly at home in Cirencester on 5 March 1899, aged 68 years. She was active until the end, continuing with her responsibilities as Director of both the BAA and LAS Solar Sections as well as maintaining her schedule of work for the Royal Meteorological Society. She is buried in the grounds of the Quaker Friends house in Thomas Street, Cirencester along with her father and mother and her sister Jemima, who was to join them 8 years later in 1907. Jemima must have carried on with some of Elizabeth's work, because she was elected a member of the BAA in November 1899, some eight months after the passing of Elizabeth. Elizabeth was without hesitation one of the most distinguished astronomers of her day.

The garden behind the Friends Meeting House used to be a cemetery but was being overrun with graves. So during the Second World War they used German POWs to landscape the cemetery and it was seeded with grass. Fortunately they have a scaled plan of where the original graves were situated.

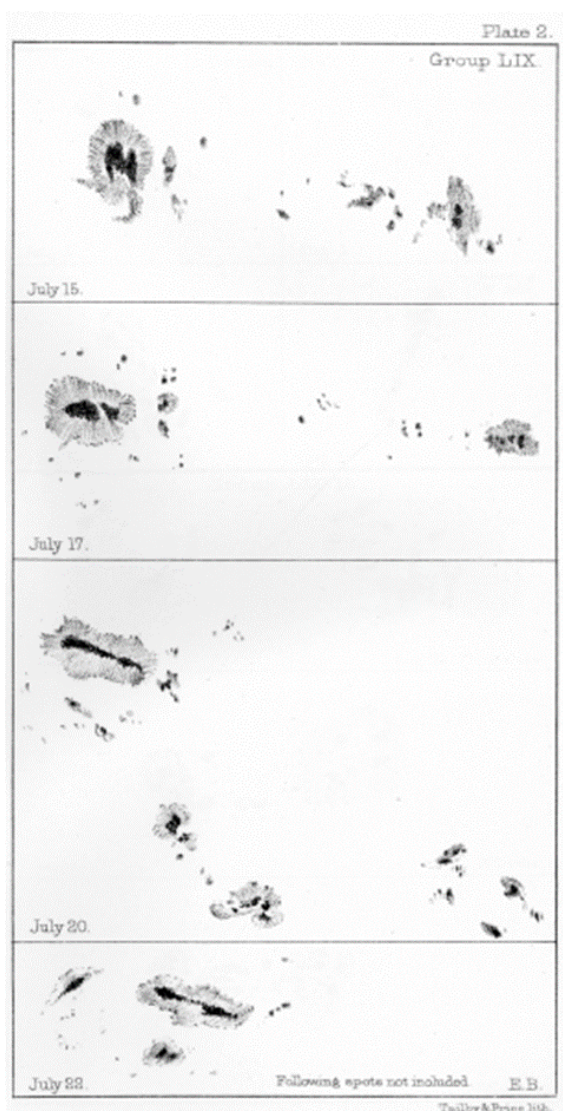


Figure 4. An example of Elizabeth Brown's drawings of sunspots.

Sources

'Elizabeth Brown and the Classification of Sunspots in the 19th Century', by Kristine Larson, published by the American Astronomical Society June 2014:-
<http://adsabs.harvard.edu/abs/2014AAS...22432013L>

<http://www.quakersintheworld.org/quakers-in-action/368/Elizabeth-Brown>

<https://www.schoolsobservatory.org/learn/careers/astromy/astrowomen/brown>

Curiously, an instrument used by Elizabeth Brown was in the news recently:

Return of Elizabeth Brown's telescope *Joseph Jaworski*

BAA Instrument number 6 has been on long-term loan to the late John Armitage of the Cannock Civic Observatories, as an example of the telescope making art of William Wray. It is an achromatic doublet of 90 mm aperture mounted in a brass cell on a brass tube approximately one metre long.

The instrument was returned to BAA Vice-President Dr Jeremy Shears by Joseph Jaworski on 14 March 2019. The exchange took place at Jodrell Bank in Cheshire.



Dr Jeremy Shears (right) receives the Wray refractor tube from BAA member Joseph Jaworski.

An Appeal for Speakers

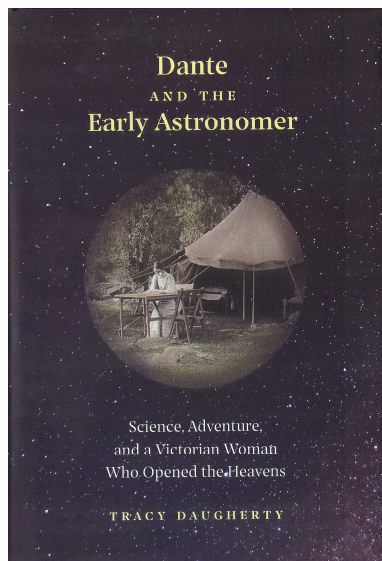
Mike Frost

Janice McClean recently contacted me, passing on a request from Flamsteed Astronomical Society (based at the Royal Observatory, Greenwich) for suggestions for speakers on the history of astronomy.

More generally, both the Historical Section and the Society for the History of Astronomy are always on the lookout for new speakers. Please don't be shy! Contact me if you are interested in giving a talk to our section or to any of these societies.

Book Review

Mike Frost



***Dante and the Early Astronomer: Science, Adventure and a Victorian Woman Who Opened the Heavens* by Tracy Daugherty (Yale University Press, 2019)**

The very first talk in our very first section meeting, in Cambridge in 2010 (by Bob Marriott), was about the very first director of the Historical Section, Mary Acworth Evershed (née Orr, 1867-1949). It was immediately apparent that my predecessor was a remarkable woman. Mary was a populariser of astronomy, author of *An Easy Guide to the Southern Stars* (written when she lived in Australia), and an accomplished solar observer, who accompanied her husband John to India, where he was director of the Kodaikanal Observatory in southern India. During her many years in India, Mary wrote *Dante and the Early Astronomers*, a detailed exploration of the astronomical references in Dante's *Divine Comedy*. This initially attracted little attention, but in the 1940s it was rediscovered by a Dante scholar, Barbara Reynolds, who realised that Mary provided insights missed by others.

Mary is the subject of a new biography, by Tracy Daugherty, professor of English and Creative Writing at Oregon State University. Tracy tells me that he grew up interested in astronomy, and his first published work was a report in *Sky & Telescope* about observing the Perseid meteors. One of his academic interests is Dante, and when he found out about the astronomer who had revolutionised the understanding of Dante and astronomy, he was determined to find out more.

Dante and the Early Astronomer is an impressive result. The book is as much about Dante as it is about solar astronomy, and Daugherty weaves the narrative and the cosmology of the *Divine Comedy* into Mary's life story and the advances in astronomy that that her life spanned. The Eversheds were involved in some of the early attempts to test Einstein's relativity, including a 1922 eclipse expedition to Western Australia to verify Eddington's observations of light bending.

I have some quibbles. For example, in a section on how difficult it was for women astronomers to make careers, Daugherty tells us that Elizabeth Brown hid her gender behind anonymity when she wrote her books. As we see on John Harris's article above, Brown's splendid account of her trip to Russia to see the total eclipse of 1887 is by 'A Lady Astronomer', though of course, that in itself raises questions – why did Elizabeth choose anonymity?

Daugherty has unearthed much information that was new to me, including a portrait of Mary in her twenties, and a fascinating undated group photograph of John and Mary Evershed and friends, on what the Science Museum Library claims is a post-war cruise to Scotland to see the aurora. However, with help from Martin Mobberley, I have been able to suggest a more plausible date of 1936, on an eclipse cruise to the Aegean.

But I wouldn't want claim the high ground here! Mary Evershed is one of the 'Lady Pioneers of the BAA' who feature in my most recent presentation. I introduce her with a group photograph from the Kodaikanal Observatory. Unfortunately, I have been pointing out the wrong woman in this picture. John and Mary sit at the centre of the group, flanked by the assistant and his wife, rather than sitting to their side. So who am I to point my finger at errors by others!

This is a well-written and very readable book, with an unusual cross-cultural approach. If you'd like to know more about the extraordinary woman who founded our section; if you'd like to know more about the first professional women astronomers; if you are interested in the intersection of the literary and scientific worlds – I'd recommend it.

Revd. Dr William Pearson and the Foundation of the RAS

Mike Frost

The Revd. Dr William Pearson, co-founder of the Royal Astronomical Society, was the rector of South Kilworth, Leicestershire, for the last three decades of his life, and built two observatories in the village to allow him to pursue his research interests; he published estimates of the obliquity of the ecliptic, and a catalogue of stars occulted by the Moon, as a result of observations from the village. As the two-hundredth anniversary of the RAS approaches, I and other historians of astronomy in the Midlands are taking the opportunity to honour the memory of one of the RAS's founding fathers.

Jacky Harrison, the current owner of the Rectory, has had a long-standing interest in Pearson's life in South Kilworth. We teamed up to secure funding to renovate Pearson's grave in the village graveyard (Figure 1). I acknowledge with gratitude a grant from the RAS. This matches funds that Jacky secured from the South Kilworth Parish Council, and the restoration took place earlier this summer.

In parallel, I and Carolyn Bedwell, assistant librarian at the Society for the History of Astronomy

and secretary of Leicester Astronomical Society, both nominated Pearson for the Green Plaque program run by Leicestershire County Council. Leics. CC invites nominations of eminent residents of the county into a popular vote to receive a plaque. Despite being up against stiff competition (including a recipient of the Victoria Cross, and the illustrator of Thomas the Tank Engine), Pearson placed high in the popular vote and so will be commemorated by the county, with a plaque on the gates of the Rectory, right in the centre of the village.

The dedication of William Pearson's plaque will take place on the afternoon of 16 January 2020, two hundred years and four days after the first meeting of the society that he did much to found and to nurture. RAS President Mike Cruise has been invited to unveil the plaque and there will be a short dedication ceremony in St Nicholas' church. I hope section members might be interested in attending – I'll post more details on the BAA forum when I have them.



Figure 1. Part of the renovated grave of the Revd. William Pearson (1767-1847).

Astronomy on the Isle of Wight

Andrew Read

Earlier this year, the Section Director was contacted by Andrew Read, asking if he knew of any sites on the Isle of Wight related to the history of astronomy. The Director's only definite suggestions were Freshwater, the birthplace of Robert Hooke (1635-1703) and the former rocket test facility at High Down, near the

Needles on the western tip of the island. Andrew proceeded to visit High Down and sent this brief report:-

I stayed near Gunard in a caravan, which was conveniently close to the new and old batteries on the needles. The High Down rocket test facility is interesting to see and I've attached a link to a few of pictures that I took. I would say that there is not a great deal on display (the control room is a mock up), but the panels are informative and the site conveys the atmosphere and the history quite nicely. Of course with the needles so close there are many reasons to visit the area and High Down is just a plus.



Figure 1. Andrew Read's picture of part of the display at the High Down former rocket test site, Isle of Wight. Andrew's other pictures of the site can be viewed at: https://1drv.ms/f/s!AhqKOpBAVvf0g_h7yVGjsomWvOWRIQ

Section member Bill Barton has since sent the following comments:-

'The thoughts that came to my mind are,

1, William Simms junior (1817-1907) lived on the IoW in retirement (MNRAS vol. 67, p. 237).

2, An *Original Member* of the BAA gave his address as Nelson House, Shanklin. His name was Harold G. Dixon, M.A.

3, After the de-centralisation of the *Chaldean Society* in the early 1920's a Branch was established on the Island under Francis Allan Stiles (1902-1955), but I am unaware of any activities carried out.

4, I have a vague memory of an observatory being part of the Royal residence Osborne House, but cannot find any definite proof. Maybe it only existed on paper and died with Prince Albert in 1861?'

Bill also says: 'Frederick Brodie lived in Eastbourne before moving to Fernhill, Wootton Bridge, Isle of Wight. FRAS from 1855 February 9. Observed with a 7½" refractor.'

If you have any other suggestions about historical astronomy sites on the Isle of Wight, please contact the Section Director.

SHA Autumn Conference and AGM 2019

The 2019 Autumn Conference and Annual General Meeting of the Society for the History of Astronomy will take place on Saturday 26 October 2019, at the Birmingham and Midland Institute, Margaret Street, Birmingham B3 3BS.

The cost is £10 per person for SHA members; £15 for non-members. Lunch is not included, but the Birmingham and Midland Institute has its own café and there are plenty of eating places nearby. The venue is conveniently located a few minutes' walk from Birmingham New Street station.

Please book in advance of the meeting. For further details and to pre-register, please contact the SHA Meetings Coordinator: meetings@shastro.org.uk

The programme for the meeting is:-

- | | |
|-------|---|
| 09:30 | Registration |
| 10:00 | Gerard Gilligan (Chairman, SHA) –
Welcome
Followed by: Annual General Meeting |
| 10:30 | Dr Heather Sebire –
Stonehenge, archaeoastronomy and the
Moon |
| 11:30 | Dr Alexandra Loske & Dr Robert Massey –
Moon: Art, Science, Culture |
| 12:30 | Lunch break |
| 13:30 | Dr Melanie Vandenbrouck &
Dr Louise Devoy –
The Moon as muse: the ideas and inspiration
behind The Moon exhibition, Royal
Museums Greenwich |
| 14:30 | Prof. Bill Leatherbarrow –
Patrick Moore & Our Volcanic Moon |
| 16:00 | Dr Allan Chapman –
The Moon, the Telescope, and the
Transformation of Astronomy after 1609 |
| 17:00 | Gerard Gilligan (Chairman, SHA) –
Conclusions & Dispersal |

For further details and updates on the SHA, see:-
<http://www.shastro.org.uk/>

Further dates for your diary

Two lectures on archaeoastronomy at Stonehenge, Wiltshire, organised by English Heritage:-

16 October 2019 Prof. Mike Edmunds, 'Ancient Astronomy: Megaliths, Landscapes and Cosmologies'. For further details, please see:-
<https://www.english-heritage.org.uk/visit/whats-on/stonehenge-mike-edmunds/>

6 November 2019 Centenary celebration of the meeting at which the results were announced of the observations to test Einstein's general theory of relativity. The celebration consists of a day conference at the Royal Astronomical Society, followed by an evening public event at the Royal Society. For details, please see: <https://eclipse1919.org/index.php/events>

23-24 November 2019 Workshop on 'Mathematical and Astronomical Practices in pre-Enlightenment Scotland and her European Networks', St Andrews University, Scotland. Details at:-
<http://www.mcs.st-andrews.ac.uk/MathsHistory/mathprac2018.shtml>

April / May 2020 SHA Spring Conference, Institute of Astronomy, Cambridge. Details to be announced.

June / July 2020 SHA Summer Picnic, Lacock Abbey, Wiltshire. Details to be announced.