



*Astronomy, and the musical family  
that did so much to pioneer it.*

## CHAIRMAN'S REPORT ON 2021

2021 was a second year of covid, but at least we were getting more used to it, and more able to reap the benefits of working virtually. One example was the AGM itself, held on Zoom for the first time, which enabled us to have a very wide ranging and broadly sourced debate on ideas for marking the bicentenary of William's death in 1822, soon labelled Herschel 200. Developing these ideas became our single main focus for the year, but I will leave discussion of that to the relevant item later.

A more immediate focus was the (virtual) National Astronomy Meeting sponsored by the RAS and organised by the University of Bath in the last week of July. This was the postponed event from 2020, the bicentenary of the RAS itself, which is why they had chosen the city most closely associated with their founding President for its location. We had two interests in this. The RAS confirmed they wanted to sponsor a virtual Herschel Music event in the margins of the Conference. Matthew Spring put this together with local music colleagues as an hour long introduced concert interspersing a wide variety of William's music with a narrative of this part of his life filmed mainly in the Museum of Bath Architecture and the Herschel Museum. This was very well received. The film itself is now available on Youtube (accessible via our website) and the format will form the basis of our main musical event in Herschel 200.

Our other interest in NAM was the session on Starlit Skies that our group was allocated. This was a good collaboration with our colleagues in CfDS and CPRE, and a report on the dangerous impact of excessive blue light from Bob Fosbury, who also heroically stepped into the breach when my microphone refused to work under the NAM's AV system! In other respects our Starlit Skies efforts have been mainly reactive this year. We have been trying to recruit an energetic and technically minded individual to power our efforts in this important work, so far without success.

July also brought a surprise with the announcement of the establishment of a Caroline Herschel Medal at the Johnson/Merkel Summit in July. You can see more detail about this in the Spring 2022 issue of the Journal.

October brought another new experience as we took part in a RAS organised "Uranus Live" webcast event with some short clips filmed at the Herschel Museum and live chat in between live remote observing and discussion from the University of Leicester.

This year's Caroline Herschel Prize Lecturer was Dr Jenny Carter, was again necessarily delivered virtually, to a good audience.

Tony Symes as Journal editor has masterminded a further two excellent editions over the year, both now with our New logo.



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Tony Symes' Lecture Report at Annex A shows how we with BRLSI have adapted quite successfully to the world of lectures where either or both of lecturer and audience are participating remotely, with a varied range of lectures delivered.

Matthew Spring's Music Report at Annex B sets out quite a range of concerts, seminars and research work that is helping raise the profile of the Herschel family as musicians.

Annex C has the report on our membership numbers, which recently have been declining. We can hope that this year's anniversary will help to reverse the trend.

Annex D sets out or proposed committee for next year. The good news is that our Committee has a better range of professional expertise in the subjects we pursue than it has ever had before. However, I wrote to the Membership last Autumn to seek replacements for Rachel and Simon Holbeche who were standing down from their roles as Treasurer and Membership Member after a 4-year joint stint in which they very helpfully modernised the way in which these roles are undertaken. Unfortunately no volunteers came forward, so Tony Symes and I have agreed to take them on for this year on a temporary basis, in addition to our existing roles. This means that all the administrative duties required in the committee to enable our Society to function will fall on just two individuals. (From a financial standpoint we could probably afford to buy in the effort required, but that is not allowed in a charity.) This is clearly a fragile arrangement at best that is not sustainable, and poses an existential threat to the future of our Society. It would be a pity if, after more than 40 years of existence and what promises to be an exciting and creative anniversary year, the Society faced dissolution, but that is now in front of us. I realise that meeting almost entirely by Zoom has not helped establish or maintain the personal links that are often required to fill such gaps as they emerge, but we have to deal with life as we find it.

We do need urgently to find individuals to fill these roles. They both require some administrative experience and a reasonable level of IT skills, but no more than many of us use in our day-to-day lives anyway. They also could be done remotely. Can I please ask each of you to consider if you could help your Society by taking one of them on, or perhaps you have a family member or friend who might be willing to support our efforts in this way? They might find themselves captivated as we all have been by the achievements of this wonderful family.

Charles Draper

Chairman



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## Annex A - Lecture report for 2021

In 2021 we managed a programme of 9 lectures as our recovery from the lows of the covid pandemic continues. All these lectures were delivered to a remote audience via Zoom, but one was also given by the lecturer in-person at the BRLSI. We intend to continue with a mixture of remote and in-person lecturers and with audiences both remote and present in the room at the BRLSI. Note that online lectures are recorded and freely available on the BRLSI YouTube channel one month after the event and are most easily accessed via the Events page of the HS website..

The yearly average attendance figures (excluding the CH Prize lecture) are:

Year	2014	2015	2016	2017	2018	2019	2020	2021
Lectures	10	9	8	7	9	8	6	8
Attendance	40	41	56	57	51	50	43	44

### **The Looking Glass Universe: from Baryogenesis to Biogenesis or is there a connection between the excess of matter over antimatter and handedness in biology?**

Date: Friday 5 February 2021

Lecturer: Roger Blandford

Mode: Zoom

Attendance: 69

Roger Blandford took us through some of the asymmetries of the early Universe including the question why baryons weren't annihilated (matter/anti-matter). Then he considered how supernovas control the evolution of galactic cosmic rays and the bias towards positive pions when these rays interact with the Earth's atmosphere.

His intriguing conclusion is that a small bias in the chiral effect of cosmic rays on biological molecules can have a big effect over billions of generations and that experiments could be designed to test this hypothesis.

### **William Herschel Annual Lecture: NASA's Juno Mission to Jupiter**

Date: Friday 5 March 2021

Lecturer: Dr Fran Bagenal, The University of Colorado

Mode: Zoom

Attendance: 66

Fran Bagenal started by describing the previous exploration of Jupiter including the Galileo probe. Juno was launched in 2011 and entered orbit on 4<sup>th</sup> July 2016. The orbit was around the poles and deliberately eccentric, enabling Juno to dive beneath the lethal radiation belt at perijove. Juno maps gravity and magnetic anomalies and its infrared camera penetrates the upper clouds. It uses microwaves to penetrate even further through the ammonia.

Beautiful images from Juno are being processed by the public. These can be seen by going to <https://www.missionjuno.swri.edu/> and clicking on Featured Junocam Images.



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## **The Search for Advanced Extraterrestrial Civilisations via Anomalies in Astronomical Survey Data**

Date: Friday 7 May 2021

Lecturer: Dr Michael Garrett, University of Manchester and Jodrell Bank

Mode: Zoom

Attendance: 46

Michael Garrett established the background for the search: ~500 billion stars and planets in our galaxy and recent Hubble Space Telescope surveys suggest that there are more than a trillion galaxies. Physicists assume that conditions on this planet are 'normal' or 'mediocre', but biologists still don't know how life starts and the chances of it happening elsewhere.

Anomalies to look for include very deep/asymmetric stellar transits, narrow band radio signals with doppler drift, extreme proper motions, spectroscopic distances different from geometric ones, unnatural spatial clustering, stellar types and galaxies with strange spectral brightness (possible indicating waste heat).

Surveys are being carried out, e.g. Breakthrough Listen Radio Surveys, and Gaia data is used to put limits on alien transmitter power. In the future, long baseline interferometry will eliminate local sources and enable precise location of sources.

## **Light Pollution is Bad for All**

Date: Friday 25 June 2021

Lecturers: Charles Draper, Bob Fosbury, Bob Mizon and Sophie Spencer

Mode: Zoom

Attendance: 19

Charles Draper chaired the panel of four. The following highlights some memorable points.

Bob Mizon discussed the state of the law which allows much light pollution including sports lighting directed upwards as long as it's not directed into people's homes, but light from transport is exempted even from that! Some countries, like France and Mexico, do have laws. He summed up the problem in this memorable statement.

*The light from distant stars and galaxies takes hundreds, thousands, even millions of years to reach our eyes. What a tragedy to lose it in the last millisecond of its journey.*

Bob Fosbury talked about the effect of light on life. The great oxygenation event of 2+ billion years ago produced the protective ozone layer which enabled life to colonise the land and air. Some UV is still needed to produce vitamin D, but too much blue light can damage cells by producing reactive oxygen radicals, especially at night.



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Sophie Spencer described the CPRE star count to get an estimate of how many stars are visible in the constellation of Orion in each location. This involved 7.000 participants of which 51% saw 10 stars or fewer and 5% saw 31 stars or more.

There followed some good questions from the audience who were generally keen to support the campaign for dark skies.

## **The Lunar South Pole Environment**

Date: Friday 10 September 2021

Lecturer: Dr Daniel Batcheldor, from Florida

Mode: Zoom

Attendance: 27

Daniel Batcheldor delivered his lecture from Florida. He explained the hazards that future astronauts landing on the Moon must face – dust which is lofted by electrostatic repulsion and the glare of the Sun when at low angles being reflected back from the regolith. He also showed the advantages of places near the Lunar South Pole like the rim of Shackleton Crater and nearby ridges which are in permanent light with regions of permanent darkness very close by. The light regions are good for energy from solar PV panels and the dark regions provide shelter from radiation and water that can be extracted.

## **Life on Mars? A Short History of 19th-Century Exploration of the Red Planet**

Date: Friday 1 October 2021

Lecturer: Dr Joshua Nall

Mode: Hybrid – both in the BRLSI and on Zoom

Attendance: 38

Joshua Nall gave the first in-person lecture in the BRLSI since the start of the pandemic. About a third of the audience were in the room while about two thirds viewed it online via Zoom. It was interesting to manage both audiences together.

In his lecture, Joshua explained how the expanding observable Universe of the 1700s caused people to speculate about the “plurality of Worlds” and the likelihood that they would be populated. He went on to take us through the thinking of William Herschel and his son John who supported this view and the opposition to it by some. Mars was considered the world to be the most similar to Earth, and speculation was encouraged by Giovanni Schiaparelli who thought that he had observed “canali” or channels and then by Percival Lowell who took this further and described a network of straight canals apparently engineered by an advanced civilisation. This line of thought culminated in H.G.Wells’ “War of the Worlds” which however can also be interpreted as a critique of empire and colonialism.



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## **Mars: Ancient rivers, lakes and oceans. But where is the water now?**

Date: Friday 5 November 2021

Lecturer: Michael Carr, from California

Mode: Zoom

Attendance: 26

Michael Carr delivered his lecture from California. He has working on Mars since 1970 when he joined the Mariner-9 imaging team. He started the lecture by explaining the physical details of Mars, high elevations in the South and basins in the North. A cryosphere 1 Km thick containing saline groundwater lies under the Northern basins. Drainage valleys are separate and typically do not feed into oceans although they can be up to 2,000 Km long.

There is geologic evidence of a warm wet early Mars with a hydrologic cycle, but this is inconsistent with climate models which indicate mean temperatures below freezing with a fainter young Sun. We have to conclude that large impacts and/or volcanic eruptions caused temporary melting. The global average depth of water over the whole planet was likely to have been 110 m (cf. 3.4 Km on Earth). Of this 110m, 85m has been lost to space.

## **The Caroline Herschel Prize Lecture, Earth versus Sun: a precarious relationship in space**

Date: Thursday 18 November 2021

Lecturer: Dr Jenny Carter, University of Leicester

Mode: Zoom

Attendance: 144

Dr Jenny Carter's lecture concentrated on the way that the Sun affects the Earth with the solar wind and corona mass ejections, and how the Earth responds with its magnetic field. She described the current spacecraft which study these phenomena and are providing details about the magnetic field interactions.



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## Annex B: Music Report from Matthew Spring, Feb 2022

### Filmed Concert

The year 2021 -2022 witnessed number of events that have raised the profile of the Herschel family as musicians and composers. The RAS conference concert originally planned for July 2020 took place in July 2021 as a recorded and streamed event and was well received by the Society. It has since been made available for member of the RAS and Herschel Society. For this filmed concert the interior of the MoBA and The Herschel Museum in King's Street were used.

### Conferences

A Bath Conference in late September to celebrate the 250 anniversary of the New Assembly Rooms was held online with a single evening performance and talks in the actual rooms. There was some mention of the Herschel's in the contents of the papers as William had been one of the early directors of the music for the rooms and had played in the band when it opened under Linley in 1771.

In the coming year York University is hosting a study day on June 19, 2022, titled 'Cosmic Harmonies': A Symposium Celebrating the Life, Science, Music, and Legacy of William Herschel (1738–1822). This symposium takes the bicentenary of his death as a cue to explore new aspects of Herschel's work as composer, instrumentalist, impresario, and astronomer in the intellectual, creative, and cultural contexts of his time. The call for papers for the symposium takes a wide perspective on astronomy, music, and natural philosophy, including the Herschels' legacy in connections between science and art today. I have submitted a paper and hope to attend the conference.

### Performances

There have been a number of performances of Herschel's music in the north of England by The Northern Sinfonia in the course of the year. In Slough the Dionysis Ensemble have recorded the sonatas for Harpsichord, violin and cello and made them available online. They have a raft of events this year performing Herschel's music including an outreach programme in Slough and a concert on March 26<sup>th</sup> featuring music by Herschel but also music inspired by Herschel.

Both the Northern Sinfonia and The Dionysis Ensemble have worked with and profited from the work done by Alex Voice in editing much of Herschel's orchestral and chamber music – a project that is part of the centenary year. Approaches have been made by the Bristol Ensemble to include music by Herschel in their programmes this year.



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Considerable work towards an application to the Arts Council for a tour for the group Sirinu has been done in collaboration with the digital artist Jerry Fishenden and the composer Andrew Huggill. This project is titled 'Sounding the Universe' and aims to reach and engage new and more inclusive audiences with an appreciation of the changing human understanding of the universe through a live music event which combines interactive visual displays using audience/participant's own mobile phones.

#### Radio

There have been a number broadcasts this year that have included Herschel including Robert Laidlow's curated concert on Radio 3 with a space theme, and music by William Herschel, Robert Laidlow, and a variety of other composers. There was some mention of the Herschel's musical background in the Simon Tillotson "In our Time" on Radio produced by Simon Tillotson, on William and Caroline Herschel's astronomy.

Considerable effort and correspondence with producers of Radio 3 and Radio 4 sadly have not produced a concrete programme/series on Herschel and music as I had hoped. After protracted correspondence with Loftus Productions they decided not to go ahead a with series of four programmes for radio 4. Independent producers for Radio 3 and Heads of Speech programmes and Live Music at Radio 3 were all contact. A positive response was received from Simon Hickling planner for 'In Tune to feature music from the concert for the September Conference.

#### Academic Work

The Herschel's catalogue has progressed in that I have created incipits for all music in the University of California archive that constitutes almost all Herschel's chamber music and concertos. A draft biography of William's musical life has been created for the website.



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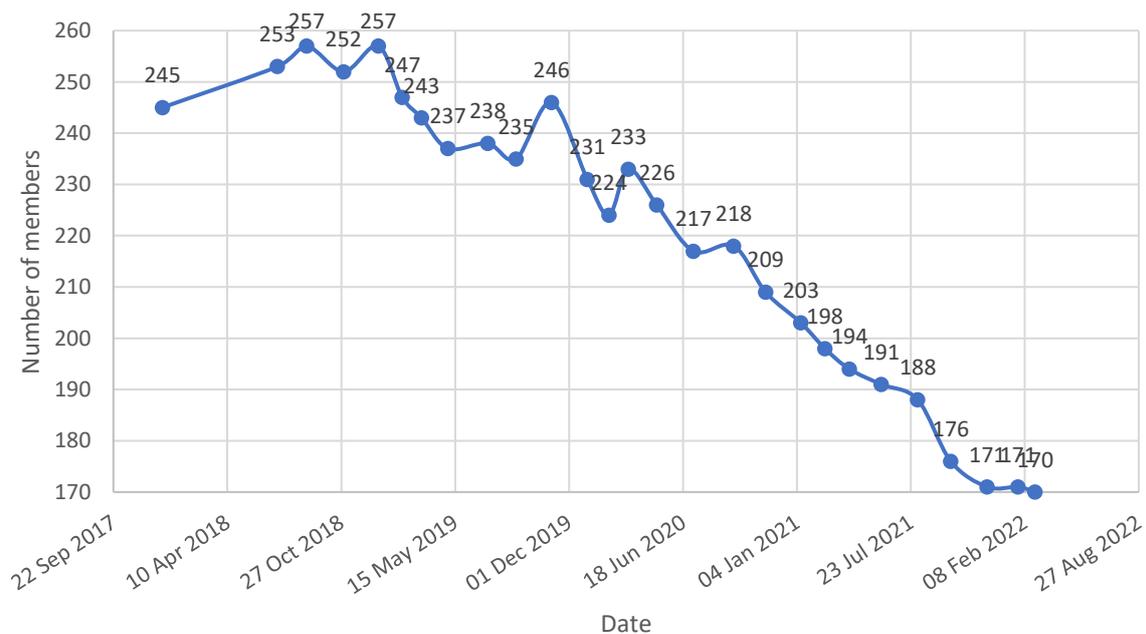
## ANNEX C Annual Membership Report 2021- 2022

The society has 170 current members as of 26<sup>th</sup> February 2022. The breakdown of membership types is illustrated below:

Expiry Year	Membership Type				Total
	Herschellian (digital)	Herschellian (paper)	Honorary	Volunteer HMoA (Hon)	
2022	41	70			111
2023	11	14			25
2024		1			1
2026		1			1
Not Applicable			18	14	32
<b>Total</b>	<b>52</b>	<b>85</b>	<b>18</b>	<b>14</b>	<b>170</b>

6 new members joined in the last 12 months. 39 memberships were not renewed in the same period, of which 2 memberships lapsed in the past month or so and may rejoin.

All members have now been confirmed in the new membership types of either Digital or Paper Herschellians since the membership fee and type changes in March 2020. 13 insufficient payments made in the past year which have been treated as donations as no response to emails or letters.





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## ANNEX D

### **The Proposed Herschel Society Committee for 2022**

website: <http://www.herschelsociety.org.uk>

Correspondence Address c/o

The Herschel Museum of Astronomy,  
19 New King Street, Bath. BA1 2BL, UK

#### **President**

Dr Allan Chapman MA DPhil DSc DUniv FRAS

#### **Vice-Presidents**

Prof. Dame Jocelyn Bell Burnell DBE FRS FRAS  
Prof. Michael Edmunds MA PhD FRAS FInstP

#### **Committee**

Mr Charles Draper FRAS (Chairman, Communications, and Membership)  
Dr Matthew Spring BA DPhil ARCM (Music)  
Mr Anthony Symes CEng MBCS (Lecture Convenor, and Treasurer)  
Dr Robert Fosbury BSc DPhil FRAS Hon Prof (UCL)  
Dr Mark Whalley (Education)  
Mr Jonathan Hall

#### **In Attendance**

Mrs Claire Dixon, Director of Museums (Herschel Museum of Astronomy)  
Mr Simon Holbeche (Bath Astronomers)  
Mr William Herschel-Shorland

#### **In Correspondence**

Dr Sadaharu Uehara (Japan)

#### **The Journal of the Herschel Society**

Editor: Mr Anthony Symes CEng MBCS, [atds@vidan.co.uk](mailto:atds@vidan.co.uk)

#### **Membership**

<http://www.herschelsociety.org.uk/membership/>