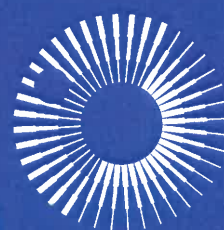




# Annual Report & Financial Statements 2023



Royal  
Astronomical  
Society

# Royal Astronomical Society

## Trustees

Council Members who served during 2023

Prof. Mike Edmunds (President, University of Cardiff)

Prof. Mike Lockwood (President-Elect from May 2023, University of Reading)

Dr Mandy Bailey (Senior Secretary, A, until May 2023 Open University)

Dr Jo Barstow (Councillor, A, Open University)

Dr Nigel M Berman (Treasurer, A, until September 2023)

Prof. Mike Cruise (Interim Treasurer, A, from September 2023, University of Birmingham)

Dr Alan Cayless (Councillor A from May 2023, Open University, retired)

Prof. Phil Charles (Councillor, A, until May 2023, University of Southampton)

Prof. Andrew Curtis (Vice-President, G, from May 2023, University of Edinburgh)

Dr Hannah Dalglish (Councillor, A, until May 2023, University of Oxford/Armagh Observatory and Planetarium)

Prof. Stephen Eales (Vice President, A, University of Cardiff)

Dr Imogen Gingell (Councillor G from May 2023, University of Southampton)

Prof. James Hammond (Secretary, G, from May 2023, Birkbeck College)

Dr Olivia Keenan (Councillor, A, King's College London)

Prof. Mark Lester (Secretary, G, until May 2023, Senior Secretary from May 2023, University of Leicester)

Dr Matthew Middleton (Vice-President, A, from May 2023, University of Southampton)

Prof. Steven Miller (Councillor, G, University College London)

Dr Arvind Parmar (Councillor, A, until May 2023, European Space Agency)

Prof. Nick Rawlinson (Vice-President, G, University of Cambridge)

Prof. Ian Robson (Vice-President, A, until May 2023, University of Edinburgh, STFC)

Dr Jasmine Kaur Sandhu (Councillor, G, University of Leicester)

Prof. Caroline Smith (Councillor, G, Natural History Museum)

Dr Colin Snodgrass (Councillor, G, until May 2023, University of Edinburgh)

Dr Ashley Spindler (Councillor, A, from May 2023, University of Hertfordshire)

Mrs Patricia Tomkins (Councillor, A)

Dr Sheona Urquhart (Secretary, A, Open University)

Prof. Clare Watt (Vice President, G, Northumbria University)

Prof. Derek Ward-Thompson (Councillor, A, from May 2023, University of Central Lancashire)

Prof. Belinda Wilkes (Councillor, A, University of Bristol)

Prof. Silvia Zane (Councillor, A, University College London)

- Note: 'A' signifies all areas of astronomy and astrophysics; 'G' covers geophysics, solar-terrestrial physics and planetary sciences.

## Senior staff

Executive Director: Philip Diamond

Deputy Executive Director: Dr Robert Massey

## Registered and Principal Office

Burlington House

Piccadilly

London

W1J 0BQ

## Charity registration number

226545

## Auditor

Buzzacott LLP

130 Wood Street

London

EC2V 6DL

## Bankers

HSBC Bank plc

West End Corporate Banking Centre

70 Pall Mall

London

SW1Y 5EZ

National Westminster Bank

St James' & Piccadilly Branch

PO Box 2 DG

208 Piccadilly

London

SWJ 9HE

## Investment managers

Newton Investment Management Ltd

The Bank of New York Mellon Centre

160 Queen Victoria Street

London

EC4V 4LA

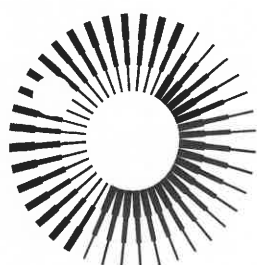
## Solicitors

Bristows

3 Lincoln's Inn Fields

London

WC2A 3AA



# Contents

<b>Our Mission and Values</b>	<b>4</b>
<b>From Our President</b>	<b>5</b>
<b>Objectives</b>	<b>6</b>
<b>Advancing Understanding</b>	<b>7</b>
<b>Sharing Knowledge</b>	<b>17</b>
<b>Our Organisation</b>	<b>23</b>
<b>Looking Forward</b>	<b>25</b>
<b>Structure and Governance</b>	<b>27</b>
<b>Financial Statements</b>	<b>31</b>

# Our Mission & Values

## Our Mission Statement

The Royal Astronomical Society supports and connects astronomers and geophysicists, in the UK and globally, throughout their careers. We assist them to sustain and advance the rigorous scientific study of the origins and evolution of our own planet and the whole wider cosmos. We promote a better understanding of the relevance and value of our subjects throughout all society, from inspiration for young people to advice to government.

## Our Values

### We are a supportive community

We are passionately curious about the universe, and recognise the importance of mutual support in its study. We are custodians of the past, learning from the history of our sciences but looking to apply our knowledge for the future. We promote the need for vital research support, for appropriate collaboration and scrutiny, and for the sharing of methods and results.

### We share our expertise in astronomy and geophysics

We are a respected, independent, self-governing organisation, free to speak frankly on behalf of our members, the science and the profession. For over 200 years, we have been a credible, independent source of the latest scientific discoveries in the field. Within our resource limitations, we willingly provide professional advice on all aspects of our subjects.

### We are an inclusive and welcoming Society

We celebrate and encourage diversity, understanding that every individual is unique and recognising and appreciating our individual differences. We will provide an inclusive environment where every member of the Society is welcome and supported, and acts with respect to all other members.

### We play our role in understanding and protecting our environment

We care about the future of humanity, the sustainability of our planet and the impact of our activities. We seek to understand our role in the wider universe and use our knowledge and expertise to the benefit of humankind.



# Welcome From Our President

It is a pleasure to introduce the Annual Report of the Royal Astronomical Society for 2023, and to start with Fellows of the Society who were recognised in the 2023 New Year Honours list. Congratulations to Prof Gillian Wright CBE, director of the UK Astronomy Technology Centre, Libby Jackson OBE, of the UK Space Agency, Prof Terry Moore OBE of the University of Nottingham and Sir Brian May CBE.

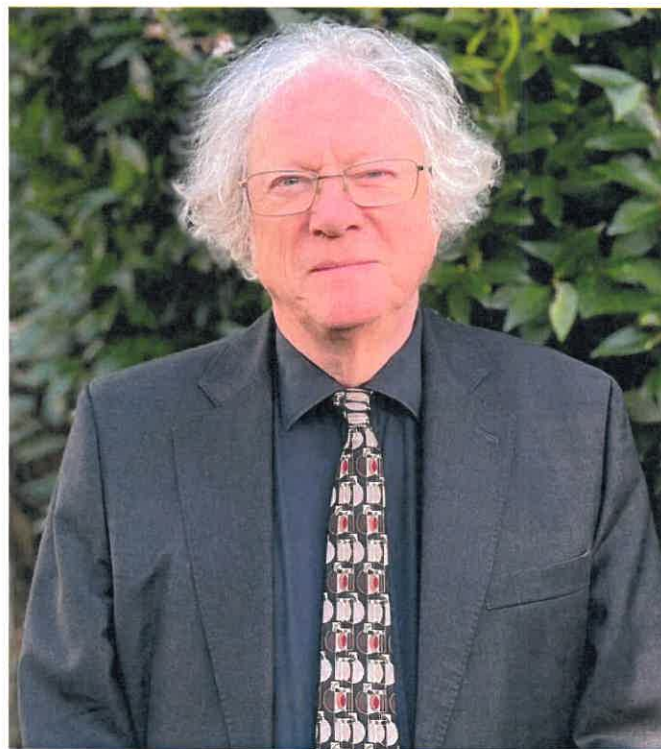
In 2023 the Society continued its excellent programme of scientific meetings, bringing a wide range of outstanding speakers to keep Fellows in touch with developments in their fields of interest. The hybrid format is a permanent feature of these meetings. We have now changed the name of our Ordinary meetings to A and G Highlights, which we feel better describes the nature of these meetings.

The National Astronomy Meeting in Cardiff this year was a great success. We were honoured to have the First Minister of Wales, the Rt Hon Mark Drakeford MS, give an inspirational welcome. He was characteristically on top of his brief, which perhaps cannot be said of all our political leaders.

In April Prof Gillian Wright was presented with the Caroline Herschel Medal from the Royal Astronomical Society and the German Astronomical Society. The ceremony was generously hosted by Miguel Berger, the German Ambassador to the UK, at his London home. Gillian is the first UK winner of this medal, and it was a pleasure to congratulate her in person.

Towards the end of the year, we held the first John Brown Memorial Lecture, honouring the esteemed late Astronomer Royal for Scotland and tireless supporter of the RAS. The University of Glasgow kindly hosted this fitting tribute to John's lifelong work at the interface between astronomy and the arts.

The Society continues to advocate on behalf of our communities. In September, the Parliamentary Science Innovation and Technology Committee launched an inquiry into the potential of UK Astronomy. The invitation to submit to the inquiry began with the words "Astronomy matters because it seeks to answer fundamental questions about the origins and evolution of the universe". It is gratifying



and, I would suggest, a testament to our work over many years, that what matters to us, also matters to those in the corridors of power.

At our December Council meeting the Trustees approved our strategy, which outlines objectives in five priority areas: meeting the needs of our members, education and outreach, library and heritage, publishing, and collaboration with external partners. Work has already begun. At a seminar to mark the completion of the very successful outreach programme RAS200, we heard how we and our partner organisations had benefitted. What we have learned is already informing our outreach strategy.

In March 2024, after many negotiations, I signed an agreement that secures our home in Burlington House on a 999-year lease. We now have stability, but also new responsibilities, including the upkeep of the building, and enhanced outreach for our Society and with our neighbours in Burlington House, in the future. Our work in this and in everything we do will succeed only with the willing support of our Council, committees, the RAS staff and our Fellows.

**Prof Michael G Edmunds**  
*President of the RAS 2023*

# Objectives

The RAS exists to advance, and to record the history of, our understanding of the Earth, the solar system, the stars and galaxies, and the nature of the universe. It does this by promoting astronomy and geophysics, interdisciplinary sciences that encompass and further our understanding of physics, chemistry, mathematics, biology, engineering and computer science to answer deep questions about the origin and fate of the cosmos, and people's place in it. Through this, the Society contributes to the growth and dissemination of knowledge and thereby fulfils its charitable objective of serving the public interest.

The Society refers to the Charity Commission's general guidance on Public Benefit when reviewing its aims and objectives and in planning future activities. These disclosures comply with the Charities Act 2011.

Our objectives for 2023 fell within two broad areas: advancing understanding and sharing knowledge. The organisation of the Society supports these goals.

During 2023, the RAS developed an overarching strategy for the next five years, and identified five key areas for development.

## **The Society's principal objectives are to:**

- publish high-quality peer-reviewed journals;
- support students and early-career scientists through research fellowships and grants;
- recognise achievement through medals and prizes;
- maintain high-quality research meetings, including the National Astronomy Meeting, and Public Lectures;
- sustain our Library and Archive service;
- continue our political engagement;
- maintain our programme of education and outreach activity, including Friends of the RAS;
- promote the work of the Society and Fellows in the media and on social media;
- build our outreach work with other Courtyard Societies.

## **In 2023 the Society worked, in addition, on:**

- supporting and developing the Early Career Network;
- ensuring that the RAS nurtures, supports and improves diversity and inclusivity within its core community;
- increasing both the engagement and satisfaction of our Fellows;
- reviewing the RAS and Norman Lockyer Fellowship Schemes with a view to ensuring maximum impact;
- increasing the involvement of RAS Fellows in education and outreach activities;
- ensuring our subscription rates are fair, equitable and in line with modern best practice;
- achieving maximum impact from the library, archive and object collections, within available resources;
- increasing the impact, reach and focus of our public engagement activities by prioritising events targeted at under-served communities.





# Advancing Understanding

The JWST proved a powerful tool to  
explore dusty environments, such as  
the Ring Nebula discovered by William  
Herschel (ESA/Webb, NASA, CSA, M. Barlow, N. Cox, R. Wesson)



## Journals

The Society's journal portfolio consists of three peer-reviewed, scholarly publications: *Monthly Notices of the Royal Astronomical Society (MNRAS)*, *Geophysical Journal International (GJI)* and *RAS Techniques and Instruments (RASTI)*.

*MNRAS* is one of the world's leading astronomy journals and publishes articles in astronomy and astrophysics, including work which is observational, theoretical or concerned with astronomical instrumentation and software. The *MNRAS* editorial board of 26 scientific editors continues to be led by Prof David Flower as Editor-in-Chief. In 2023 *MNRAS* received 5045 submissions, published 4241 papers, and had 5,324,975 downloads. Its two-year impact factor for 2022 was 4.8.

*GJI* is an international journal publishing primary research articles on all aspects of theoretical, computational, experimental, applied and observational geophysics. The Editor-in-Chief, Prof Joerg Renner leads an editorial board of 33 scientific editors. In 2023 *GJI* received 1152 submissions, published 617 papers, and had 1,850,903 downloads. Its two-year impact factor for 2022 was 2.8.

The RAS's newest journal, *RASTI*, published its second volume in 2023. *RASTI* is broad in scope and encourages submission of papers that cover topics in both astronomy and geophysics, ranging from instrumentation, data science, machine learning, software, and numerical and statistical methods. The editorial board, led by Prof Jonathan Tennyson, consists of 15 academics appointed to ensure *RASTI* maintains the high editorial standards set by *MNRAS* and *GJI*. During 2023, *RASTI* received 73 submissions, published 56 articles and had 17,245 downloads.

All three journals are published in partnership with Oxford University Press (OUP). OUP will remain the Society's

## The RAS is committed to advancing understanding of our sciences by:

- Publishing journals
- Supporting scientists financially with fellowships and grants
- Organising scientific meetings
- Recognising excellence through awards
- Running a Library and Archive for research
- Producing a magazine for our members
- Advocating for the community with government
- Promoting diversity in our community
- Supporting early-career researchers

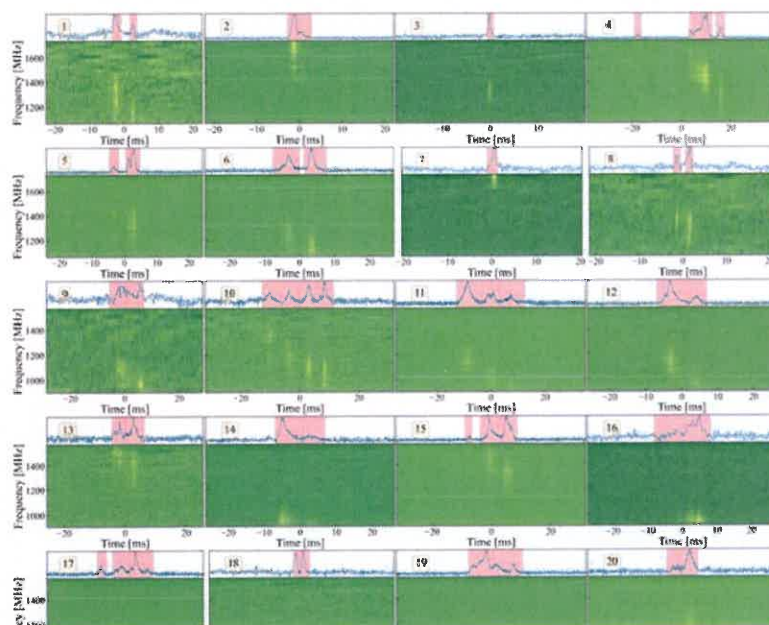
publishing partner for the next five years until the end of 2028.

*RASTI* is a fully Open Access (OA) title which means authors pay an Article Processing Charge (APC) for publication. The payment of APCs allows worldwide access to the scholarly research in *RASTI*, removing barriers to readership and reuse.

*MNRAS* and *GJI* continued to be published as 'hybrid' journals during 2023 whereby OUP sells institutional subscriptions to the journals, at the same time as offering optional OA publication. The transition to fully OA for both *MNRAS* and *GJI* began on 1 October 2023. All papers accepted in late 2023, to be published in 2024 volumes of *MNRAS* and

**Below:** A novel repeating fast radio burst with a distinctive frequency drop reported in *Monthly Notices of the Royal Astronomical Society*.

(Sofia Z. Sheikh et al., SETI Institute)





*GJI*, were processed as OA papers with Creative Commons licences.

Two part-time publishing managers manage the RAS journal team, and eight assistant editors oversee the administration of the peer review process. The peer review process on *RASTI* is provided by OUP. In April, the journal team, editors-in-chief and OUP presented their annual reports to the RAS Publications Management Committee.

There was an increase in journal marketing in 2023 to promote the move to OA. OUP organised marketing that included 'Why Publish?' webpages, calls for papers, online adverts, email campaigns, high-impact article collections and booths at the American Astronomical Society, European Geophysical Union and American Geophysical Union Conferences. The RAS also exhibited at the European Astronomical Society Annual Meeting and the International Union of Geodesy and Geophysics General Assembly. At the National Astronomy Meeting (NAM) at Cardiff University OUP promoted the journal portfolio alongside the RAS. Also at NAM, the journal team ran two workshops for early-career researchers. In October, an online publishing workshop was held for early-career researchers from the Chinese Academy of Sciences. The journals were actively promoted on the RAS social media platforms primarily on X (@RAS\_Journals), and supported author press releases with the RAS Communications Team.

The virtual collection series of the 100 most influential geophysics papers published by the Society published a further 10 collections of *GJI* papers selected by the *GJI* editors, with each collection introduced by different editors. The winners of the *GJI* Student Award for the best paper by an early career scientist

were Lauren S Abrahams and Quentin Nicolas, who each received a certificate and cash prize.

Further details on the RAS journals, the editors and editorial boards can be found on our website at [ras.ac.uk/journals](https://ras.ac.uk/journals)

## Research Fellowships and grants

The RAS grants, research fellowships and awards support research, education and outreach activities. 109 grants, fellowships and awards, totalling £252,511

### Grant for instrumentation



With a history of planetary exploration now going back decades, there is always pressure to make the most of the archive of data records. An RAS grant made it possible for PhD student George Xystouris of Lancaster University to visit the Laboratory for Atmospheric and Space Physics (LASP) in Boulder, Colorado from September to December 2023 in order to reanalyse, recalibrate, and archive data from Voyager 2 Plasma Science (PLS) experiment for Uranus and Neptune. Voyager PLS data from the Jupiter flybys in 1979 had already been recalibrated and the project involved applying a similar process for the outer planets. The visit allowed George to work with researchers who had been involved in building the PLS and in working on the software during and after the flybys, gaining valuable insights; he plans to publish the methodology and results.

(2022 – £178,412) were awarded to institutions and 37 grants, medals and awards totalling £20,683 (2022 – £28,066) were made to individuals. Expenditure supporting an RAS Research Fellowship totalled £35,365 (2022 – £32,000). The 2023 Norman Lockyer Fellowship totalled £57,000. Adjustments to other grants resulted in credits to expenditure totalling £21,768 (2022 – £54,180).

A full list of all grantees and analysis can be found on the Society's website.

### The Norman Lockyer Research Fellowship

In 2023 the Norman Lockyer Research Fellowship was awarded to Dr Christopher Osborne (University of Glasgow) to work on 'Unifying Solar Non-Equilibrium Radiative Transfer and Magnetohydrodynamic Models'.

### The RAS Research Fellowship

The RAS Fellowship was held by Dr Rebecca Smethurst (University of Oxford), working on 'Co-evolution cracked: the

## THE RAS AWARDED £252,511 IN GRANTS, FELLOWSHIPS & AWARDS TO INSTITUTIONS

*Below: Meteorites and other pristine samples from the outer solar system were the focus of a Specialist Discussion Meeting (The Trustees of the Natural History Museum)*



contribution of non-merger processes to supermassive black hole growth'.

### Scientific meetings

The Society held 15 Specialist Discussion Meetings in 2023, attended by 1012 people, 44% in person and 56% online.

#### Abiotic baselines in astrobiology

#### New generation multi-dimensional (2D/3D) and multi-scale modelling of solar flares;

from reconnection to particle energisation and beyond

Towards a **consistent and coherent**

#### strategy for RAS outreach, engagement and education activities

Harvesting **spectroscopic and time**

**series data** with machine learning and artificial intelligence

#### Solar control of energy transport

**and deposition** in the terrestrial magnetosphere-ionosphere system

Evidence for **supermassive black hole binaries**

Understanding **solar system evolution** using outer solar system samples

#### Radio frequency systems in

astronomy, space science and ionospheric physics

Impact Earth! **protecting the UK and further afield from impacts by near Earth objects**

#### Geomagnetic twin satellites MSS-1:

progress and future plans

Exploring a **High-resolution**

#### Stabilised Spectroscopy Telescope Network

New eyes on the cold universe: **star**

**formation in the Milky Way and**

**beyond** in the era of JWST and ALMA

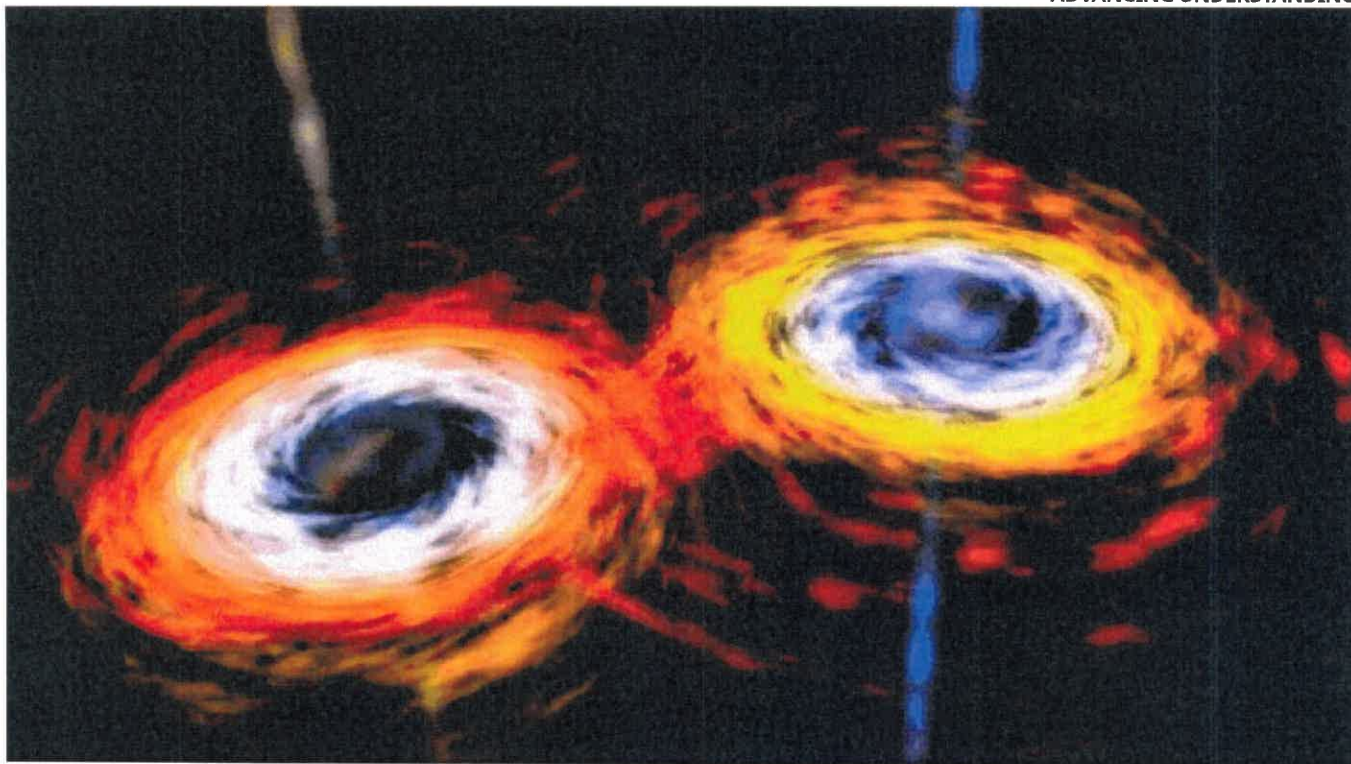
**Coronal condensations:** formation, evolution, and energy transport

Science opportunities enabled by

next-generation **gravitational-wave observatories**

Halfway for Halley. **Current and future horizons in cometary science**





### Highlights Meetings

The RAS held five Ordinary Meetings from January until May; from October the name for these meetings changed to A&G Highlights Meetings for the remaining three of the year. 1165 people attended over the year, 43% in person and 57% online. The following presented at the meetings:

**Prof Joop Schaye** (Leiden University)

Cosmological simulations of galaxy formation – RAS Group Award

**Prof Alan Fitzsimmons** (Queen's

University Belfast) Small body impacts across the galaxy – George Darwin Lecture

**Prof Eleri Pryce** (Aberystwyth University)

Extending astronomy outreach through Eisteddfodau in Wales

**Prof Andy Newsam** (Liverpool John

Moore's University) Access to the universe for all

**Dr Ashley King** (UK Fireball Alliance,

Natural History Museum) The fall, recovery, and analysis of the Winchcombe Meteorite – RAS Group Award

**Dr Yuan-Sen Ting** (Australian National

*Above: Multimessenger astronomy came to the fore at a Specialist Discussion Meeting on the search for supermassive black hole binaries (NASA/Tumblr)*

University) From high-redshift precursors to present-day galaxies: a new frontier in astronomy with graph neural networks

**Dr Nicholeen Viall** (NASA/Goddard Space Flight Center) The grand challenge questions of solar wind physics

**Dr Mark Clampin** (Science Mission Directorate, NASA) Overview of the NASA Astrophysics Program

**Prof Rhodri Davies** (Australian National University) Linking intra-plate volcanism to underlying mantle dynamics – Harold Jeffreys Lecture 2021

**Prof Mike Edmunds** (University of Cardiff) The mechanical universe – the 2023 Presidential Address

**Dr Tim Lichtenberg** (ETH Zurich) Molten exoplanets as a window into the earliest Earth – Winton Award

**Dr Oliver Allanson** (University of Exeter) Understanding the Earth's radiation belts: our local, superscale, relativistic particle accelerator – Fowler Award

**Dr Annelies Mortier** (University of Birmingham) Weighing exoplanets through a telescope network

**Dr Beatriz Sanchez-Cano** (University of

Leicester) Mars' ionosphere: from our current knowledge to the future of Mars exploration – Fowler Award

**Dr Elizabeth Watkins** (University of Manchester) Characterising superbubble populations and their energetics in nearby galaxies using JWST and ALMA

**Prof Marina Galand** (Imperial College London) Revealing plasma interactions under auroral skies in the solar system – James Dungey Lectureship

**Dr Daniel Belteki** (Science Museum) The making of an observatory: the early years of the Cambridge Observatory – RAS Diary Talk

**Prof Rob Fender** and **Prof Ian Heywood** (University of Oxford) MeerKAT – RAS Group Award

**Dr David Hosking** (Princeton Center for Theoretical Studies/Gonville & Caius College, Cambridge) Are cosmic voids filled with reconnecting magnetic fields from the early universe? – Michael Penston Thesis Prize

### National Astronomy Meeting 2023

The National Astronomy Meeting held with meetings of UK Solar Physics and MIST at the University of Cardiff had one of the largest attendances in its history. Some 920 people attended over the week, with 120 taking part online; that's more than 650 people registered each day. The meeting had specialist sessions grouped into themes, each spread over two days, under the broad banner of 'Origins'. There were also a range of plenary lectures from distinguished speakers, including Richard Mushotzky of the University of Maryland, winner of the 2022 American Astronomical Society Henry Norris Russell prize. Regular NAM features included community lunches, poster prizes and the conference dinner celebrating the winners of RAS Medals and Awards.



*Above: The 2023 Group Achievement Award went to the MeerKAT consortium (South African Radio Astronomy Observatory (SARAO))*

THE  
NATIONAL  
ASTRONOMY  
MEETING  
HAD ONE OF  
THE LARGEST  
ATTENDANCES  
IN ITS  
HISTORY

### 2023 Medals and Awards

**Gold Medal in Astronomy** Prof John Peacock, University of Edinburgh

**Gold Medal in Geophysics** Prof Timothy N Palmer, University of Oxford

**Herschel Medal** Prof Heino Falcke (Radboud University, the Netherlands, and Max Planck Institute for Radio Astronomy in Bonn, Germany)

**Eddington Medal** Dr Monika Moscibrodzka (Radboud University, the Netherlands)

**Chapman Medal** Prof Nicholas Achilleos (University College London)

**Price Medal** Dr Rhian Jones (University of Manchester, UK)

**Jackson-Gwilt Medal** Prof Roberto Abraham (University of Toronto, Canada) and Prof Pieter van Dokkum (Yale University, USA)

**Agnes Mary Clerke Medal** Prof Jim Bennett (Linacre College, Oxford)

**Annie Maunder Medal** Black In Astro team led by Ashley Walker: Caprice Phillips, Dr Ronald Gamble Jr, AJ Link, Esq., KeShawn Ivory, Cheyenne Polius,



Bryné Hadnott, Dakota Tyler, Robert Washington III and Naia Butler-Craig

**Primary Education Award** Inga Helmecke (Europa School UK)

**Secondary Education Award** Dr David Boyce (Uppingham School, Uppingham)

**Higher Education Award** Dr Ravindra T Desai (Imperial College, London)

**Award for Service in Astronomy** Charles Barclay

**Winton Award (Astronomy)** Dr Alexandra Amon (University of Cambridge)

**Winton Award (Geophysics)** Dr Ravindra T Desai (Imperial College, London)

**Fowler Award (Astronomy)** Dr Christopher Berry (University of Glasgow)

**Fowler Award (Geophysics)** Dr Oliver Allanson (University of Exeter)  
Group Achievement Award (Astronomy)  
The MeerKAT team

**James Dungey Lecture** Prof Marina Galand (Imperial College, London, UK)

**George Darwin Lecture** Dr Dominic Bowman (KU Leuven, the Netherlands)

**Honorary Fellows** Prof Erik Høg (Niels Bohr Institute, Copenhagen, Denmark);  
Dr Premana Premadi (Director of the Bosscha Observatory and Bandung Institute of Technology, Indonesia);  
Dr Rita Sambruna (NASA Goddard Space Flight Center, USA)

## The Caroline Herschel Medal

The Caroline Herschel Medal was awarded to Prof Gillian Wright CBE FRSE, long-standing European Principal Investigator of the Mid-Infrared Instrument (MIRI) on the JWST and director of the UK Astronomy Technology Centre in Edinburgh. Prof Wright, the first UK recipient of the award, received the medal and citation in a ceremony on 13 April 2023 at the residence of the German Ambassador, Miguel Berger.

The new prize was launched in 2021 by the UK Government in honour of former German Chancellor Angela Merkel. It commemorates astronomer Caroline Herschel (1750–1828), who, with her brother William, revised and greatly improved catalogues of stars, clusters and nebulae, and herself discovered eight comets. The medal recognises both her legacy and the deep and enduring scientific links between Germany and the UK. The award recognises outstanding research by women astrophysicists and is awarded in Germany and the UK in alternate years.

## Student Prizes

The RAS awards prizes for the best PhD theses submitted during 2022 in the fields of astronomy and astrophysics (the Michael Penston Prize), geophysics and planetary science (the Keith Runcorn Prize), and instrumentation (the Patricia Tomkins Prize). There is also an annual Patricia Tomkins Prize for undergraduate work in instrumentation.

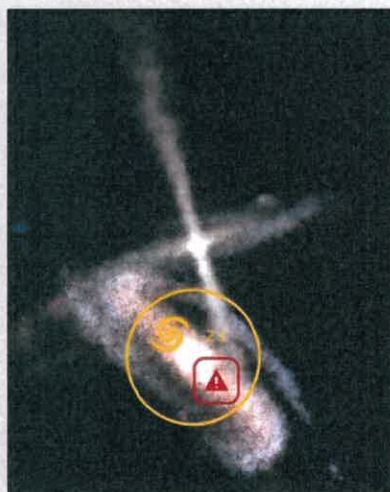
Dr David Hosking (Princeton University, USA) won the Michael Penston Prize for

*Below: Prof Gillian Wright, recipient of the Caroline Herschel Medal (RAS/L. Laird)*



## Undergraduate bursaries

The RAS funds research placements of 6-8 weeks for undergraduates, giving them hands-on experience of research and the necessary technical skills. The 13 projects this year included: mapping the cosmic web using 55 000 galaxies at the University of Nottingham; tracking differences between solar cycles; simulating structure above sunspots; modelling structure within flares; simulating accretion disks around black holes; studying the contribution of women to 17th century astronomical calendars and almanacks; a search for images of a low surface-brightness stellar stream; experimenting with ways to overcome radio frequency interference; measurement of remanent magnetism in rocks from during a possible geomagnetic reversal; the Brazilian branch of the Liverpool Astronomical Society; the role of modest ground-based telescopes in asteroseismology; and composing music for the game *Astera Evolution*, based on the *Astera* galaxy simulation project. Comments from the students focused on the value of practical experience with both astronomical and geophysical data, but also with software and coding – and of their positive experience of the skills needed for the research environment.



*The RAS helped to fund the composition of music for the game Astera Evolution*

his thesis at the University of Oxford: 'The decay of MHD turbulence and the primordial origin of magnetic fields in cosmic voids'. Runners-up were Dr Nora Eisner (University of Oxford) for 'People Powered Planet Hunting with TESS' and Dr Andrew Mummery (also Oxford) for 'Tidal Disruption Events with a Time Dependent Theory of Relativistic Accretion Disks'.

Dr Peter Stephenson (University of Arizona) won the Keith Runcorn Thesis Prize for his Imperial College thesis entitled: 'Origin, evolution and impact of electrons at comet 69P'. Dr James Ward

(University of Leeds) was the runner-up for 'Analysis of Mantle Heterogeneity through Array Observations of Multipathing and its Expansion to a Global Scale'.

Dr Daniel Mortimer (University of Exeter) won the Patricia Tomkins Thesis Prize for his University of Cambridge thesis: 'Designing a beam combiner for faint limiting magnitudes in optical interferometry'.

In addition, the Patricia Tomkins Undergraduate Prize was awarded in 2023. Brad Lewis of Liverpool John Moores University won the award for his work creating a system to characterise atmospheric turbulence close to ground level, for the New Robotic Telescope.

## Library and archives

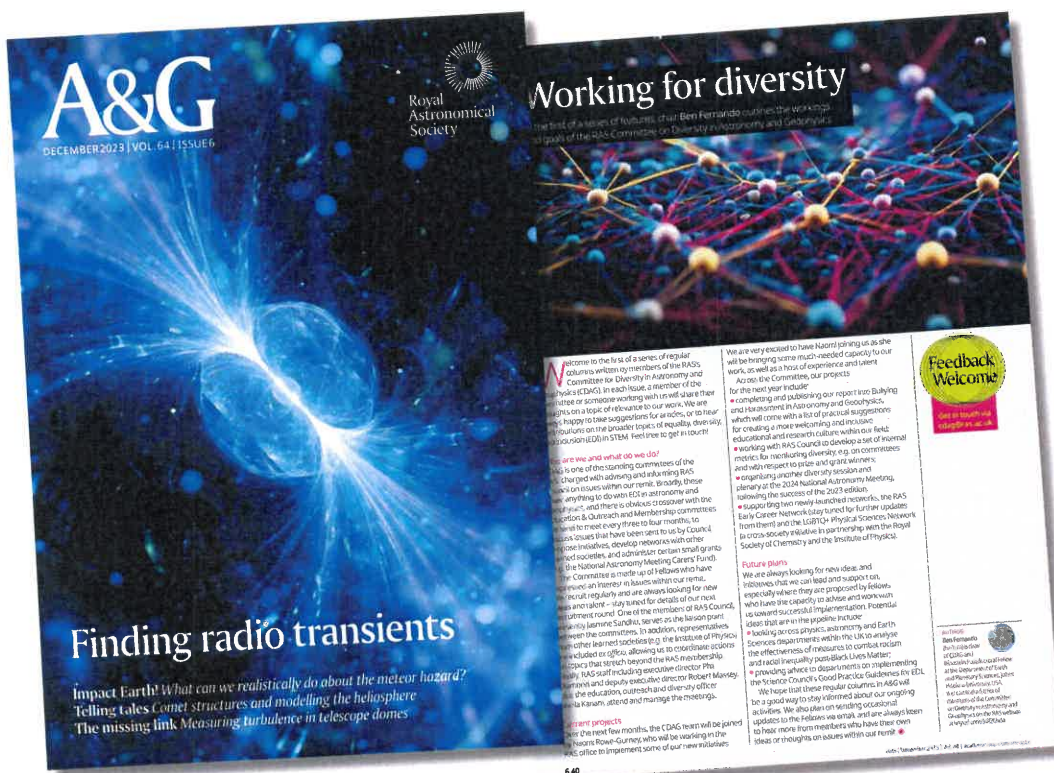
Library research visits to consult the Society's archives, photographs, book and journal collections are back at pre-pandemic levels, with 107 visits by Fellows and Friends of the RAS and 79 by external researchers. Library staff handled 173 research enquiries remotely.

2023 saw the publication of a book chapter on some of the oldest books in the RAS Library collection: Prosser, S (2023). "Chapter 10 An Astronomer's Incunabula: The Library of Edmond Herbert Grove-Hills". In *Spotlights on Incunabula*. Leiden, The Netherlands: Brill. doi.org/10.1163/9789004681378\_012

## Our membership magazine

A&G continued to share news of scientific progress, outreach, achievements and awards – with some 200 news items over the year – and a more in-depth exploration of current research with 42 longer feature articles, including reports from RAS Specialist Discussion Meetings and the National Astronomy Meeting in Cardiff. A total of 174,364 downloads demonstrates the widespread online engagement





**WE WERE DELIGHTED TO HAVE AN ARTICLE FROM OUR OLDEST AUTHOR... SO FAR!**

with the magazine. Highlights include an in-depth exploration of Betelgeuse, a star that has been especially variable of late, a taste of the exploration of Mercury by the Bepi-Colombo mission from our outgoing president, and discussion of the transition of all our journals to Open Access publishing. We were also delighted to have an article from our oldest author so far: in 2023 Prof Francis Graham-Smith celebrated his 100th birthday and gave A&G his account of pulsar science, from the first detections through to current observations and the future. It's a treat to hear from someone whose career has been at the centre of things and whose interests remain current. That his overview sat alongside an appeal to ensure better monitoring of the pulsars and other radio transients that will be discovered by the next generation of radio telescopes gives a snapshot of the breadth of research interests among the RAS Fellowship. Last but not least, the Editor thanks Fellows for their readiness to write for the magazine and share their work across the Society; the whole RAS network benefits.

## Political engagement

The Society continues its work in public policy, initially addressing the delayed association to Horizon Europe, which eventually took place in September. We welcomed the agreement, which meant that UK research groups could apply for European Research Fund support from January 2024.

The Society submitted written evidence to the House of Lords Science and Technology Committee inquiry into Light Pollution and Human Health and to the Commons Science and Technology Committee inquiry into UK Astronomy.

Light pollution continued to be an area of concern. The Society gave evidence to a Greater London Assembly Environment Committee inquiring into light and noise pollution. The Mayor of London later refused planning permission for the MSG Sphere, a large and internally illuminated dome-shaped entertainment venue in the Olympic Park area.

The Society provides the secretariat for the All-Party Parliamentary Group for Dark Skies, and hosted a meeting

in October with specialists from Buglife and the University of Plymouth (covering the impact of light pollution on marine life). At the instigation of the RAS, group members wrote to ministers regarding protection of dark skies in planning policy and supported an Early Day Motion on International Dark Sky Week. The co-chair (Sir Peter Bottomley MP) also wrote on our behalf to Steve Reed MP, the new Shadow Secretary of State for the Department of Environment, Food and Rural Affairs. In January the Society convened a one-day conference with the UK Space Agency on this topic, with speakers from the Agency, the Department for Science, Innovation and Technology, OneWeb, OfCom and CPRE.

The RAS continues as a contributing member of the International Astronomical Union Centre for the Protection of the Dark and Quiet Sky from Satellite Constellation Interference, with representation in its Policy Hub. Working with the IAU, we successfully lobbied the UK delegation to the G7 Science and Technology Minister's summit in Sendai to endorse a statement that recognised space sustainability including dark and quiet skies. In July the Society assisted with the drafting of and signed the Memorandum of Principles for the new Earth Space Sustainability Initiative.

## Diversity

A working group was formed in order to create actions and recommendations based on the report and data collected in 2021 on Bullying and harassment in astronomy and geophysics. A report including actions and recommendations is in preparation.

A new Chair was appointed to the RAS Committee on Diversity in Astronomy and Geophysics and a part-time Equality, Diversity and Inclusion support officer has

## TRAINING FOR RAS STAFF IN 2023 INCLUDED BRITISH SIGN LANGUAGE AND DEAF AWARENESS

been contracted. The Chair will share the committee's work with Fellows through regular reports in A&G.

Training for RAS staff in 2023 included British Sign Language and deaf awareness; staff have also given allyship training for the Science and Technology Facilities Council and Lancaster University, and diversity talks for ESTEC, ESA and MIST.

The RAS is once again working with the Institute of Physics and the Royal Society of Chemistry to support LGBT+ scientists. The Society is also now a member of the Business Disability Forum and the Forum for the Tackling of Bullying and Harassment.

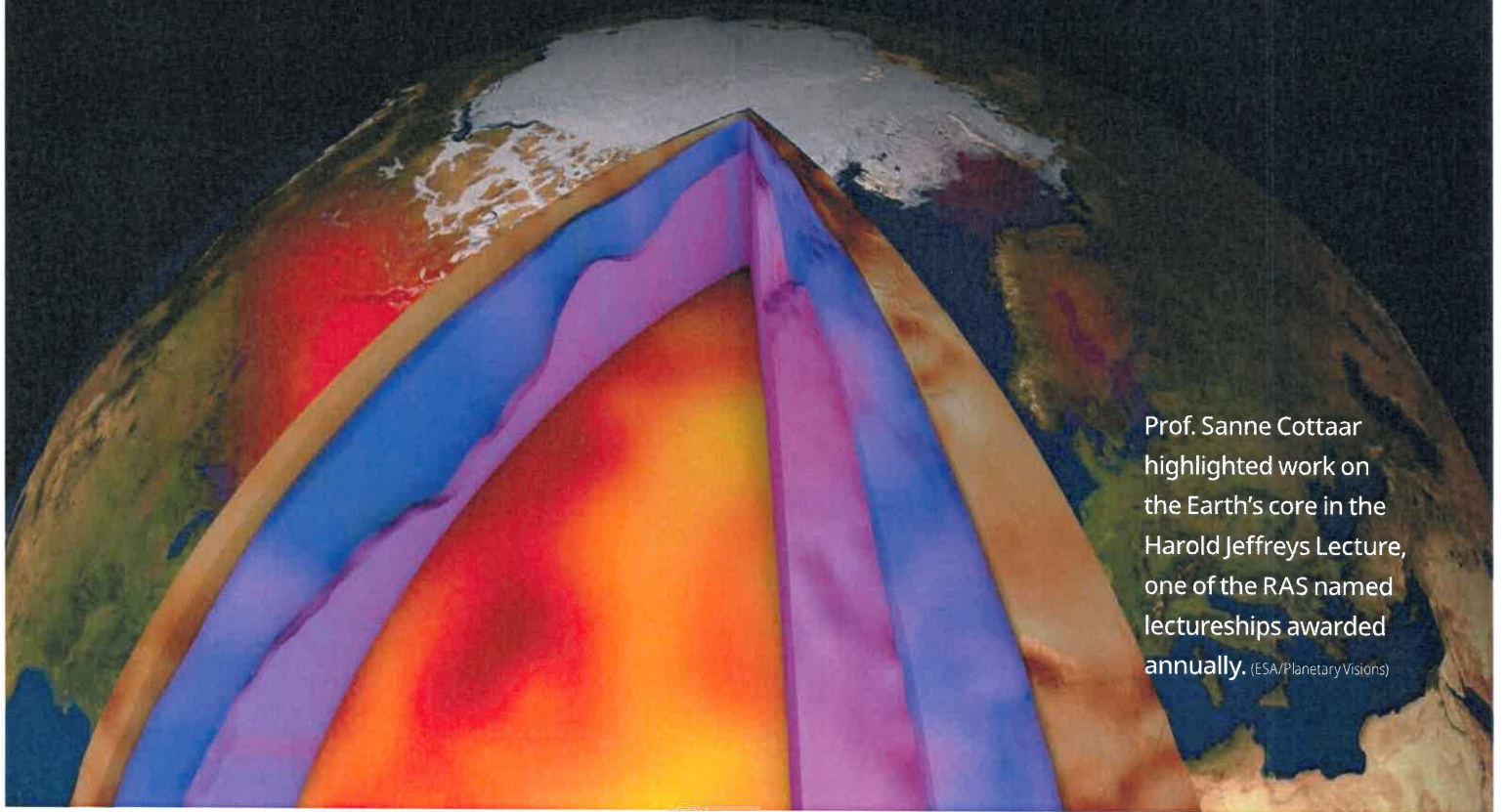
## Early Career Network

At the National Astronomy Meeting in Cardiff, the Early Career Network Committee organised a career panel, exploring the different opportunities open to those starting out on careers in astronomy and geophysics. Exemplifying academic career paths, two of the panellists were Rebecca Bowler, at the University of Manchester, and Tana Joseph, at the University of Amsterdam. From industry were Tim Waskett, who does statistical research for Liverpool FC, and David Nutter of EDF. After all of the panellists had introduced themselves, there was a question-and-answer session, allowing attendees to seek the panel's advice on the course of their careers.

For many early-career researchers who started during the pandemic, there have been limited opportunities to meet others in their position, and to forge the connections which will sustain them throughout their careers. For that reason, also at NAM, the Committee hosted a networking lunch, which enabled ECRs to establish new relationships, and successfully elicited many questions and much discussion.



# Sharing Knowledge



Prof. Sanne Cottaar highlighted work on the Earth's core in the Harold Jeffreys Lecture, one of the RAS named lectureships awarded annually. (ESA/Planetary Visions)



## Education and outreach events

The RASreach event for science communicators took place at Glasgow Science Centre early in 2023 with 60 people attending in person and more than 300 taking part online. RAS staff delivered Connecting the Dots constellation workshops to mark British Science Week, for the Courtyard Societies' Coronation Late event on the eve of the King's coronation in May, during the Open House event in September and in partnership with West Yorkshire Astronomy Society in November; more than 200 people built electrical circuits – initially inspired by the theme of British Science Week – that lit up constellations depicted in Urania's Mirror, a gem from the RAS archives.

School visits continued, with more than 1000 children participating in assemblies about space across primary schools, and approximately 100 participating in workshops about space and careers in secondary schools. In addition, a World Space Week primary event took place in Blackburn with an assembly for 300 secondary school students and an

## The Society disseminates knowledge to students, the press and the wider public by:

- Organising education and outreach events
- Arranging a programme of Public Lectures
- Exploiting the resources of the Library and Archives
- Promoting research in the media and social media
- Supporting the Friends of the RAS
- Working with specialist partners through RAS200
- Working with the Courtyard Societies as a cultural hub



**Above:** An RAS Public Lecture considered what JWST is telling us about the solar system. This is a JWST image of Europa (NASA, ESA, K. Sahu (STScI))

online session with 40 children at a school in Ghana, Africa. Staff are teaching GCSE Astronomy in schools in London and northwest England, with 30 students planning to take the exam in 2024.

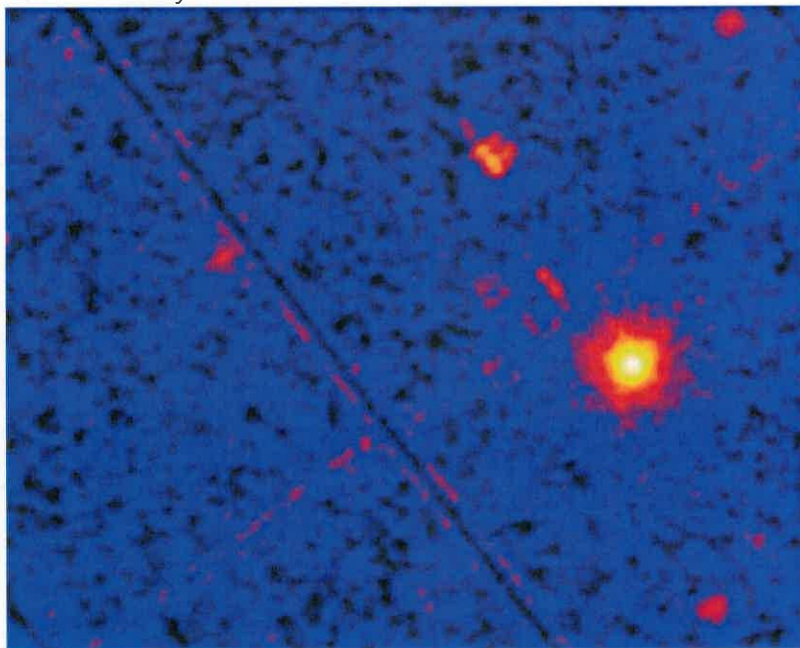
A day-long livestream in partnership with Northumbria University and the University of Leicester proved to be so successful that the same team ran another session a few days later, to include the most-up-to-date observations. During 'Eyeing the Ionosphere', the team of researchers shared their live observations as NASA's Juno spacecraft passed behind Jupiter, and their observations of Jupiter with the JWST. 150 people joined the livestream over two days and there have been more than 1000 views on the RAS YouTube channel.

RAS staff supported education and outreach events associated with the National Astronomy Meeting in Cardiff, including the Celebration Space Community event and the Astro Pop-up stall in St David's Dewi Sant shopping centre, with activities and a Space Quest scavenger hunt for 12 space posters.

The RAS has also initiated a partnership programme with STEM Ambassadors to recognise the outreach undertaken by our members. Almost 300 Fellows are now registered with us as STEM Ambassadors.

## Public lectures

The Society presented seven public lectures during 2023, offering in-person and online options and moving through



**Above:** Powerful X-ray emission was discovered from quasar J1144 by researchers combining data from four space-based observatories, and reporting their results in Monthly Notices of the Royal Astronomical Society. (ESA/XMM-Newton/Dr Elias Kammoun)



the year back to lunchtime and evening presentations. 1313 people attended in total; 26% in person and 74% online. The public lectures have so far been viewed more than 4000 times on the RAS YouTube channel.

**Mark Wrigley** Education and disruption: outreach, telescopes, tinkering and gumption.

**Jennifer G A Donohue** Rebooting and hacking space ageing in exploration using the 'Space Age Pathways'.

**Dr Alexandra Amon** Unveiling the dark universe with the Dark Energy Survey (Caroline Herschel Prize Lecture).

**Dr Robert Massey** A cluttered and noisy sky

**Dr Iris van Zelst** Venus: cloudy with a chance of earthquakes

**Prof Haley Gomez** Ashes to ashes, dust to dust: a search for the stolen starlight

**Dr Naomi Rowe-Gurney** Our solar system from JWST: The first two years

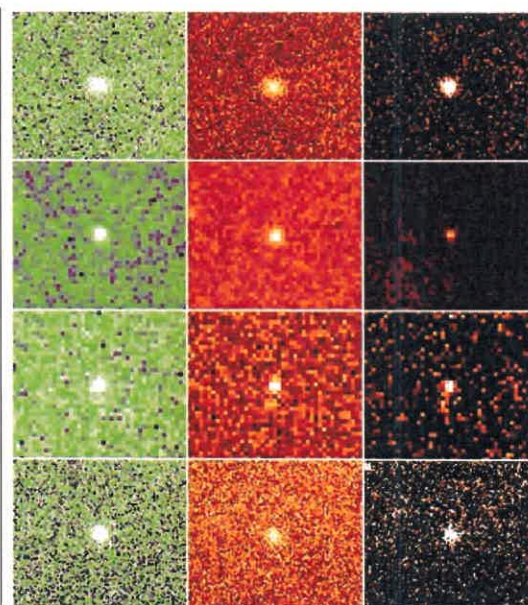
### John Brown Memorial Lecture

The Society held the inaugural John Brown Memorial Lecture, hosted by the University of Glasgow, celebrating the life and work of Astronomer Royal for Scotland, Prof John Brown. Prof Randall Stevenson of the University of Edinburgh spoke on 'Celestial visitants – comets and culture in the 19th century and beyond', focusing on the extraordinary number of striking comets and their impact in wider culture, including the writings of Thomas Hardy. Poet Rab Wilson, co-author with Brown of the book 'Our Big Braw Cosmos' also addressed the audience of colleagues, friends and family of the late professor.

### Library and Archive outreach

This year we returned to the single-day format for the annual Open House event. On Saturday 16 September, Burlington House was open to the public with four

**Right:** Surprisingly red Neptunian Trojans were the subject of an RAS press release in March, based on research published in Monthly Notices of the Royal Astronomical Society. (Dr Bryce Bolin)



children's 'Connecting the Dots' activity sessions, and 11 tours attended by 267 people. We had more visitors in one day than during the nine-day series of events that took place in 2022. Spectrum Drama actors playing the roles of Caroline Herschel and Isaac Newton were complemented by special library displays, the RAS bicentenary quilt, and tours led by RAS staff and Open House volunteers. A replica of the Pearson Orrery made by Peter Rigby and recently donated by him to the RAS was on display.

### Funding school astronomy in rural India

RAS grant funding supported astronomy in schools in rural East Rukum, India. Astronomy workshops and an observing session in October 2023 took 'astro-kits' to students from 12 local schools. Local communities were also involved. The team led from Pokhara Astronomical Society demonstrated the use of clinometers, sundials, star wheels and star clocks in the astro-kits,

and distributed telescopes to all the schools involved. They trained teachers and some of the students to use the telescopes and left each school with a video tutorial and more astro-kit equipment. The team reached 2000 people – aged between 13 and 50 – from varied geographical and ethnic backgrounds, 100% of whom were excited about having a telescope in their local school.



We hosted a further 416 visitors during 13 group visits and other library-centred events, ranging from Open Age and RAS200 project partners, to children and families taking part in British Science Week and the Coronation Courtyard Late in May. As in previous years, displays of archive and rare book materials suggested by Fellows and visiting speakers were put together to complement public lectures, Specialist Discussion Meetings, A&G Highlights talks and other scientific conferences.

Library and archive-related events which took place offsite included exhibiting a letter by Georges Lemaître during a lecture by Thomas Hertog at the Royal Institution, and displaying the RAS Bicentenary Quilt at the Royal Society's

*Above: For Open House 2023, staff (with Caroline Herschel and Isaac Newton from Spectrum Drama) welcomed visitors to Burlington House with children's activities, Library displays and the RAS Bicentenary Quilt. (RAS)*

Space Late. Lectures on the Herschel archives were delivered to astronomical societies in Milton Keynes and Luton, and online to the Open University Space Society.

The team behind the popular 'Objectivity' YouTube channel returned to make additional videos about interesting objects in the RAS collections. Videos released so far this year feature John Russell's Selenographia and pastel drawings of the Moon, works by Galileo Galilei, and the RAS Bicentenary Quilt (the full playlist is available here: [tinyurl.com/3cea6um5](https://tinyurl.com/3cea6um5))

We provided a live display of relevant library and archive material to support 'Eyeing the Ionosphere': a six-hour observation of Jupiter using Juno and



JWST. We included some of the earliest drawings of the Great Red Spot, and diagrams of Jupiter and its four brightest satellites in Galileo Galilei's *Sidereus Nuncius* ([tinyurl.com/y7rrypcv](https://tinyurl.com/y7rrypcv)). There were 275 attendees during the livestream, and the YouTube recording has been seen over 500 times so far.

## RAS200

The bicentenary outreach project RAS200: Sky & Earth concluded in February with a meeting for all our partners followed by a reception at the Royal Institution in London. The final evaluation report from Jenesys gave an idea of the reach of the project: some 220,000 people had a direct engagement with astronomy and geophysics through these 12 projects. That figure includes those attending an event, workshop or presentation, as well as those staff of our partner organisations trained to deliver information about our sciences, and those watching events online. The audience included those already interested in our subjects, and those with no prior knowledge or interest. And the partner organisations the RAS worked with meant that we engaged with isolated adults, carers, prison inmates, refugees, and young people outside formal education, among others.

The success of the partnership model used in RAS200 and, especially, the value of systematic evaluation of the impact of different aspects of outreach through the different programmes, has been a benefit of the project for the RAS. Future outreach activities will use a similar approach, making the most of our resources.

## RAS in the media

In 2023 the Society issued 37 press releases comprising papers published in *Monthly Notices of the Royal Astronomical Society* (MNRAS), scientific presentations at

## Sharing STEM enthusiasm through astronomy

The RAS supported STEM education in South Africa through grant funding for the MPASS Summer School for high school students in STEM and astronomy, based at Magwagwaza High School in Acornhoek, South Africa. This 3-week school in which students learnt maths physics and chemistry included an introduction to astronomy

from university students who were themselves graduates of MPASS summer schools in the past. The grant supported catering and supplies for students and tutors, and tutors' stipends, making the event possible. Students reported that they felt more positive about STEM in general, and astronomy in particular, after the school.

the National Astronomy Meeting (NAM) in Cardiff, and announcements such as our awards and medals.

The releases with the highest impact included the NAM stories on ancient stars in the heart of the Milky Way, solar shooting stars, sandwich planets and a black hole 'switch on'. NAM releases alone resulted in at least 296 media articles and interviews. MNRAS releases on the discovery of an ultramassive black hole in March, the "largest cosmic explosion ever seen" in a paper in May, and the largest ever cosmological computer simulation in October were among the more successful this year. These resulted in more than 180 media articles.

Stories related to our press releases and events appeared in national and local

**Below:** Online workshops for Fellows registered as STEM Ambassadors offered support to our members



newspapers and news outlets, radio and TV broadcasts, such as the *Daily Mail*, *Telegraph*, *Guardian*, *Daily Star*, *Sky*, *BBC*, *ITN*, *Metro*, *space.com*, *IfL Science*, *Forbes*, *Astronomy Now*, *Sky at Night* and *CNN*.

RAS staff and trustees gave 25 radio and TV interviews over the course of the year, with at least one syndicated to an estimated 400 local radio stations.

The RAS has accounts on the social media platforms Facebook, LinkedIn, Instagram, Bluesky, Threads, Mastodon (on the Astrodon server) and X. By the end of 2023 we had 13800 followers on LinkedIn, around 11800 in Instagram, 54200 on X and 18500 on Facebook. We have some, but far fewer, followers on the newer social media channels.

Social media engagement sometimes but not always aligns with interest from media outlets. For example, in 2023 an X post on the largest black hole was retweeted 146 times, while on the same platform the announcement of our journals' move to Open Access publishing gathered 240000 impressions, but no conventional media coverage. The countries with the largest numbers of our followers on Facebook and Instagram are the UK itself, the United States, India and Brazil.

## The RAS podcast

The Supermassive podcast enjoyed continued success, with the number of listens reaching 1.25 million by the autumn. Nearly 40% of its listeners are women, and it has a fairly even distribution of listeners by age, peaking between 35 and 44 years old. More than a fifth of listeners are older than 65 years old, and almost all listeners stay with the podcast from start to finish.

## Friends of the RAS

The Friends of the RAS had a full programme of lectures this year.

**NEARLY  
40% OF  
THE SUPER-  
MASSIVE  
PODCAST'S  
LISTENERS  
ARE WOMEN**

**Sean McMahon** False biosignatures on Mars?

**Ian Robson** The Pluto story

**Gavin Dalton** WEAVE – the WHT's new widefield spectroscopy facility

**Lauren Rhodes** Radio transients: studying the most powerful explosions in the universe.

**Nicolas Laporte** The quest for Cosmic Dawn: new insights from the JWST

**Emma Chapman** First stars and sensationalism: Early universe research in the James Webb Space Telescope era

**Ziri Younsi** Peering at the edge of space and time

**Tim Horbury** The Sun up close; results from the Solar Orbiter mission

**Cyrielle Opitom** DART – a great success for NASA's first planetary defence mission.

## Burlington House Courtyard Societies

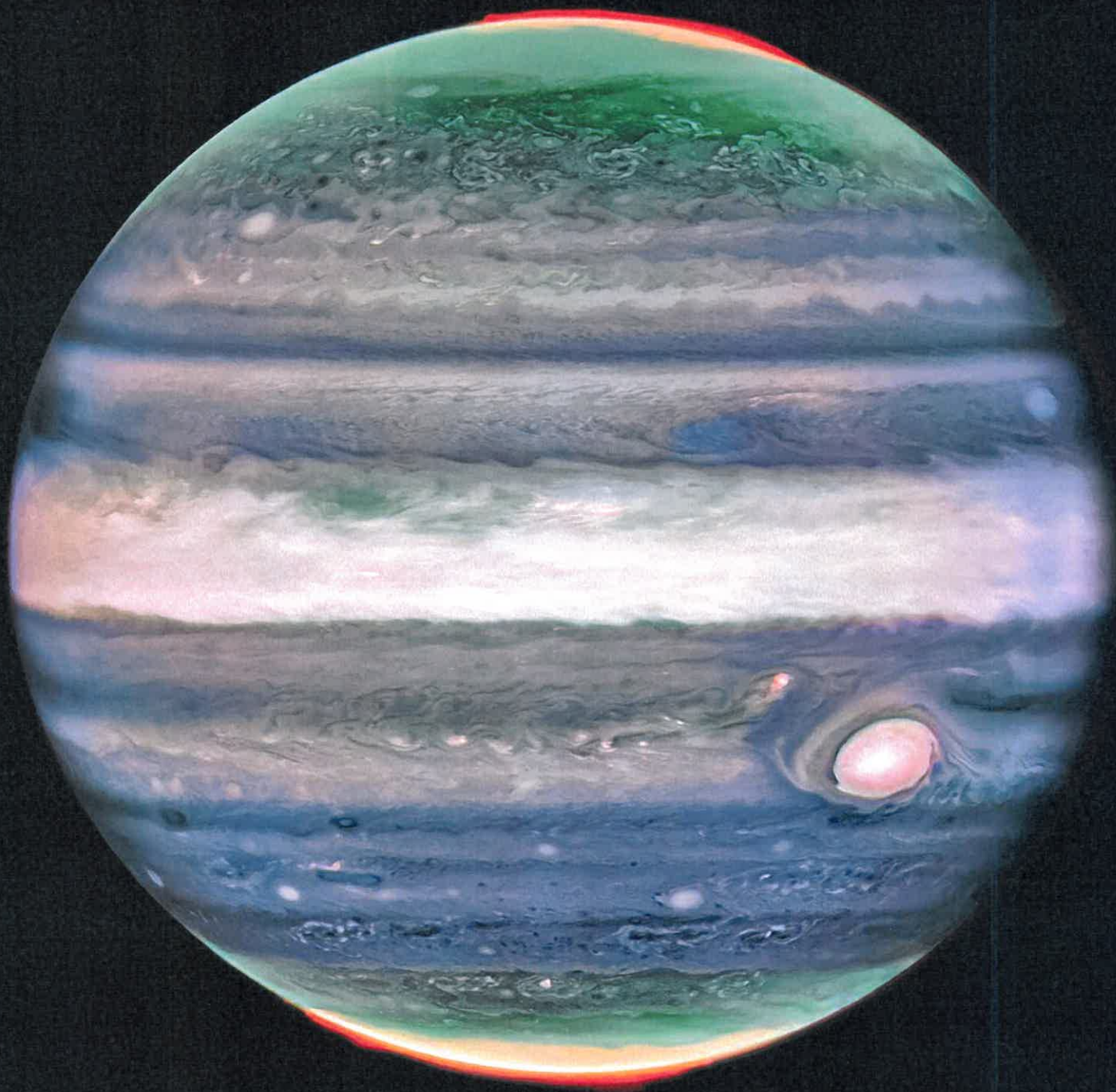
The RAS joined other courtyard societies for several events this year. With other Courtyard Societies, we took part in the Courtyard Coronation Late event on the eve of the King's Coronation, offering a crown themed Connecting the Dots session and tours of the Library. We also joined other Courtyard Societies at the annual Open House event on Saturday 16 September, offering children's 'Connecting the Dots' activity sessions, tours and special library displays.

*Below: Connecting the Dots, a new children's activity developed for British Science Week; 150 people made light-up constellation cards based on archive materials.*





# Our Organisation



Jupiter, as seen by the JWST's NIRCam, featured in an education and outreach livestream (NASA, ESA,

CSA, STScI, R. Hueso, I. de Pater, T. Fouchet, L. Fletcher, M. Wong, Joseph DePasquale)

## Membership

In 2023 the RAS had 4282 Fellows, 157 of whom were Honorary Fellows; 20% were female, and 78% male and under 2% of Fellows did not specify. 33% were aged 65 and over and 6% were 25 and under. Most Fellows, 75%, lived in the UK, with 9% based in Europe and 16% in the rest of the world.

## Our objectives

The organisation of the RAS supported our objectives during 2023 by:

Developing an overarching strategy for the next five years, together with identifying five key areas for development.

## Our strategy

We will continue our current valuable activities:

- Providing a **learned and professional membership Society**
- Holding regular **scientific meetings**
- **Publishing**, in journals and more widely
- Giving **policy advice** to government
- Awarding **grants and medals**
- Providing **education and outreach** activities
- Curating **our heritage**.

In addition we will develop these areas:

- Meeting the needs of **our members** and improving how we communicate with them.
- Providing **inspirational** programmes in astronomy and geophysics **education and outreach**
- Achieving **maximum impact from the library**, archive and object collections.
- Publishing **high quality research**, accessible to all
- Exploring and nurturing **partnerships for collaboration and influence**.

## Our actions

During 2023, the Society began to implement the Strategy throughout its activities. The President sought and received input from Fellows on the development of the RAS Strategy at the National Astronomy Meeting.

We took action to further support and develop the Early Career Network.

In order for the RAS to nurture, support and improve diversity and inclusivity within its core community,

the Committee on Diversity in Astronomy and Geophysics agreed a new Chair, Dr Ben Fernando, and the society contracted an additional staff member to support the Committee's

work. The RAS also carried out a survey of the demographics and research interests of the UK astronomy and geophysics communities, seeking input over the period from spring to autumn of 2023.

We have put in place plans to increase the impact, reach and focus of our public engagement activities by prioritising events targeted at under-served communities.

The RAS now encourages Fellows working in outreach to register as STEM Ambassadors and has run online events to support them.

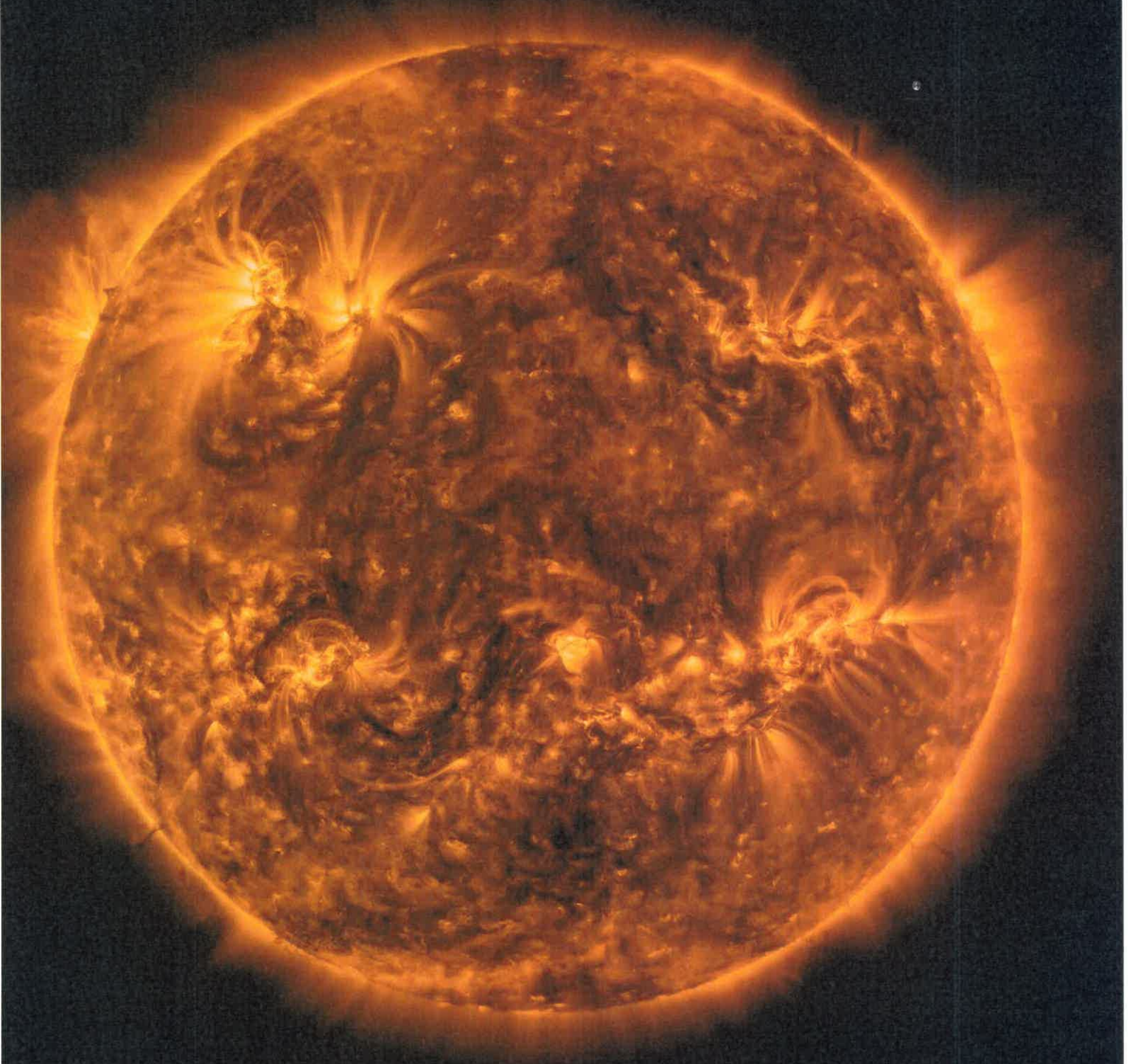
We have been exploring how to achieve maximum impact from the library, archive and object collections, within available resources, considering the best approaches to digitisation of our collections and catalogues.

At the 2023 AGM we agreed a number of resolutions to update our subscriptions policies.

**WE PLAN TO INCREASE THE REACH OF OUR ACTIVITIES BY PRIORITISING EVENTS TARGETED AT UNDER-SERVED COMMUNITIES**



# Looking Forward



ESA's Solar Orbiter produced a wealth of information,  
shared in RAS meetings and at a Friends of the RAS  
Lecture. (ESA & NASA/Solar Orbiter/EUI team; Data processing: E. Kraaikamp (ROB))



## Objectives for 2024

The Society will:

- publish high-quality peer-reviewed journals;
- support students and early-career scientists through research fellowships and grants;
- recognise achievement through medals and prizes;
- maintain high-quality research meetings, including the National Astronomy Meeting, and Public Lectures;
- sustain our Library and Archive service;
- continue our political engagement;
- maintain our programme of education and outreach activity, including Friends of the RAS;
- promote the work of the Society and Fellows in the media and on social media;
- build our outreach work with other Courtyard Societies.

In addition, in 2024 and following years, the Society will:

- Publish its strategy
- Take action to develop the five key areas identified in the strategy

## Events since the year end

### Sealing our future at Burlington House

In March 2024, after protracted negotiations, the RAS President signed an agreement that secures our occupation of Burlington House on a 999-year lease. With the agreement comes stability, but also new responsibilities, including the upkeep of the building, and future activities including enhanced outreach for the Society itself and with our neighbours.



*Above: Dr Linda Tacconi, recipient of the Caroline Herschel Medal, 2024*

### Caroline Herschel Medal 2024

The Caroline Herschel Medal celebrating an outstanding woman astrophysicist has been awarded to Dr Linda Tacconi, of the Max Planck Institute for Extraterrestrial Physics (MPE) in Garching, Germany.

### *The Life Scientific*

Burlington House was the setting for an episode of the Radio 4 programme featuring our President, Prof Mike Edmunds, and an audience of guests. Presenter (and physicist) Jim Al-Khalili joined the President and guests at a reception after the recording.

*Below: An agreement has been reached to make Burlington House the home of the RAS for the next six neptunian years*





# Structure and Governance

A circular diagram representing the structure and governance of the RAS. It features a central hub with many lines radiating outwards to various departments and committees. The diagram is composed of concentric circles of nodes and connecting lines, with a central hub and many lines radiating outwards. The nodes are represented by small circles, and the lines are thin and grey. The diagram is set against a dark background with a grid of yellow squares.

The Friends of the RAS learnt more about the William Herschel Telescope's new wide-field spectroscopy instrument: WEAVE (Gavin Dalton)



The Royal Astronomical Society was founded in 1820 and is incorporated by Royal Charter and managed according to byelaws that were revised at the Annual General Meeting in 2015. The objectives, charters and byelaws are detailed on the Society's website [ras.ac.uk](http://ras.ac.uk).

The control of the Society rests with the General Meeting of Fellows. Subject to that, direction and management are the responsibility of the Council (as the Trustees of the charity). The Council consists of a President, a Treasurer and three Secretaries together with four Vice-Presidents and 12 Councillors. In addition, the President-Elect attends Council for one year prior to taking up the post.

### Trustee recruitment and appointment

Annually, the full membership of the Society is asked to nominate themselves or other members of the Society to available positions on Council.

A nomination must be supported by two other members of the Society. Council approves the ballot list and this together with a narrative on each candidate is sent to the full membership for their consideration prior to casting their votes. We moved to fully electronic voting and an online AGM in 2020 in line with Covid-19 restrictions; we will continue with solely online voting in future. Members of the Council are elected by ballot at the AGM, for the following normal and maximum terms of office, as set out in the byelaws. In summary:

- President, two years
- Vice-Presidents, two years
- Treasurer and Secretaries, five years
- Councillors, three years.

### Trustee induction and training

New members of Council attend a Trustee induction programme before

### Regulations and procedures of the Society:

- Society governance
- Trustee recruitment and appointment
- Trustee induction and training
- Organisational structure
- Risks

their first Council meeting. All members of Council are asked to complete a conflict-of-interest declaration and to sign a Trustee declaration form. Trustees have the opportunity to attend training, where appropriate; for example, on The Governance Code.

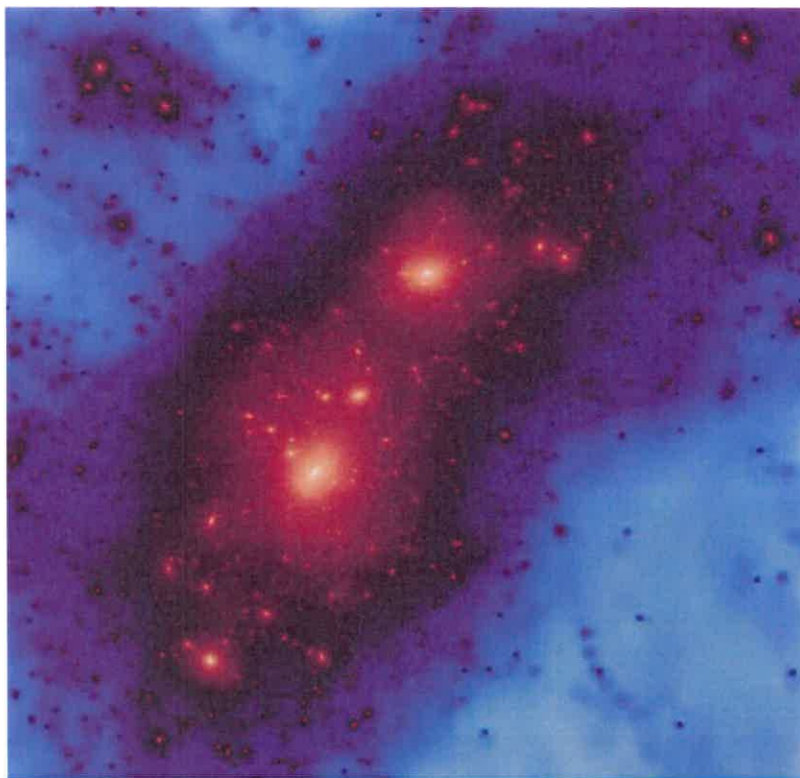
### Fundraising

The Society is not currently fundraising actively, but if it does so in future it will comply with best practice as outlined by the Charity Commission, and also in compliance with GDPR. The Society offers information and guidance about leaving a legacy to the RAS on the website.

### Organisational structure

The RAS Council normally meets six times during the year and its function is to direct, on behalf of the Society, all the affairs and business of the Society. Council appoints standing committees (Publications Management, Editorial [for each journal], Outreach and Education, Finance, Remuneration, International, Membership, Library, Astronomical Heritage, Diversity in Astronomy and Geophysics) and *ad hoc* committees (e.g. Awards) to forward its objectives. It appoints the managing editors and editors of the Society's research journals, *Monthly Notices of the Royal Astronomical Society*, *Geophysical Journal International*, and *RAS Techniques and Instruments*, who provide their services, as does the Treasurer, for an honorarium. The Society has formal associations with a number of organisations having shared interests, and





has less-formal arrangements with several other bodies. These include:

- The British Geophysical Association, jointly sponsored by the RAS and the Geological Society of London to represent solid-Earth geophysicists whose interests fall within the remits of both parent societies
- The Paneth Meteorite Fund that the Society administers under the direction of the Paneth Fund Trustees
- The Society is the UK national member organisation of the International Astronomical Union and the European Astronomical Society and is represented on the UK Panel of the International Union of Radio Science
- The Society is represented on a number of organisations including the Science Council, the Parliamentary and Scientific Committee and the Campaign for Science and Engineering

The Society recognises the appeal of astronomy and geophysics to the general public by offering annual membership to

*Above: Structure formation in the early universe from the large FLAMINGO simulation featured in a press release (Virgo Consortium)*

## RIGOROUS PEER REVIEW IS USED TO MAINTAIN THE QUALITY OF THE THREE JOURNALS

Friends of the RAS for a small fee. Friends' benefits include a series of Friends-only lectures, as well as priority seating for the Society's popular Public Lectures, visits to observatories and science centres, use of the Society's Library, as well as a reduced subscription to the Society's members' magazine *A&G*.

## Risks

The principal risks and uncertainties identified by the Trustees are:

- Maintenance of the quality of, and income from, publications (a significant income stream of >60%) having transitioned to Open Access publishing
- Affordability of the rent and service charges in place in 2023 for the premises at Burlington House; these have changed with the agreement of new lease terms (see note 17 p57).

The Finance Committee regularly reviews the Society's risk register and the Council annually reviews the major risks to which the Society is exposed and the systems that have been established to manage those risks. In regard to the most significant risks:

- The Society insists that rigorous peer review is used to maintain the quality of the three journals and thereby the demand by authors and readers for the highly successful publications and, with the publishers, ensures that it adopts a robust business model for production and sales.
- Maintenance of the (listed) premises is ensured by regular repair and refurbishment.

Other key risks identified and their mitigation measures include:

- Maintenance of the size of the membership (by regular review of services and subscriptions and

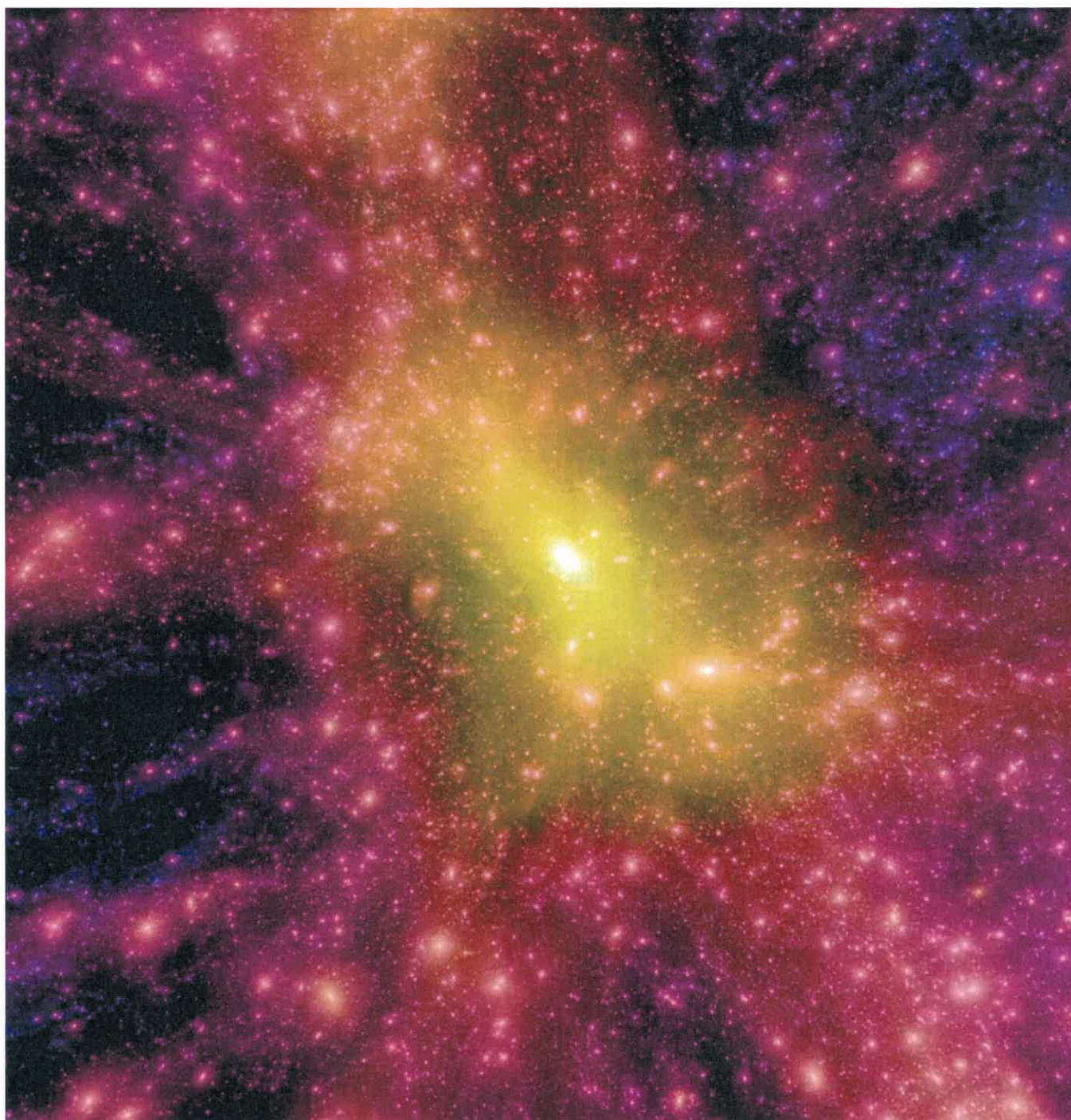
outreach activities to potential new members)

- The implementation of a broad range of statutory regulation, for example GDPR (using expert external assistance where necessary).

The Trustees consider the fluctuations in investment fund values and variability of investment returns to be a risk for the Society. The fund, Newton Growth and Income Fund for Charities, is actively and

expertly managed and administered by Newton Investment Management who were reappointed after a competitive tender. Funds are invested in a diverse portfolio comprising mainly equities and bonds. This managed strategy mitigates fluctuations in fund values and seeks opportunities for fund growth and income. The Trustees consider this approach mitigates the subsequent exposure to any investment risk.

**Below:** Results of the large Flamingo cosmological simulation were published in Monthly Notices of the Royal Astronomical Society (Dr Stuart McAlpine)





# Financial Statements



NGC 1365 – great barred spiral in Fornax –  
images by the Dark Energy Survey, whose  
work to understand the dark universe was  
described in a public lecture (DES Collaboration)

## FINANCIAL REVIEW

The Society's total funds increased from £23,477,081 to £25,823,874 during the year, both figures including a large contribution from the Society's heritage assets (rare books, clocks, telescopes and fine art) which totalled £9,470,879 (2022 – £9,470,879). Income increased to £7,082,695 (2022 – £5,280,990) due to increased income from publishing and investments. Publishing income increased by £1,631,120, significantly increased by the renewal of the contract with Oxford University Press. The Society's expenditure increased to £5,276,132 (2022 – £4,733,200) which is mainly due to a full return to pre Covid-19 activities.

### Policy on reserves

The reserves policy aims to maintain adequate financial cover for the main risks to the Society and provide in the normal way for an efficient winding-up if that ever became necessary. Working cash reserves are maintained so the Society does not rely on realisation of investments gains, or capital invested. The total funds amounted to £25,823,874 of which £9,470,879 are held in heritage assets, leaving funds of £16,352,995 (2022 – £14,006,202) to cover the main risks and the operational needs of a going concern. The requirement for significant reserves falls into two areas:

- The need to have contingency plans in place to maintain publication income now that, from 2024, the two main journals, *Monthly Notices of the Royal Astronomical Society* and *Geophysical Journal International*, are fully Open Access.
- The need to make some provision for substantial increases in the cost of our accommodation. In March 2024 it was agreed, (after a full discussion by the trustees and subject to contract), with the Department for Levelling Up, Housing and

Communities (DLUHC) to purchase a 999 year lease, alongside four other Courtyard Societies, at a peppercorn rent thereby giving greater certainty to the future of the premises but making the Society liable for the costs of backlog maintenance, environmental improvements and greater accessibility.

The Accommodation and Building funds are detailed in note 17, page 57, along with the other Designated funds.

The Open Access Fund and the Burlington House Fund are currently maintained at high levels to support any significant changes to the Society's operations and the General Fund is available to provide further financial support if either of these risks materialise. The General Fund is also available, should it ever be needed, to enable an orderly winding up of the Society. At present the free reserves of the Society, defined as unrestricted, undesignated funds, excluding tangible fixed assets, are £7,659,982 (2022 – £7,028,151) and these would allow operation of the Society for at least 16 months if publishing were continued and expenditure incurred during that period and 42 months if publishing were halted. The trustees are satisfied that the current level of reserves is appropriate given the risks and uncertainties outlined above.

It has been the policy of the Society to fund grant activity from the Research and Grants fund, which is now included in the balance of designated reserves.

### Investment policy

Investments are held with BNY Mellon Charities Fund: Newton Growth and Income Fund for Charities, with the aim of generating capital growth and income over the medium to long term, with actively managed assets held in global equities and fixed income securities. Surplus cash is held in the COIF Charities



Deposit Fund with CCLA Investment Management, which provides a high level of capital security, interest, and liquidity. The Fund has an actively managed diversified portfolio of sterling denominated money market deposits and instruments. Income and gains from these investments contribute to fund the Society's charitable activities. Investment performance is monitored by the accountant, treasurer, finance committee and Council.

The trustees, by resolution, adopted a total returns approach to the invested endowment funds in accordance with the requirements of the Charity Commission believing that this approach is in the best interests of the Society. The fund reconciliation is disclosed in note 12. This approach was applied from 1 January 2015 when the value of the endowment funds at that date of £1,652,682 was used as a proxy for the original value of the endowment funds. In adopting this policy, permanent endowment funds will not be permitted to fall below the original value of £1,652,682. The trustees aim to maintain the real value of the permanent endowment as a measure against the movements in the retail prices index. This was 5.2% for the year (2022 – 13.50%). No transfers to the restricted funds were made during the year, (2022 – nil).

### **Grant making policy**

The RAS has for many years provided small grants to support the community in activities not funded by the research councils. Primarily these have been awarded to help students at the start of their careers, either with funding for summer bursaries enabling them to experience working in a research environment while still an undergraduate, or to enable PhD students to present work at research conferences. The RAS has also supported scientific meetings in the UK, especially those held outside London. These broad categories of support have

been discussed many times at Council and serve the purpose of encouraging entrants to the profession and extending the activities of the Society to members and the public outside London.

In addition to these grants to individuals the Society funds a series of fellowships to promote the careers of the highest quality young postdoctoral scientists. These currently include RAS Fellowships (on any subject) and the Norman Lockyer Fellowship (on an astronomical topic, including solar system and planetary science). The Norman Lockyer Fellow is funded from an endowment fund set up for that purpose.

A further activity funded by the Society is the award of medals to recognise the highest quality work in various categories. These awards are proposed to Council by a separate awards panel and no awards are made to serving councillors.

The grants, fellowships and awards are funded from several sources including the restricted and endowment funds invested with Newton Investment Management. The income and gains from these investments and interest from the CCLA COIF Charities Deposit Fund, are used to support the grants expenditure in accordance with the bequests.

The grants panel deliberates twice a year and further grants are awarded by the Education and Outreach Committee. 176 applications were received for the two deadlines in February and in August. Panel members observe strict rules on conflict of interest, taking no part in decisions on grant applications from their home institutions. In addition, it is usual for panel members to absent themselves from discussions on grant applications from scientists with whom they have had recent close contact, such as research students supervised in the past five years.

Information relating to RAS200 can be found on page 21.

## FINANCIAL REVIEW (CONTINUED)

### Key management personnel

The key management personnel of the charity in charge of directing and controlling, running and operating the charity are the trustees, the Executive Director and the Deputy Executive Director; the latter two are employees. They are assisted by the Accountant, a further five managerial level officers and other staff.

Council ensures that the Society carries out a salary comparison exercise every 3-5 years. The comparability study compares the staff salaries to other similar external positions to reassure the trustees that the levels of remuneration are appropriate. The last comparison exercise was carried out in 2023 and the newly created Remuneration Committee started the process of a full review in January 2024.

The Society does not have a performance related pay scheme. The trustees set up the Remuneration Committee to advise on the appropriate level of salary increase in response to the cost of living increases for all staff.

### Pension scheme

The Society's defined benefit pension surplus and its accounting treatment is explained in note 20 of these financial statements. This scheme is closed to new members and has two deferred members only and nine annuitants. The Society operates a defined contribution group personal pension scheme for current staff.

### Legacies and donations

The Society encourages Fellows to include donations to the Society in their wills and receives donations during the year from Fellows and members of the public. During the year the Society received donations of £2,167 (2022 - £4,009) and legacies of £10,000 (2022- £12,324).

### Heritage assets

The Society's collection of rare books, fine art, telescopes and clocks was valued in 2011 at approximately £9.5 million. The Society does not

regard these as assets which can be converted to their cash value, except in the most dire circumstances.

The Society continues to periodically receive donated items. All such donations are gratefully received and appreciated by the Society. Where a valuation is available for additions to the collection, this is reflected in the financial statements. A valuation will always be obtained for additions that are financially material to the whole collection

### Investment performance

The Newton Growth and Income fund for Charities provided a yield of 2.32% and a total return gross of 9.21% in the year. Annual management charges of 0.6% are taken from the capital of the fund. Interest from the COIF Charities Deposit Fund yielded 4.4%. Performance of the fund managers is kept under continual review.

## TRUSTEES' RESPONSIBILITIES IN THE PREPARATION OF FINANCIAL STATEMENTS

The trustees are responsible for preparing the Trustees' report and the financial statements in accordance with applicable law and United Kingdom Accounting Standards (United Kingdom Generally Accepted Accounting Practice).

The law applicable to charities in England and Wales requires the trustees to prepare financial statements for each financial year which give a true and fair view of the state of affairs of the charity and of the income and expenditure of the charity for that period. In preparing these financial statements, the trustees are required to:

- select suitable accounting policies and then apply them consistently;
- observe the methods and principles in Accounting and Reporting by Charities: Statement of Recommended Practice applicable to charities preparing their financial statements in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS 102);
- make judgments and estimates that are reasonable and prudent;
- state whether applicable United Kingdom



Accounting Standards have been followed, subject to any material departures disclosed and explained in the financial statements;

- prepare the financial statements on the going concern basis unless it is inappropriate to presume that the charity will continue in operation.

The trustees are responsible for keeping proper accounting records that disclose with reasonable accuracy at any time the financial position of the charity and enable them to ensure that the financial statements comply with the Charities Act 2011 and the provisions of the Royal Charter and Bye Laws. They are also responsible for safeguarding the assets of the charity and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities. The trustees are responsible for the

maintenance and integrity of the charity and financial information included on the charity's website. The Council of the Society believes that it has carried out these requirements.

## AUDITORS

A resolution to appoint Buzzacott for 2024 will be proposed at the Annual General Meeting.

Approved by the Council and signed on its behalf by:

Prof. Michael G Edmunds

President

Date: 10 May 2024

## INDEPENDENT AUDITOR'S REPORT TO THE TRUSTEES OF ROYAL ASTRONOMICAL SOCIETY

### Opinion

We have audited the financial statements of Royal Astronomical Society (the 'charity') for the year ended 31 December 2023, which comprise the statement of financial activities, the balance sheet, the statement of cash flows, the principal accounting policies and the notes to the financial statements. The financial reporting framework that has been applied in their preparation is applicable law and United Kingdom Accounting Standards, including Financial Reporting Standard 102 'The Financial Reporting Standard applicable in the UK and Republic of Ireland' (United Kingdom Generally Accepted Accounting Practice).

In our opinion, the financial statements:

- give a true and fair view of the state of the charity's affairs as at 31 December 2023 and of its income and expenditure for the year then ended;
- have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice; and
- have been prepared in accordance with the requirements of the Charities Act 2011.

### Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (UK) (ISAs (UK)) and applicable law. Our responsibilities under those standards are further described in the auditor's responsibilities for the audit of the financial statements section of our report. We are independent of the charity in accordance with the ethical requirements that are relevant to our audit of the financial statements in the UK, including the FRC's Ethical Standard, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

### Conclusions relating to going concern

In auditing the financial statements, we have concluded that the trustees' use of the going concern

basis of accounting in the preparation of the financial statements is appropriate.

Based on the work we have performed, we have not identified any material uncertainties relating to events or conditions that, individually or collectively, may cast significant doubt on the charity's ability to continue as a going concern for a period of at least twelve months from when the financial statements are authorised for issue.

Our responsibilities and the responsibilities of the trustees with respect to going concern are described in the relevant sections of this report.

### Other information

The trustees are responsible for the other information. The other information comprises the information included in the annual report and financial statements other than the financial statements and our auditor's report thereon. Our opinion on the financial statements does not cover the other information and we do not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated. If we identify such material inconsistencies or apparent material misstatements, we are required to determine whether there is a material misstatement in the financial statements or a material misstatement of the other information. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact.

We have nothing to report in this regard.

### Matters on which we are required to report by exception

We have nothing to report in respect of the following matters in relation to which the Charities Act 2011 requires us to report to you if, in our opinion:

- the information given in the trustees' annual report is inconsistent in any material respect with the financial statements; or



- sufficient accounting records have not been kept; or
- the financial statements are not in agreement with the accounting records and returns; or
- we have not received all the information and explanations we require for our audit.

## Responsibilities of trustees

As explained more fully in the trustees' responsibilities statement, the trustees are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view, and for such internal control as the trustees determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the trustees are responsible for assessing the charity's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the trustees either intend to liquidate the charity or to cease operations, or have no realistic alternative but to do so.

## Auditor's responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

Irregularities, including fraud, are instances of non-compliance with laws and regulations. We design procedures in line with our responsibilities, outlined above, to detect material misstatements in respect of irregularities, including fraud. The extent to which our procedures are capable of detecting irregularities, including fraud is detailed below.

Our approach to identifying and assessing the risks of material misstatement in respect of irregularities, including fraud and non-compliance with laws and regulations, was as follows:

- the engagement partner ensured that the engagement team collectively had the appropriate competence, capabilities and skills to identify or recognise non-compliance with applicable laws and regulations;
- we identified the laws and regulations applicable to the charity through discussions with management, and from our knowledge and experience of the sector;
- we focused on specific laws and regulations which we considered may have a direct material effect on the financial statements or the operations of the charity, including the Charities Act 2011, data protection legislation, anti-bribery, employment, pensions and health and safety legislation;
- we assessed the extent of compliance with the laws and regulations identified above through making enquiries of management; and
- identified laws and regulations were communicated within the audit team regularly and the team remained alert to instances of non-compliance throughout the audit.

We assessed the susceptibility of the charity's financial statements to material misstatement, including obtaining an understanding of how fraud might occur, by:

- making enquiries of management and those charged with governance as to where they considered there was susceptibility to fraud, their knowledge of actual, suspected and alleged fraud; and
- considering the internal controls in place to mitigate risks of fraud and non-compliance with laws and regulations.

To address the risk of fraud through management bias and override of controls, we:

- performed analytical procedures to identify any unusual or unexpected financial relationships;
- tested journal entries to identify unusual financial transactions;
- tested authorisation controls during substantive testing of expenditure;

---

## INDEPENDENT AUDITOR'S REPORT

- assessed whether judgements and assumptions made were indicative of potential bias; and
- investigated the rationale behind significant or unusual financial transactions.

In response to the risk of irregularities and non-compliance with laws and regulations, we designed procedures which included, but were not limited to:

- agreeing financial statement disclosures to underlying supporting documentation;
- reading the minutes of meetings of those charged with governance; and
- enquiring of management and those charged with governance as to actual and potential litigation and claims.

There are inherent limitations in our audit procedures described above. The more removed that laws and regulations are from financial transactions, the less likely it is that we would become aware of non-compliance. Auditing standards also limit the audit procedures required to identify non-compliance with laws and regulations to enquiry of the trustees and other management and the inspection of regulatory and legal correspondence, if any.

Material misstatements that arise due to fraud can be harder to detect than those that arise from error as they may involve deliberate concealment or collusion.

A further description of our responsibilities for the audit of the financial statements is located on the

Financial Reporting Council's website at [www.frc.org.uk/auditorsresponsibilities](http://www.frc.org.uk/auditorsresponsibilities). This description forms part of our auditor's report.

### Use of our report

This report is made solely to the charity's trustees, as a body, in accordance with section 144 of the Charities Act 2011 and with regulations made under section 154 of that Act. Our audit work has been undertaken so that we might state to the charity's trustees those matters we are required to state to them in an auditor's report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the charity and the charity's trustees as a body, for our audit work, for this report, or for the opinions we have formed.

Buzzacott LLP  
10 May 2024  
Registered Auditor  
130 Wood Street  
London  
EC2V 6DL

Buzzacott LLP is eligible to act as an auditor in terms of section 1212 of the Companies Act 2006



## STATEMENT OF FINANCIAL ACTIVITIES YEAR TO 31 DECEMBER 2023

	Notes	Unrestricted funds £	Restricted funds £	Endowment funds £	2023 Total funds £	2022 Total funds £
<b>Income</b>						
Donations and legacies	1	11,176	991	—	12,167	16,333
Other trading activities		13,181	—	—	13,181	9,309
Investment income	2	299,888	17,905	111,797	429,590	252,030
Charitable activities	3	6,627,757	—	—	6,627,757	5,003,318
<b>Total income</b>		<b>6,952,002</b>	<b>18,896</b>	<b>111,797</b>	<b>7,082,695</b>	<b>5,280,990</b>
<b>Expenditure</b>						
Raising funds		19,615	—	—	19,615	42,313
Charitable activities	5	5,192,332	64,185	—	5,256,517	4,690,887
<b>Total expenditure</b>		<b>5,211,947</b>	<b>64,185</b>	<b>—</b>	<b>5,276,132</b>	<b>4,733,200</b>
<b>Net income (expenditure) before investment gains and losses</b>		<b>1,740,055</b>	<b>(45,289)</b>	<b>111,797</b>	<b>1,806,563</b>	<b>547,790</b>
Net gains (losses) on investments	12	372,759	23,119	144,352	540,230	(717,182)
<b>Net income (expenditure) for the year and net movement in funds</b>		<b>2,112,814</b>	<b>(22,170)</b>	<b>256,149</b>	<b>2,346,793</b>	<b>(169,392)</b>
<b>Reconciliation of funds:</b>						
Total funds brought forward at 1 January 2023		20,494,288	1,058,292	1,924,501	23,477,081	23,646,473
<b>Total funds carried forward at 31 December 2023</b>		<b>22,607,102</b>	<b>1,036,122</b>	<b>2,180,650</b>	<b>25,823,874</b>	<b>23,477,081</b>

All gains and losses for the year are recognised in the above statement. All activities are classed as continuing. The notes on pages 47 to 61 form part of these financial statements.

## STATEMENT OF FINANCIAL ACTIVITIES YEAR TO 31 DECEMBER 2022

	Notes	Unrestricted funds £	Restricted funds £	Endowment funds £	2022 Total funds £
Income					
Donations and legacies	1	13,101	3,232	—	16,333
Other trading activities		9,309	—	—	9,309
Investment income	2	174,271	10,623	67,136	252,030
Charitable activities	3	5,003,318	—	—	5,003,318
Total income		5,199,999	13,855	67,136	5,280,990
Expenditure					
Raising funds		42,313	—	—	42,313
Charitable activities	5	4,687,107	3,780	—	4,690,887
Total expenditure		4,729,420	3,780	—	4,733,200
Net income before investment losses		470,579	10,075	67,136	547,790
Net losses on investments	12	(494,856)	(30,371)	(191,955)	(717,182)
Net expenditure for the year and net movement in funds		(24,277)	(20,296)	(124,819)	(169,392)
Reconciliation of funds:					
Total funds brought forward at 1 January 2022		20,518,565	1,078,588	2,049,320	23,646,473
Total funds carried forward at 31 December 2022		20,494,288	1,058,292	1,924,501	23,477,081

All gains and losses for the year are recognised in the above statement. All activities are classed as continuing. The notes on pages 47 to 61 form part of these financial statements.



## BALANCE SHEET 31 DECEMBER 2023

	Notes	2023 £	2023 £	2022 £	2022 £
<b>Fixed assets</b>					
Tangible assets					
. Heritage assets	11	9,470,879		9,470,879	
. Other assets	11	482,016		570,167	
Investments	12	9,696,013		9,155,783	
			19,648,908		19,196,829
<b>Current assets</b>					
Debtors	13	1,052,260		1,141,492	
Cash at bank and in hand		7,415,452		4,853,609	
		8,467,712		5,995,101	
<b>Creditors:</b> amounts falling due within one year	14	(2,228,747)		(1,643,346)	
<b>Net current assets</b>			6,238,965		4,351,755
<b>Total assets less current liabilities</b>			25,887,873		23,548,584
<b>Creditors:</b> amounts falling due after one year	14		(63,999)		(71,503)
<b>Total net assets</b>			25,823,874		23,477,081
<b>The funds of the charity</b>					
Endowment funds	15	2,180,650			1,924,501
Restricted income funds	16	1,036,122			1,058,292
Unrestricted income funds					
. Designated funds	17	14,870,434		13,385,888	
. General funds		7,736,668		7,108,400	
			22,607,102		20,494,288
			25,823,874		23,477,081

The financial statements were approved by Council on 10 May 2024 and signed on its behalf by

Prof. Michael G Edmunds  
President

The notes on pages 47 to 61 form part of these financial statements

## STATEMENT OF CASH FLOWS YEAR TO 31 DECEMBER 2023

	Notes	2023 £	2022 £
<b>Cash flow from operating activities</b>			
Net cash provided by operating activities	A	<b>2,169,313</b>	191,163
<b>Cash inflow from investing activities</b>			
Dividends and interest from investments		<b>429,590</b>	252,030
Purchase of tangible fixed assets		<b>(37,060)</b>	(36,153)
<b>Net cash provided by investing activities</b>		<b>392,530</b>	215,877
<b>Change in cash and cash equivalents in the year</b>		<b>2,561,843</b>	407,040
<b>Cash and cash equivalents at 1 January 2023</b>	B	<b>4,853,609</b>	4,446,569
<b>Cash and cash equivalents at 31 December 2023</b>	B	<b>7,415,452</b>	4,853,609

## NOTES TO THE STATEMENT OF CASH FLOWS FOR THE YEAR TO 31 DECEMBER 2023

## A Reconciliation of net movement in funds to net cash flow from operating activities

	2023 £	2022 £
<b>Net movement in funds (as per the statement of financial activities)</b>	<b>2,346,793</b>	(169,392)
Adjustments for:		
Depreciation charge	<b>125,211</b>	122,311
Net (gains) losses on investments	<b>(540,230)</b>	717,182
Dividends and interest from investments	<b>(429,590)</b>	(252,030)
Decrease (increase) in debtors	<b>89,232</b>	(28,638)
Increase (decrease) in creditors	<b>577,897</b>	(198,270)
<b>Net cash provided by operating activities</b>	<b>2,169,313</b>	191,163

## B Analysis of cash and cash equivalents

	2023 £	2022 £
<b>Total cash and cash equivalents: Cash at bank and in hand</b>	<b>7,415,452</b>	4,853,609

## C Reconciliation of net funds

	1 January 2023 £	Cash flows £	31 December 2023 £
Cash and cash equivalents	4,853,609	2,561,843	<b>7,415,452</b>



## PRINCIPAL ACCOUNTING POLICIES

The principal accounting policies adopted, judgements and key sources of estimation uncertainty in the preparation of the financial statements are laid out below.

### Basis of preparation

These financial statements have been prepared for the year to 31 December 2023.

The financial statements have been prepared under the historical cost convention with items recognised at cost or transaction value unless otherwise stated in the relevant accounting policies below or the notes to these financial statements.

The financial statements have been prepared in accordance with Accounting and Reporting by Charities: Statement of Recommended Practice applicable to charities preparing their financial statements in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (Charities SORP) the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS 102) and the Charities Act 2011.

The charity constitutes a public benefit entity as defined by FRS 102.

The financial statements are presented in sterling and are rounded to the nearest pound.

### Critical accounting estimates and areas of judgement

Preparation of the financial statements requires the trustees and management to make significant judgements and estimates.

The items in the financial statements where these judgements and estimates have been made include:

- the liability for multi-year grant commitments; and
- the useful economic life of tangible fixed assets.

### Assessment of going concern

The trustees have assessed whether the use of the going concern assumption is appropriate in preparing these financial statements. The trustees have made this assessment in respect of a period of at least one year from the date of approval of these financial statements.

The trustees are fully cognisant of the risks that the Society is carrying such as the uncertainty and

risks of increased costs for the accommodation in Burlington House, the possible risk posed by Open Access and a possible impact on the business model that relies on the publishing income and also of a low probability, albeit high impact risk, that the quality and success of the Society's publications will decrease.

Whilst recognising these risks the trustees are content that the Society has strategies in place to manage them and are of the opinion that the Society has adequate free reserves and therefore sufficient resources to meet its liabilities as they fall due. The Reserves Policy in the Trustees' report provides more detail.

The trustees have also considered the continuing impact of the Russian invasion of Ukraine. The Newton Growth and Income Fund for Charities has little or no exposure to Russian or Ukraine and subsequent interest rate rises during the year increased income significantly from the CCLA COIF Charities Deposit Fund. The Society's publishing activities are world-wide, but there are no editors based in Russia or Ukraine, and Oxford University Press reports the impact on these publishing activities is minimal. Higher energy costs did not materially impact the Society. The trustees have concluded that there are no other material uncertainties related to events or conditions that may cast significant doubt on the ability of the charity to continue as a going concern.

The most significant areas of judgement that affect items in the financial statements are mentioned above and detail provided in the section on risks in the Trustees' report.

### Income recognition

Income is recognised in the period in which the charity has entitlement to the income, the amount of income can be measured reliably and it is probable that the income will be received.

Income comprises donations, investment income, income from the sale of publications, membership subscriptions, and other related income.

Donations, are recognised when the charity has confirmation of both the amount and settlement date. In the event of donations pledged but not received, the amount is accrued for where the

receipt is considered probable. In the event that a donation is subject to conditions that require a level of performance before the charity is entitled to the funds, the income is deferred and not recognised until either those conditions are fully met, or the fulfilment of those conditions is wholly within the control of the charity and it is probable that those conditions will be fulfilled in the reporting period.

Legacies are included in the statement of financial activities when the charity is entitled to the legacy, the executors have established that there are sufficient surplus assets in the estate to pay the legacy, and any conditions attached to the legacy are within the control of the charity.

The Society has a contract with Oxford University Press for the publication of journals, which gives a percentage of the surplus made to 31 December each year to the Society. Although payments are received net, income is recognised in the financial statements on a gross basis which reflects that the Society retains the underlying long term rights. All publication income is accounted for on a receivable basis.

Membership subscriptions are payable in respect of a twelve month period in advance. The unearned portion of income received relating to the period after 31 December is carried forward as deferred income.

Investment income is recognised once the dividend has been declared and notification has been received of the dividend due.

Interest on funds held on deposit is included when receivable and the amount can be measured reliably by the charity; this is normally upon notification of the interest paid or payable by the bank.

### **Expenditure recognition**

Expenditure is recognised as soon as there is a legal or constructive obligation committing the charity to the expenditure. All expenditure is accounted for on an accruals basis and has been classified under headings that aggregate all costs related to the category.

Expenditure on charitable activities includes all costs associated with furthering the charitable purposes of the charity as described in the Trustees' Report.

Grants payable for the support of research or study in any areas of astronomy and geophysics are recognised in the financial statements as soon as the obligation has been authorised by the Grants Committee, which meets twice-yearly (ca. February and August) to allocate funds, the recipient has a reasonable expectation that they will receive a grant and any condition attaching to the grant is outside the control of the Society.

The costs of raising funds consist of room hire expenditure and RAS diaries bought for resale.

### **Allocation of support and governance costs**

Support costs, including governance costs, represent indirect charitable expenditure. In order to carry out the primary purposes of the charity it is necessary to provide support in the form of personnel development, financial procedures, provision of office services and equipment and a suitable working environment.

Governance costs comprise audit fees, legal advice for trustees and costs associated with constitutional and statutory requirements, e.g. cost of trustee meetings and preparing statutory financial statements as well as costs associated with the strategic management of the Society

Support costs are apportioned based on the proportion of floor area occupied by, or proportion of staff time spent on, the activity.

### **Taxation**

The Society is a registered charity and no liability to taxation arises on the results of its activities as applied for charitable purposes, with the exception of investment income, which is taxed at source.

### **Operating leases**

Rentals under operating leases are charged to the statement of financial activities on a straight-line basis over the term of the lease.

### **Pension costs**

The Society operates two pension schemes for employees and former employees. The assets of the schemes are held separately from those of the Society.

The Society operates a defined benefit pension



scheme for former employees, who joined its service before 1 January 2002, providing benefits based upon final pensionable earnings. Royal London manages the pension scheme, with the investments held by Royal London.

The latest actuarial valuation shows a pension surplus which is not recognised on the balance sheet as an asset because it is not available to the Society by way of reduced future contributions.

Actuarial gains and losses arising from new valuations and from updating valuations to the balance sheet date are recognised in the statement of financial activities as other recognised gains and losses.

The Society has established a second pension scheme (a defined contribution scheme) for employees who began service with the Society after 1 January 2002. The amount charged in the statement of financial activities in respect of the defined contribution pension scheme is the contributions payable in the year.

## Heritage assets

Heritage assets are included in the financial statements at a historic valuation which is being treated as deemed cost. There are two main classes of heritage assets that the Society possesses, which are:

- Rare Books and Manuscripts
- Fine Art and Collectibles – Historic books, portraits, busts, instruments and antique furniture.

The Society's rare book and manuscript collection is reported in the balance sheet at a valuation by Christies in 1996, with a number of items re-valued by B Quaritch Limited in 2011. The valuation basis was High Auction Estimate.

The Society's fine art and collectibles are reported in the balance sheet at a valuation by Bonhams in 1992, including index linking, with a number of items revalued by Bonhams in 2011.

The Society continues to periodically receive donated items. All such donations are gratefully received and appreciated by the Society. The Society would only obtain a valuation of the donation, if it was deemed to materially affect the overall value of the heritage asset portfolio.

Depreciation is not charged on heritage assets due

to immateriality based on their extremely long useful lives and high residual values.

## Other tangible fixed assets

The Society capitalises tangible fixed assets with a cost greater than £250 and an estimated useful life over one year.

Tangible fixed assets are depreciated on cost on a straight line basis from the date of acquisition over their expected useful lives as follows:

- Telephone and security system and computer equipment..... 4 years
- Leasehold Improvements ..... 20 years
- Plant and machinery ..... 10 years

## Investments

Listed investments are a form of basic financial instrument and are initially recognised at their transaction value and subsequently measured at their fair value as at the balance sheet date using the closing quoted market price.

Realised gains (or losses) on investment assets are calculated as the difference between disposal proceeds and their opening carrying value or their purchase value where the investment is acquired subsequent to the first day of the financial year. Unrealised gains and losses are calculated as the difference between the fair value at the year end and their carrying value at that date. Realised and unrealised investment gains (or losses) are combined in the statement of financial activities and are credited (or debited) in the year in which they arise.

## Debtors

Debtors are recognised at their settlement amount, less any provision for non-recoverability. Prepayments are valued at the amount prepaid.

## Cash at bank and in hand

Cash at bank and in hand represents such accounts and instruments that are available on demand or have a maturity of less than three months from the date of acquisition.

## Creditors and provisions

Creditors and provisions are recognised when there is an obligation at the balance sheet date as

a result of a past event, it is probable that a transfer of economic benefit will be required in settlement, and the amount of the settlement can be estimated reliably. Creditors and provisions are recognised at the amount the charity anticipates it will pay to settle the debt.

### **Fund structure**

Endowment funds comprise assets which normally must be held as capital. The income arising therefrom is used to support specific activities determined in accordance with the wishes of the donor.

Restricted funds comprise monies raised for, or their use restricted to, a specific purpose, or contributions subject to donor imposed conditions.

Designated funds represent monies set aside out of unrestricted funds and designated by the trustees for a specific purpose.

Unrestricted funds represent those monies which are freely available for application towards achieving any charitable purpose that falls within the Society's charitable objects.



## 1. Donations and legacies

	Unrestricted funds	Restricted funds	2023 Total funds	Unrestricted funds	Restricted funds	2022 Total funds
	£	£	£	£	£	£
Donations	1,176	991	2,167	1,009	3,000	4,009
Legacies	10,000	—	10,000	12,092	232	12,324
<b>Total funds</b>	<b>11,176</b>	<b>991</b>	<b>12,167</b>	<b>13,101</b>	<b>3,232</b>	<b>16,333</b>

## 2. Investment income

	Unrestricted funds	Restricted funds	Endowment funds	2023 Total funds
	£	£	£	£
Income from listed investments	155,914	9,670	60,379	225,963
Bank interest	143,974	8,235	51,418	203,627
<b>2023 Total funds</b>	<b>299,888</b>	<b>17,905</b>	<b>111,797</b>	<b>429,590</b>

	Unrestricted funds	Restricted funds	Endowment funds	2022 Total funds
	£	£	£	£
Income from listed investments	141,776	8,703	55,000	205,479
Bank interest	32,495	1,920	12,136	46,551
<b>2022 Total funds</b>	<b>174,271</b>	<b>10,623</b>	<b>67,136</b>	<b>252,030</b>

## 3. Income from charitable activities

	Unrestricted funds	
	2023	2022
	£	£
Publications (note 4)	6,209,917	4,578,797
Membership	370,606	369,762
Scientific meetings	30,225	27,958
Public policy	731	2,105
Library	3,492	4,677
Educational	210	543
Other	12,576	19,476
<b>Total funds</b>	<b>6,627,757</b>	<b>5,003,318</b>

## 4. Publications

	2023 £	2022 £
<b>Income (see note)</b>		
Monthly Notices of the Royal Astronomical Society	<b>4,758,987</b>	3,437,288
Geophysical Journal International	<b>1,278,672</b>	1,046,550
Astronomy & Geophysics	<b>106,360</b>	81,118
Royal Astronomical Society Techniques & Instruments	<b>60,032</b>	7,518
Other	<b>5,866</b>	6,323
	<b>6,209,917</b>	4,578,797
<b>Expenditure</b>		
Monthly Notices of the Royal Astronomical Society	<b>2,735,624</b>	2,447,568
Geophysical Journal International	<b>686,333</b>	699,828
Astronomy & Geophysics	<b>187,045</b>	168,291
Royal Astronomical Society Techniques & Instruments	<b>56,020</b>	20,959
Other	<b>5,982</b>	33,714
	<b>3,671,004</b>	3,370,360

Publications income includes additional income due to the renewal of the publishing agreement with Oxford University Press

## 5. Expenditure on charitable activities

Expenditure on charitable activities is analysed as follows:

	Direct costs £	Support costs £	2023 £	Direct costs £	Support costs £	2022 £
Publications (note 4)	<b>3,196,294</b>	<b>474,710</b>	<b>3,671,004</b>	2,948,115	422,245	3,370,360
Scientific meetings	<b>96,917</b>	<b>229,999</b>	<b>326,916</b>	95,751	204,579	300,330
Membership	<b>10,377</b>	<b>54,618</b>	<b>64,995</b>	8,842	48,582	57,424
Educational	<b>343,340</b>	<b>93,225</b>	<b>436,565</b>	147,795	80,590	228,385
RAS 200	<b>18,602</b>	<b>3,000</b>	<b>21,602</b>	86,930	5,000	91,930
Library	<b>104,699</b>	<b>445,004</b>	<b>549,703</b>	102,583	395,822	498,405
Public policy	<b>94,379</b>	<b>91,353</b>	<b>185,732</b>	62,796	81,257	144,053
	<b>3,864,608</b>	<b>1,391,909</b>	<b>5,256,517</b>	3,452,812	1,238,075	4,690,887

Grants, fellowships and awards in support of research are principally included under Educational and RAS 200 above to reflect the responsibilities for the management and administration of grants. 109 grants, fellowships and awards, totalling £252,511 (2022 – £178,412) were awarded to institutions and 37 grants, medals and awards totalling £20,683 (2022 – £28,066) were made to individuals. Expenditure supporting an RAS Research Fellowship totalled £35,365 (2022 – £32,000). The 2023 Norman Lockyer Fellowship totalled £57,000. Adjustments to other grants resulted in credits to expenditure totalling £21,768 (2022 – £54,180).

Total grant making support costs were £36,000 (2022 – £35,000). A full list of all grantees and analysis can be found on the Society's website. All expenditure on charitable activities is unrestricted except for £64,185 (which is entirely included within the educational category) which is restricted (2022 – £3,780).



## 6. Support costs

Support costs analysed by function are as follows:

	2023 £	2022 £
Executive	144,233	124,102
Finance	100,298	96,280
Facilities	112,288	99,890
Membership	47,534	41,625
IT	154,975	84,202
Policy, development and press	118,719	107,819
Burlington House	173,584	168,808
Other	379,035	362,237
Governance (note 7)	161,243	153,112
	<b>1,391,909</b>	<b>1,238,075</b>

Staff time (based on a review of staff time apportionment) and floor area, are used as bases of apportioning support costs over charitable activities.

## 7. Governance costs

	2023 £	2022 £
Auditor's remuneration (note 8)	25,510	24,100
Trustees' and Committee costs	41,235	18,921
AGM expenses	4,330	9,107
Staff time and other expenses	90,168	100,984
	<b>161,243</b>	<b>153,112</b>

## 8. Net income (expenditure) for the year

This is stated after charging:

	2023 £	2022 £
Depreciation	125,211	122,311
Auditor's remuneration:		
. Charity audit	19,600	17,500
. Pension scheme audit	5,160	5,850
. Other services	750	750
Operating lease rentals		
. Office equipment	10,830	7,449

## 9. Staff costs and remuneration of key management personnel

	2023 £	2022 £
Wages and salaries	<b>1,035,906</b>	972,010
Social security costs	<b>110,409</b>	106,197
Pension costs (see note 20)		
. Stakeholder pension scheme	<b>86,248</b>	82,315
. Death in service contributions	<b>8,469</b>	6,924
	<b>1,241,032</b>	1,167,446

During the year one employee earned between £90,000 and £100,000 (2022 -no employee) no employee of the Society earned between £80,000 and £90,000 (2022 – one employee), one employee earned between £70,000 and £80,000 (2022 – one employee) and one employee earned between £60,000 and £70,000 (2022 – one employee). Employer contributions to the stakeholder pension scheme for employees earning over £60,000 were £24,080 (2022 – £21,980).

The average number of employees was 23 (Administration 6, Outreach 2, Editorial 10, Library 2, House 1, Press & Policy 2) (2022 – 24). The key management personnel of the charity in charge of directing and controlling, running and operating the charity on a day to day basis comprise the trustees and the Executive and Deputy Executive Directors. The total remuneration (including taxable benefits and employer's pension and national insurance contributions) of the key management personnel for the year was £222,491 (2022 - £202,413).

## 10. Transactions with trustees

The trustees receive reimbursement for travel expenses incurred in attending meetings. The amount reimbursed during the year for 22 trustees was £23,891 (2022 – £11,561). Remuneration of £11,510 was paid to two trustees during 2023 (2022 – £6,292 to one Trustee). By agreement with the Charity Commissioners (dated 14 June 2004, case No. 299189, Sealing No. 344/04) the Treasurer is paid an Honorarium. This is formally approved each year by Council.

## Grants Made to Councillors

The following grants were made to Councillors during the year as part of the RAS grant awarding process. The recipients had no influence or part in the decisions on the award of these grants. For the most part the grant holders were not the main personal beneficiaries as the support was directly received by their students or meeting attendees. Excluding Councillors from the grants round completely is not seen as a satisfactory policy. It would strongly dissuade members from standing for election as Councillors and would be at variance with the accepted practice in Research Councils where members of grants panels are not excluded from applying. The process of grant review and award fully complies with the Nolan Principles and closely follows Government Research Council practice.

The grants were:

- Sir Norman Lockyer Memorial Trust as disclosed in note 22 (which shares the same board of trustees as the Society).
- F A Paneth Meteorite Collection as disclosed in note 22. Dr Nigel Berman, Treasurer, was a trustee, and Prof A M Cruise, Treasurer, is a trustee.
- A £1,000 P Tomkins Thesis Prize and a £500 P Tomkins Undergraduate Prize were awarded during the year. Patricia Tomkins is a trustee.
- The Society awarded funding of £4,000 to the British Geophysical Association (BGA). BGA Committee members Prof James Hammond and Prof Andrew Curtis are trustees.



## 11. Tangible fixed assets

### a) Heritage assets

	Rare books and manuscripts £	Fine art and collectibles £	<b>Total £</b>
At 1 January 2023 and 31 December 2023	4,951,500	4,519,379	<b>9,470,879</b>

Fine art and collectible additions of £30,000 were recorded in 2020. There were no other additions in the last five years.

The rare book collection is preserved by storing in an air-conditioned, temperature-controlled environment; the fine art and collectibles are also continually preserved in order to maintain their values.

Certain heritage assets are on public display at exhibitions. The Society's Librarian controls access to those heritage assets which are kept at Burlington House.

### b) Other assets

	Leasehold improve- ments £	Plant and machinery £	Telephone, security & computer equipment £	Past Presidents' Portraits £	<b>Total £</b>
<b>Cost</b>					
At 1 January 2023	1,879,422	38,360	339,459	9,994	<b>2,267,235</b>
Additions	9,057	515	27,488	—	<b>37,060</b>
<b>At 31 December 2023</b>	<b>1,888,479</b>	<b>38,875</b>	<b>366,947</b>	<b>9,994</b>	<b>2,304,295</b>
<b>Depreciation</b>					
At 1 January 2023	1,388,536	21,071	287,461	—	<b>1,697,068</b>
Charge for the year	94,613	3,879	26,719	—	<b>125,211</b>
<b>At 31 December 2023</b>	<b>1,483,149</b>	<b>24,950</b>	<b>314,180</b>	<b>—</b>	<b>1,822,279</b>
<b>Net book values</b>					
<b>At 31 December 2023</b>	<b>405,330</b>	<b>13,925</b>	<b>52,767</b>	<b>9,994</b>	<b>482,016</b>
At 31 December 2022	490,886	17,289	51,998	9,994	<b>570,167</b>

## 12. Investments

	<b>2023</b>	2022
	<b>Total</b>	Total
	<b>funds</b>	funds
	<b>£</b>	£
Market value at 1 January 2023	<b>9,155,783</b>	9,872,965
Net unrealised investment gains (losses)	<b>540,230</b>	(717,182)
<b>Market value at 31 December 2023</b>	<b>9,696,013</b>	9,155,783
<b>Historical cost as at 31 December 2023</b>	4,917,081	4,917,081

Investments comprise BNY Mellon: Newton Growth and Income Fund for Charities

The permanent endowment fund investments and movements in the unapplied total return are set out below.

	<b>Trust for</b>	<b>Unapplied</b>	<b>Total</b>
	<b>investment</b>	<b>total return</b>	<b>endowment</b>
	<b>£</b>	<b>£</b>	<b>£</b>
<b>At 1 January 2023</b>	<b>1,652,682</b>	<b>271,819</b>	<b>1,924,501</b>
Add: Total return			
. Investment income		<b>111,797</b>	<b>111,797</b>
. Net gains on listed investments		<b>144,352</b>	<b>144,352</b>
		<b>256,149</b>	<b>256,149</b>
<b>At 31 December 2023</b>		<b>527,968</b>	<b>2,180,650</b>
	Trust for	Unapplied	Total
	investment	total return	endowment
	£	£	£
At 1 January 2022	1,652,682	396,638	2,049,320
Add: Total return			
. Investment income		67,136	67,136
. Net losses on listed investments		(191,955)	(191,955)
		(124,819)	(124,819)
At 31 December 2022	1,652,682	271,819	1,924,501

When adopting total applied return with effect from 1 January 2015, in the absence of reliable records of the original donations, the trustees considered that the market values of the investments as recorded as at 1 January 2015 were appropriate to be considered as the initial value of the trust for investment. Since that figure sets the baseline below which disposals may not be made, taking a higher value than the actual original donations was considered to be prudent.

The trustees have resolved that they wish to maintain the real value of the permanent endowment using the retail price index as a measure. No transfers to the restricted funds were made in the year (2022 – £nil).

## 13. Debtors

	2023 £	2022 £
Trade debtors	5,346	8,492
Prepayments and accrued income	1,046,255	1,107,943
Other debtors	659	25,057
	<b>1,052,260</b>	<b>1,141,492</b>

## 14. Creditors

### a) Amounts falling due within one year

	2023 £	2022 £
Trade creditors	28,486	26,128
Accruals	107,788	234,353
Grants payable	168,647	71,503
Tax and social security	552,937	208,691
Deferred income	1,299,417	1,038,917
Other creditors	71,472	63,754
	<b>2,228,747</b>	<b>1,643,346</b>

### b) Amounts falling due after more than one year

	2023 £	2022 £
Grants payable	63,999	71,503

### c) Deferred income

	2023 £	2022 £
Balance as at 1 January 2023	1,038,917	1,039,016
Released to income	(1,038,917)	(1,039,016)
Income received from Fellows in advance	47,428	56,540
Publications income received in advance	1,250,000	950,000
Other income received in advance	1,989	32,377
Balance as at 31 December 2023	<b>1,299,417</b>	<b>1,038,917</b>



## 15. Endowment funds

	1 January 2023 £	Income £	Investment gains £	31 December 2023 £
Research and Grants funds:				
. Sir Norman Lockyer fund	1,488,797	86,486	111,671	1,686,954
. Other funds	149,304	8,673	11,199	169,176
	1,638,101	95,159	122,870	1,856,130
Benevolent fund	93,711	5,444	7,028	106,183
Library fund	44,512	2,586	3,339	50,437
Lectures & Awards fund	148,177	8,608	11,115	167,900
	1,924,501	111,797	144,352	2,180,650

	1 January 2022 £	Income £	Investment losses £	31 December 2022 £
Research and Grants funds:				
. Sir Norman Lockyer fund	1,585,356	51,937	(148,496)	1,488,797
. Other funds	158,988	5,208	(14,892)	149,304
	1,744,344	57,145	(163,388)	1,638,101
Benevolent fund	99,789	3,269	(9,347)	93,711
Library fund	47,399	1,553	(4,440)	44,512
Lectures & Awards fund	157,788	5,169	(14,780)	148,177
	2,049,320	67,136	(191,955)	1,924,501

## 16. Restricted income funds

	1 January 2023 £	Income £	Expenditure £	Investment gains £	31 December 2023 £
Research & Grants fund	781,837	8,994	(61,300)	11,613	741,144
Benevolent fund	41,815	—	(218)	—	41,597
Library fund	48,517	1,488	—	1,921	51,926
Education fund	127,789	8,414	(1,000)	9,585	144,788
Lectures & Awards fund	58,334	—	(1,667)	—	56,667
	1,058,292	18,896	(64,185)	23,119	1,036,122

## 16. Restricted income funds (continued)

	1 January 2022 £	Income £	Expenditure £	Investment gains £	31 December 2022 £
Research & Grants fund	788,269	8,468	70	(14,970)	781,837
Benevolent fund	42,527	—	(712)	—	41,815
Library fund	50,178	894	—	(2,555)	48,517
Education fund	137,142	4,493	(1,000)	(12,846)	127,789
Lectures & Awards fund	60,472	—	(2,138)	—	58,334
	<u>1,078,588</u>	<u>13,855</u>	<u>(3,780)</u>	<u>(30,371)</u>	<u>1,058,292</u>

The Restricted Funds are consolidated into five groups to serve the Council's priorities and address modern needs: Research & Grants, Benevolent, Library, Education and Lectures & Awards.

A detailed fund summary can be found on the RAS website.

The restricted funds were classified to either Restricted (R), Endowment (E), Designated (D), or General (G) funds as indicated below:

#### Research & Grants fund

**E** AG Stillhamer Trust Fund (1937)

**D** EW Brown Trust Fund (1939)

**E** Plummer Bequest (1946)

**G** General

**R** Victor Nadarov Fund (1950)

**E** Sir Norman Lockyer Memorial Trust (1990)

**R** Hosie Bequest (2000)

**D** Mrs. J.M Jelley-Freeman Bequest (2000)

**D** CAG Bearpark Trust (2000)

**R** Patricia Tomkins Fund (2011)

**G** Special Purposes Fund

**E** E A Milne Travel Fund (2013)

**R** R Potter Research Fund (2017)

**R** Osmaston Fund (2020)

#### Benevolent fund

**E** Lee & Jansen Trust Fund (1834/1879)

**E** Gerald Merton Fund (1986)

**G** Donald R. Barber Fund (2001)

#### Library fund

**E** Turner Fund and Horrocks Memorial Fund (1853/1876)

**E** Harry Watson Memorial Fund (1923)

**E** Warin Bushell Fund (1964)

**E** Gaythorp Bequest (1969)

**E** Ian Ridpath Conservation Fund (2006)

**R** Dewhurst Fund (2013)

#### Education fund

**R** Newbigen Fund (1990)

**R** Michael Penston Memorial Fund (1991)

**R** Sir William Hunter McCrea Memorial Fund (2000)

**R** Paul Ruffle Memorial Fund (2014)

**D** Education Committee

#### Lectures & Awards fund

**E** Hannah Jackson-Gwilt Trust Fund (1861/1893)

**E** George Darwin Lectureship Fund (1926)

**E** George Darwin Support Fund

**D** AS Eddington Commemoration Fund (1948)

**E** Harold Jeffreys Lectureship Fund (1962)

**E** AT Price Medal Fund (1999)

**E** Gerald Whitrow Memorial Lecture Fund (2001)

**E** Fowler Prizes Fund (2004)

## 17. Designated funds

	1 January 2023 £	New designations £	Utilised/ released £	31 December 2023 £
Accommodation fund	1,500,000	1,500,000	—	3,000,000
Burlington House fund	458,823	—	(94,613)	364,210
Heritage Asset fund	9,470,879	—	—	9,470,879
Building fund	1,405,635	94,613	—	1,500,248
Open Access fund	392,596	—	(7,499)	385,097
RAS 200	55,503	—	(55,503)	—
Research and grants fund	102,452	47,548	—	150,000
<b>Total designated funds</b>	<b>13,385,888</b>	<b>1,642,161</b>	<b>(157,615)</b>	<b>14,870,434</b>



## 17. Designated funds (continued)

	1 January 2022 £	New designation £	Utilised/ released £	31 December 2022 £
Accommodation fund	1,000,000	500,000	—	1,500,000
Burlington House fund	552,836	—	(94,013)	458,823
Heritage Asset fund	9,470,879	—	—	9,470,879
Building fund	1,311,622	—	94,013	1,405,635
Open Access fund	392,596	—	—	392,596
RAS 200	142,433	—	(86,930)	55,503
Research and grants fund	122,661	—	(20,209)	102,452
Total designated funds	12,993,027	500,000	(107,139)	13,385,888

### (i) Accommodation fund

This fund represents the requirement for accommodation at Burlington House or elsewhere. In 2024, after a full discussion by the trustees, it was agreed to sign a Heads of Terms Agreement with the Department for Levelling Up, Housing and Communities (DLUHC) to purchase a 999 year lease at a peppercorn rent. This fund will subsequently enable this acquisition and the total outlay is in the region of £4,400,000 over ten years.

### (ii) Burlington House fund

In 2006-7, the Society executed a refurbishment project on the interior of the apartments. Expenditure incurred on the project has been capitalised and designated as the Burlington House fund. With the prospective change of the lease, further internal renovation of the building may be necessary.

### (iii) Heritage Asset fund

A fund has been established to include the Society's heritage assets to recognise that there is no intention to dispose of these assets and the amount is not readily available to meet expenditure.

### (iv) Building fund

The repairs and maintenance of the exterior of the building, its insurance and some security costs are currently carried out by the landlord for all the occupants and a proportion recharged to the Society. The prospective change of the lease will place the liability for backlog maintenance, environmental regulation compliance and accessibility improvements on the Society using these funds. The Finance Committee will recommend how much more to accumulate in this fund and at what rate. The timescale for expenditure is difficult to forecast but in principle could start within two years. Current estimates are in the region of £3,000,000 to £4,000,000.

### (v) Open Access fund

A fund has been established to provide against the risk of the possible loss of income from publishing due to the adoption of Open Access. The timescale for expenditure is difficult to forecast but could in principle start within five years.

### (vi) RAS 200

The original fund balance of £1,000,000 was the total committed grant expenditure for RAS 200. RAS 200 grant expenditure was being charged to this fund from 2015 to 2023.

### (vii) Research and grants fund

This represents those funds to be used for research and grants.

## 18. Analysis of net assets between funds

Fund balances at 31 December 2023 are represented by:

	General funds £	Designated funds £	Restricted funds £	Endowment funds £	2023 Total funds £
Tangible assets					
. Heritage assets	—	9,470,879	—	—	9,470,879
. Other fixed assets	76,686	405,330	—	—	482,016
Investments	4,343,369	2,135,872	1,036,122	2,180,650	9,696,013
Current assets					
. Debtors	1,052,260	—	—	—	1,052,260
. Cash at bank and in hand	4,358,452	3,000,000	57,000	—	7,415,452
Current liabilities	(2,094,099)	(77,648)	(57,000)	—	(2,228,747)
Non-current liabilities	—	(63,999)	—	—	(63,999)
<b>Total net assets</b>	<b>7,736,668</b>	<b>14,870,434</b>	<b>1,036,122</b>	<b>2,180,650</b>	<b>25,823,874</b>

	General funds £	Designated funds £	Restricted funds £	Endowment funds £	2022 Total funds £
Tangible assets					
. Heritage assets	—	9,470,879	—	—	9,470,879
. Other fixed assets	80,249	489,918	—	—	570,167
Investments	4,320,008	1,852,982	1,058,292	1,924,501	9,155,783
Current assets					
. Debtors	1,141,492	—	—	—	1,141,492
. Cash at bank and in hand	3,098,990	1,752,189	2,430	—	4,853,609
Current liabilities	(1,532,339)	(108,577)	(2,430)	—	(1,643,346)
Non-current liabilities	—	(71,503)	—	—	(71,503)
<b>Total net assets</b>	<b>7,108,400</b>	<b>13,385,888</b>	<b>1,058,292</b>	<b>1,924,501</b>	<b>23,477,081</b>

## 19. Leasing commitments

At 31 December 2023, the charity had total future minimum commitments in respect of non-cancellable operating leases as follows:

Office equipment	2023 £	2022 £
Amounts payable within one year	6,390	7,134
Amounts payable between two and five years	20,188	5,105
	<b>26,578</b>	<b>12,239</b>

## 20. Pension schemes

A qualified actuary carried out a triennial review of the defined benefit scheme as at 1 January 2022; the actuarial valuation showed that the market value of the Scheme's assets was £1,009,000 which represents 124% of the benefits that accrued to members after allowing for expected future increases in earnings. The actuary has calculated that no contributions are payable from 1 January 2016.

## 20. Pension schemes (continued)

Pension costs comprise £86,248 (2022 – £82,315) in respect of the defined contribution scheme and £8,469 (2022 – £6,924) in respect of Death in Service contributions.

### Retirement benefits disclosure under FRS102

The actuarial valuation for FRS 102 purposes, at 31 December 2023, shows a pension surplus of £473,000 (2022 – £507,000) which cannot be recognised as this is not available to the Society by way of reduced future contributions.

The amounts recognised in the balance sheet are as follows:

	2023 £'000	2022 £'000
Present value of funded obligations	(121)	(259)
Fair value of scheme assets	594	766
Surplus not recognised	(473)	(507)
<b>Surplus in scheme at end of the year and available to the Society</b>	—	—

Changes in the present value of the defined benefit obligations are as follows:

	2023 £'000	2022 £'000
Opening defined benefit obligation	259	537
Interest cost	9	11
Re-measurement arising from changes in assumptions and experience	51	(198)
Benefits paid	(198)	(91)
<b>Closing defined benefit obligation</b>	121	259

Changes in fair value of scheme assets are as follows:

	2023 £'000	2022 £'000
Opening scheme assets	766	1,009
Interest Income	34	21
Actual return on plan assets, excluding interest income	(8)	(173)
Benefits paid	(198)	(91)
<b>Closing scheme assets</b>	594	766

The amounts recognised in other recognised gains and losses are as follows:

	2023 £'000	2022 £'000
Remeasurement of defined benefit obligation	51	(198)
Return on plan assets	8	173
Effect of surplus restriction	(59)	25
<b>Total</b>	—	—

The actual return on scheme assets was £26,000 (2022 – negative £152,000).



## 20. Pension schemes (continued)

### Retirement benefits disclosure under FRS102 (continued)

The major categories of scheme assets as a percentage of total scheme assets are as follows:

	Fair value of scheme assets	
	2023 %	2022 %
Equities	1	21
Bonds	1	9
Property	—	5
Cash	6	10
Gilts	92	55
	<b>100</b>	<b>100</b>

Principal actuarial assumptions at the balance sheet date (expressed as a weighted average):

	2023 %	2022 %
Discount rate at 31 December	4.7	4.9
Retail Prices Index	3.0	3.1
Consumer Prices Index	2.4	2.5
Increases in deferment	2.4	2.5
Future pension increases – pension earned before 6 April 1997	0.0	0.0
Future pension increases – pension earned on or after 6 April 1997	3.0	3.1

The current mortality rate assumptions include sufficient allowance for future improvements in mortality rates. The assumed life expectancy for a pensioner retiring at 65 on the balance sheet date is:

	2023	2022
Retiring now		
Male	19.6	20.2
Female	21.8	22.2
Retiring in 20 years		
Male	20.9	21.4
Female	23.2	23.7

Amounts for the current and previous four periods are as follows:

Defined benefit pension scheme:

	2023 £'000	2022 £'000	2021 £'000	2020 £'000	2019 £'000
Defined benefit obligations	121	259	537	548	488
Scheme assets	594	766	1,009	916	911
Surplus	473	507	472	368	423

## 21. Grants committed

Grants, principally fellowships and travel and research grants to the value of £285,250 have been committed for future payment, subject to certain conditions, specified by the Society, having been met (2022 – £281,500). These grants were not approved or communicated to the recipients until after the year end and therefore have not been accounted for in the year ended 31 December 2023.

## 22. Connected Charities and related party transactions

Since 2001, the Society has been the administration agent for the trustees of FA Paneth Meteorite Collection, a charity connected to the Royal Astronomical Society. The Paneth trustees decided that its income should support research in Cosmochemistry by graduate and postdoctoral students. The accumulated net expenditure of £50,908 (2022 – £50,789), is included in Other Creditors. Grants awarded in 2023 totalled £10,800 (2022 – £5,920). Total income was £11,399 (2022 – £10,365).

The Society also administers the Sir Norman Lockyer Memorial Trust, (charity registration number 900135). By agreement with the Charity Commission the Society includes the following information within these financial statements. Each charity remains a

separate legal entity. The Norman Lockyer Fellowship is awarded to enable an outstanding researcher to devote the majority of their time to research on an astronomical topic, including solar system and planetary science. They are named after Sir Norman Lockyer (1836-1920), pioneering solar astronomer and discoverer of helium. The fellowship is available every three years, with applications sought in the years 2016, 2019, 2022 etc. for fellowships starting in the following year. The fellowship is open to those who hold a doctorate from a recognised institution of higher education at the time of taking up the award. Applicants must normally be 30 years of age or younger on 1 October of the year of appointment. The Society funds Fellows between spine points 30 and 36 (inclusive) on the UCU HE Framework single pay spine. During the year The Norman Lockyer Fellowship funded one fellowship. Expenditure for the year amounted to £57,000 (2022 – £nil). The fund balance, including the unspent balance in the restricted fund is £2,200,545 (2022 – £2,059,388).

Transactions involving trustees are also disclosed in note 10.

## 23. Post balance sheet event

In March 2024, an agreement was signed that secures occupation of Burlington House on a 999 year lease.



# Royal Astronomical Society

**Royal Astronomical Society**

Burlington House

Piccadilly

London W1J 0BQ

+44 (0)20 7734 4582 or

+44 (0)20 7734 3307

**ras.ac.uk**