

Royal Astronomical Society

Annual Report and Accounts

31 December 2016

Charity Registration Number 226545

Contents

Reports

Reference and administrative details of the charity, its trustees and advisers	1
Trustees' report	4
Including:	
Executive Summary	4
Objectives	11
Significant achievements	12
Public engagement	
◆ Celebrating Women	
◆ RAS 200: Sky and Earth	
◆ Transit of Mercury	
◆ Other Education and Outreach projects	
Public policy	
◆ Post Referendum on Europe	
Governance	
◆ Code of Conduct and review of other documentation	
◆ Occupancy of Burlington House	
◆ Elections to Council 2016/2017	
Ongoing significant achievements	
Other achievements	25
Risks	30
Structure, Governance and Management	32
Events since year end and plans for the future	34
Activities	37
Financial Review	46
Independent auditor's report	51
Statement of financial activities	53
Balance sheet	54
Statement of cash flows	55
Principal accounting policies	56
Notes to the accounts	63

Reference and administrative details of the charity, its trustees and advisers

Patron	Her Majesty the Queen
Trustees	<p>The Council members who served during 2016 were:</p> <p>Professor Martin Barstow (President until May 2016, A, University of Leicester)</p> <p>Professor John Zarnecki (President elect from May 2015 and President from May 2016, G, Open University)</p> <p>Professor Mike Edmunds (Vice-President until May 2016, A, University of Cardiff)</p> <p>Professor Yvonne Elsworth (Vice President, G, University of Birmingham)</p> <p>Professor Don Kurtz (Vice President, A, University of Central Lancashire)</p> <p>Professor Christine Peirce (Vice President, G, University of Durham)</p> <p>Professor Hiranya Peiris (Vice President, A, University College London)</p> <p>Professor James Wild (Vice-President until May 2016, G, University of Lancaster)</p> <p>Dr Nigel Berman (Treasurer from May 2016, A)</p> <p>Professor Mike Cruise (Treasurer until May 2016, A, University of Birmingham)</p> <p>Professor Ian Crawford (Senior Secretary, Birkbeck College)</p> <p>Dr Mandy Bailey (Secretary, A, Open University)</p> <p>Professor Lyndsay Fletcher (Secretary, G, University of Glasgow)</p> <p>Dr Joanna Barstow (Councillor until Feb 2016, A, University of Oxford)</p> <p>Professor Mike Bode (Councillor, A, Liverpool John Moores University)</p> <p>Professor John Brown (Councillor until May 2016, G, University of Glasgow)</p> <p>Professor Martin Bureau (Councillor, A, University of Oxford)</p> <p>Dr Paul Daniels (Councillor from May 2016, A)</p> <p>Professor Brad Gibson (Councillor from May 2016, A, University of Hull)</p> <p>Dr Stacey Habbergham (Councillor, A, Liverpool John Moores University)</p> <p>Dr Caitriona Jackman (Councillor, G, University of Southampton)</p> <p>Miss Jane MacArthur (Councillor, G, University of Leicester)</p> <p>Dr Sarah Matthews (Councillor until May 2016, G, University College London)</p> <p>Professor Stephen Serjeant (Councillor, A, Open University)</p> <p>Dr Sheila Peacock (Councillor from May 2016, G, AWE Blacknest)</p> <p>Dr Sara Russell (Councillor G, Natural History Museum)</p> <p>Professor Giovanna Tinetti (Councillor from May 2016, A, University College London)</p> <p>Professor Mike Watson (Councillor from May 2016, A, University of Leicester)</p>

Reference and administrative details of the charity, its trustees and advisers

Trustees (continued)	[Note: "A" signifies all areas of astronomy & astrophysics; "G" covers geophysics, solar-terrestrial physics and planetary sciences, respectively.]
Senior Staff	Executive Director: Pamela Mortimer Deputy Executive Director: 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

Reference and administrative details of the charity, its trustees and advisers

Solicitors Bristows
3 Lincoln's Inn Fields
London
WC2A 3AA

Executive summary 31 December 2016

With over 4,000 Fellows, the Royal Astronomical Society (RAS) is the leading UK body representing the interests of astronomers, space scientists and geophysicists. By promoting the study of astronomy, solar-system science, geophysics and closely related branches of science, the Society aims to advance our understanding of the universe. Moreover, by encouraging the dissemination of knowledge gained by these sciences the Society fulfils its charitable object of serving the public interest. The Society meets these aims by organising scientific meetings (including meetings for the general public), publishing world leading research journals (its single biggest activity), awarding grants, prizes and medals, maintaining a library, providing the media with expert commentary on newsworthy astronomy topics and contributing to the formulation of the UK Government's science policy.

The Society is a modern, forward looking as well as outward facing organisation that promotes Astronomy (A) & Geophysics (G) to the widest possible public audience and through its public policy engagement influences government, funding bodies and other decision makers to support the study of A & G and Science Technology Engineering and Maths (STEM) subjects more generally.

In 2016 the Society continued to:

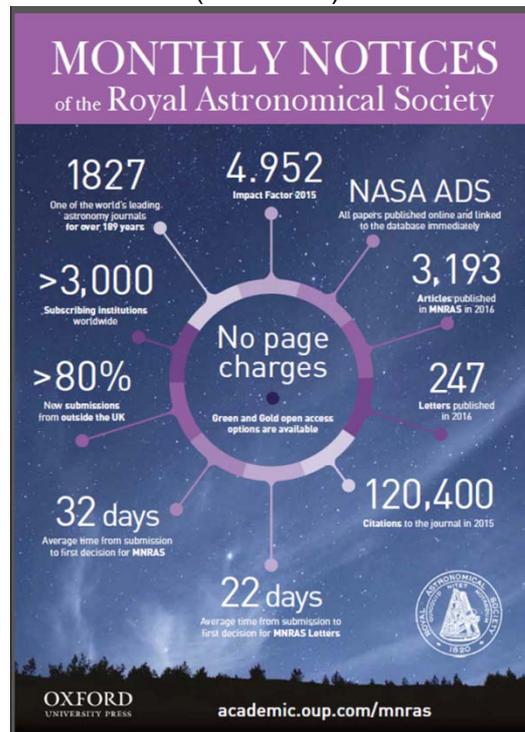
- ◆ publish world leading journals
- ◆ support professional Astronomers and Geophysicists and students
- ◆ carry out extensive public engagement, outreach and education activities; in particular the Society celebrated 100 years of women in the Society and built upon its diversity agenda
- ◆ take part in significant public policy consultations, including in response to the Referendum on Europe
- ◆ modernise governance arrangements

Publications

The Society owns two research journals, published by Oxford University Press during 2016:

- ◆ *Monthly Notices of the Royal Astronomical Society (MNRAS)* is one of the world's leading primary research journals in astronomy and astrophysics covering the results of original research in positional and dynamical astronomy, astrophysics, radio astronomy, cosmology, space research and the design of astronomical instruments.

Publications (continued)



- ◆ *Geophysical Journal International (GJI)* is one of the world's leading primary research journals in geophysics and the leading solid-earth geophysics journal based in Europe. The monthly journal aims to promote the understanding of the earth's internal structure, physical properties, evolution and processes. Editorial management of *GJI* is shared with the *Deutsche Geophysikalische Gesellschaft*.

The financial surplus generated by the journals is (together with income from membership, investments and donations) used to support the other charitable objectives of the Society, particularly scientific meetings, travel grants for students, summer bursaries for undergraduates and public outreach.

Supporting professional astronomers and geophysicists and students

In 2016 the Society awarded two Research Fellowships; the applications received for the two extremely well sought after positions were of very high calibre. In addition, the Society made 162 awards totalling £163,028 to support travel, research and educational projects. Details of these together with RAS 200 grants are disclosed in note 5.

Celebrating women

Celebrating women in the Society and in Science was a key feature of 2016.



2016 marked the centenary of the year when women were allowed to become full Fellows of the Society. To celebrate this anniversary, the Society held a range of events that told the stories of pioneering women researchers, their contemporary counterparts, and their impact on science throughout the years.

Celebrating women (continued)

Events during the anniversary included:

- ◆ the production and performance of a short play 'The Way to the Stars', by Time Will Tell Theatre (www.time-will-tell.co.uk) that highlighted the experiences of the earliest women astronomers and their struggle for recognition.



Copyright: With permission from Time Will Tell Theatre

- ◆ Commissioning 21 photographic portraits of women Fellows, representing the rich diversity of female Fellows in the Society, from around the UK, and at different stages in their careers. The photos were displayed throughout the year in the Society's apartments in Burlington House (which receives > 7,000 visitors annually).
- ◆ Introducing a new Medal in honour of Annie Maunder who was one of the first women elected as a Fellow in 1916. The first Annie Maunder Medal will be awarded in 2017, for outstanding work in public engagement in astronomy, geophysics and space science.
- ◆ Introducing the Agnes Mary Clerk Medal, she was one of the greatest historians of astronomy in the Victorian era. The first Agnes Mary Clerk Medal will be awarded in 2017 to an individual who has achieved outstanding personal research into the history of astronomy or geophysics.
- ◆ Sponsoring [Ada Lovelace Day](#), an international day of celebration of women in STEM named after the first female computer programmer.

Celebrating women (continued)



Dr Sheila Kanani, the Education, Outreach and Diversity Officer performing at Ada Lovelace Live!

- ◆ a series of articles in the Society's A&G magazine on women in astronomy and geophysics.

Diversity initiatives

A few highlights on the wider diversity and inclusion agenda included the following:

- ◆ The Society developed a policy on diversity and equal opportunities, covering members, staff and the communities that the Society represents, this can be found at:
https://www.ras.org.uk/images/Diversity_Equality_Inclusion_policy_2015.pdf
- ◆ The Society carried out a Demographic Survey, the results of which will be available in 2017 with a comparison with the similar survey carried out in 2010/11.
- ◆ Together with the Institute of Physics, the Society established a LGBT+ Physicists' and Astronomers' Network. The Society sponsored the first LGBT+ STEMinar that took place in March 2016.

RAS 200: Sky & Earth

The benefit of the Society's enhanced public engagement portfolio was recognised in 2016; external evaluation of the first year of the RAS 200: Sky and Earth programme proved that the programme has so far been a highly successful initiative, which has made considerable progress in its first full year. Good progress has been made by each of the Society's partners, Care4Carers, the Workers' Education Association, the Prince's Trust, the National Autistic Society, the National Space Centre and the University of Aberystwyth/ National and Urdd Eisteddfods. Events and activities from all projects have engaged a combined total of at least 4,000 people with many more being reached by social media and other publicity. The reach included many of the audiences that are deemed 'hard to reach' by science communicators and public engagement experts.

Building on the success of tranche 1, the Society launched tranche 2 of this programme during 2016 and will announce the award winners at the Annual General Meeting in May 2017.



Transit of Mercury

The Transit of Mercury was another highlight of the year and a real opportunity to engage the public. The Society organised an event in the courtyard of Burlington House where around 300 members of the public used solar viewers to see the transit at first hand.



Other Education and Outreach projects

The annual programme of public lectures was a highlight of 2016. In late 2014 the Society introduced evening public lectures in addition to the lunchtime lectures. Lectures at both time slots were very well attended and appreciated by the public; the evening lectures (often fully booked; 100 attendees) attracted a different more diverse audience, with younger people attending.

Public Policy

2016 was an interesting year in regards to national and international politics with the UK considering how to move forward following the result of the Referendum on Europe. The phrase “may you live in interesting times” applies probably more today than for a very long time: now more than ever it is important that the Society engages constructively with the Government and other interested parties to represent concerns about possible deleterious impacts on the funding of science projects in the UK and beyond and also to take advantage of any opportunities that arise. Always active in public policy matters, the Society, working alongside other scientific and engineering bodies, sought to ensure that decisions makers were cognisant of the importance and effect of ‘blue skies’ research and its resultant applications coming from the study of astronomy, geophysics and related sciences. Within two working days of the Referendum result, the Society was present in numbers at a meeting in Parliament attended by representatives of several learned societies and a significant number of Parliamentarians, showing our concern at possible implications of Brexit to our fields. We continue to work with similar organisations as our interests and concerns significantly overlap. We are particularly concerned about the implication of the loss of EU Research and Development funding which is highly significant for many of our members. Collectively, we have been able to get an assurance from Government that funding promised under existing programmes, such as Horizon2020, will be assured even after Brexit. However, this is only a short term palliative and does not address how this gap will be filled in the long term. The Society will contribute to the cost of a Policy Officer dedicated to work on the impact of Brexit on Science in the UK, who will be based at the Campaign for Science and Engineering.

Governance

Code of Conduct and review of other documentation

Over the last few years the Society has been reviewing its governance arrangements. In May 2016 the Society introduced a ‘Code of Conduct for Members and Procedure for Investigating Alleged Breaches of the Code’ and reviewed the criteria for making the prestigious awards and medals that it awards annually during the National Astronomy Meetings (held in Nottingham in 2016.) In addition, the regulation for the use of the library was updated and a full review of Human Resource Policies and Terms and Conditions of Service for the staff at the Society was undertaken in 2016.

Governance (continued)

Occupancy of Burlington House

Establishing the legal position with regards to the Society's occupancy of the premises at Burlington House was a significant undertaking during 2016. The Society alongside the other Courtyard Societies (the Linnean Society, the Royal Society for Chemistry, the Geological Society of London and the Society of Antiquaries) has been engaged in a process of arbitration with the landlord, the Department for Communities and Local Government to seek clarity on a number of disputed aspects of the terms of the lease. The arbitration has been on-going since Feb 2015 following the end of the first ten year lease, agreed in 2005. The arbitration was concluded in December 2016 when the arbitrator unfortunately ruled in favour of the landlord. This presents considerable uncertainty for the Society in regards to future rental and other accommodation charges. The Societies are continuing to work together and to pursue the matter through other avenues.

2016 was a successful yet challenging year for the Society; there is a lot of hard work ahead to ensure that the Society continues to thrive and support our sciences and charitable outputs as the UK sees significant fundamental changes to its position in Europe and the world.

Professor John Zarnecki

President

Trustees' report 31 December 2016

The Trustees present their report together with the accounts of The Royal Astronomical Society (the "charity") for the year ended 31 December 2016.

The accounts have been prepared in accordance with the accounting policies set out on pages 56 to 61 therein and comply with the charity's Royal Charter and Bye Laws, the Charities Act 2011 and Accounting and Reporting by Charities: Statement of Recommended Practice applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS 102).

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.

The Society's principal objectives for 2016 were to:

- ◆ Continue to publish world-leading research journals and support professional astronomers and geophysicists and students through the provision of grants, including Research Fellowships.
- ◆ Continue to broaden its engagement with the public through the provision of education, outreach and diversity projects.
- ◆ Celebrate diversity, in particular by celebrating women in the Society and in Science.
- ◆ Continue to review and improve governance arrangements, in particular by introducing a Code of Conduct for Members.
- ◆ Determine the legal position in regards to the terms of occupancy of the Society at Burlington House.

The on-going objective of continuing to help the Government by presenting the case for sustained and significant public funding of astronomy and geophysics research and teaching was brought into focus in the latter half of the year following the result of the referendum on membership of the European Union.

OBJECTIVES (continued)

The achievements that helped the Society meet its annual objectives are set out in the section below. The criteria for measuring success in these objectives were:

- ◆ Numerical data in relation to publications (e.g. impact factors, download numbers etc).
- ◆ The opinion of the external evaluators of the RAS 200: Sky and Earth Programme (Jenesys Associates).
- ◆ For the annual outreach and education activity and expenditure level to be retained or increased.
- ◆ To achieve significant interest and publicity for the events celebrating women in the Society and Science and for efforts in measuring and implementing diversity policies to be enhanced over previous years.
- ◆ To receive the result of the arbitration on the case of the Courtyard Societies versus the landlord for Burlington House.

SIGNIFICANT ACHIEVEMENTS

This section below highlights the significant new achievements made in 2016, in particular the success of the celebrations of women in the Society and in Science, progress made in the RAS 200: Sky and Earth programme and other outreach and education programmes, the Society's response to the changing political landscape brought about through the referendum on membership of the European Union, the introduction of a Code of Conduct for Members and other governance improvements and the outcome of the arbitration concerning occupancy at Burlington House.

Information on the on-going and highly significant activities such as publishing and other support for professional astronomers and geophysicists and students follows.

a) Public Engagement

Celebrating Women

2016 marked the 100th anniversary of the admission to women as Fellows of the RAS in their own right, and to mark this, women in the Society and women in science were celebrated throughout 2016. An enlightening, and humorous short play entitled 'The Way to the Stars' that highlighted the experiences of the earliest women astronomers and their struggle for recognition was performed at the Ordinary Meeting in January. Around 100 Fellows saw the performance live and a video was also made available:

<http://women.ras.ac.uk/the-way-to-the-stars>

SIGNIFICANT ACHIEVEMENTS (continued)

a) Public Engagement (continued)

Celebrating Women (continued)

Throughout the year a digital display in the foyer of Burlington House showed photographic portraits of twenty-one women, representing the rich diversity of female Fellows in the Society, from around the UK, and at different levels in their careers. The Society has in excess of 7,000 visitors a year so this display reached a significant audience.

[Women of the Royal Astronomical Society](#)



SIGNIFICANT ACHIEVEMENTS (continued)

a) Public Engagement (continued)

Celebrating Women (continued)



The Society's magazine, 'Astronomy & Geophysics' carried a series of articles examining the changing roles of women in the Society, from a few respected outsiders in the early years to the active and leading members of today's Society. The articles, written by Fellows and staff are available as a virtual issue at the following link (https://academic.oup.com/astrogeo/pages/virtual_issue).

The articles covered the changes in the Society and in wider society through the lives of key women such as the first four women who were elected to the Fellowship in January 1916, Honorary Fellows, the role of amateur astronomy societies, gold medallists and the first women to take on important roles in the Society such as the first journal Editor and President. The articles were well received by the Fellowship and led directly to articles in the press, notably on the BBC website.

SIGNIFICANT ACHIEVEMENTS (continued)

a) Public Engagement (continued)

Celebrating Women (continued)

The Society also chose to celebrate in perpetuity two well-known historical women astronomers by naming two new medals after Annie Maunder and Agnes Mary Clarke, these medals for 'outstanding work in public engagement' and 'outstanding personal research into the history of astronomy or geophysics' respectively will be presented for the first time in 2017, at the awards dinner during the National Astronomy meeting that will be held in Hull.

In October, the Society was the platinum sponsor for Ada Lovelace Day (ALD.) ALD is an international celebration day of the achievements of women in STEM, it aims to increase the profile of women in STEM and, in doing so, create new role models who will encourage more girls into STEM careers and support women already working in STEM.

Dr Sheila Kanani, the Society's Education, Diversity and Outreach Officer, who is also a part-time science comedian, gave a fantastic performance on stage during the key event, ALD Live!

Sheila's performance can be found at: www.youtube.com/watch?v=HodZ1nIBV74
and highlights of ALD Live! can be found at:
www.youtube.com/watch?v=pZqfeJAvxwk

On the day of ALD Live! the Society ran a drop-in event where visitors could see the newly rediscovered lantern slides that astronomy enthusiast Mary Proctor had used in her public lectures. ALD Live! had an attendance of around 400 adults and received a significant amount of media coverage.

To celebrate International Women's Day on 8 March, the Society Events and Library teams collaborated with the other Courtyard Societies to host a behind-the-scenes tour of the Courtyard, allowing members of the public to discover the contributions of significant women in the history of the Learned Societies; the Society tour focused on the achievements of Mary Somerville, Annie Maunder and other early women Fellows. For further details see: <http://burlingtonhouse.org/2016/03/08/women-focus-inspirational-women-learned-societies-8-march-2016/>

SIGNIFICANT ACHIEVEMENTS (continued)

a) Public Engagement (continued)

RAS 200: Sky and Earth

A key element in the Society's plan to engage with a broader range of the general public is the RAS 200: Sky and Earth programme; real progress was made on this in 2016.

The aims of RAS 200: Sky and Earth are:

- ◆ To have a lasting impact beyond 2020 and inspire a new generation to broaden their interest in STEM.
- ◆ To go 'where no outreach project has gone before', engaging people from all age groups, ethnic and socioeconomic backgrounds.
- ◆ To harness the shared ambitions of world-leading researchers and national, local and community organisations.

The Society had announced the first round of six funded projects in May 2015 and work began in earnest on the chosen projects in 2016. A summary of the projects is set out in the table below.

First Tranche Projects

Project Title and Lead Organisation(s)	Description
Stepping out: Astronomy Short Breaks for Carers (Care4Carers – C4C)	Astronomy-themed residential and day breaks for carers in Scotland.
Astronomy and Geophysics through the Traditional Culture of Wales (Aberystwyth University with the National and Urdd Eisteddfodau – Eisteddfods)	Activities led by experts in the arts supported by scientists that deliver performances, installations, competitions and compositions at the National and Urdd (youth) Eisteddfods of Wales.
Stars and Space (The Prince's Trust - PT)	Training courses and programmes to engage young people not in education, employment or training and develop their confidence and social skills.
Open Your Eyes, Look up to the Sky (Workers' Educational Association - WEA)	Engaging with hard-to-reach groups through grass-roots events and new STEM curricula courses.

SIGNIFICANT ACHIEVEMENTS (continued)

a) **Public Engagement** (continued)

RAS 200: Sky and Earth (continued)

First Tranche Projects (continued)

<p>The Planets360 (NSC Creative Ltd - NSC)</p>	<p>A full-dome, immersive, modular-format planetarium show based around Holst's Planet Suite and available to all UK planetariums license free.</p>
<p>Space, Earth and Autism (National Autistic Society - NAS)</p>	<p>A pilot project to enable people on the autistic spectrum to access the other RAS 200 projects.</p>

Highlights from the first tranche of projects include approximately 500 young people reached via the Prince's Trust training programme, 162 carers participating in Care4Carers RAS200 respite breaks, and circa 500 people visiting the tent where the 'Particles' exhibition was held during the National Eisteddfod festival in Wales.

The Society appointed Jenesys Associates to undertake formal evaluation on the success or otherwise of the projects. In November 2016 they reported that there is already evidence that four of the projects (C4C, Eisteddfods, PT and WEA) are developing and have developed legacy outputs in the forms of courses and events for which there appears to be sustainable demand and interest and that the other two projects, Planets 360 and NAS should also have a legacy beyond RAS 200: Sky and Earth. They noted that the RAS 200: Sky and Earth model of funding partner organisations that are experienced in working with some of the harder to reach audiences has been successful. Events and activities from all the

projects have engaged a combined total of at least 4,021 people with many more being reached by social media and other publicity. The reach included many of the audiences that are deemed 'hard to reach' by science communicators and public engagement experts. In summary, Jenesys Associates found that the RAS 200: Sky and Earth programme is a highly successful initiative, which has made considerable progress in its first full year.



Prince's Trust Stargazing Booklet

SIGNIFICANT ACHIEVEMENTS (continued)

a) Public Engagement (continued)

RAS 200: Sky and Earth (continued)

First Tranche Projects (continued)

The Society embarked on calling for proposals for tranche 2 of the programme; a stakeholder meeting was held in July and 10 'town hall' meetings were convened over the autumn across the UK and Ireland, supported by members of the RAS 200 Steering Group, to promote the scheme and encourage submissions. By the December deadline for outline proposals 60 submissions had been received.

Transit of Mercury

The Transit of Mercury event held on 9th May was an ideal opportunity to increase public awareness and engagement in Astronomy. The Society organised a free event in the courtyard of Burlington House where around 300 members of the public used solar viewers to see the transit at first hand, 160 visited the library to look at historical material on previous transits. There were also approximately 500 downloads of the teaching materials provided by the Society and 30,000 hits on the website, <http://mercury.ras.ac.uk/>



Other outreach and education activities

Public lectures became increasingly popular in 2016. In late 2014, the Society had introduced evening public lectures in addition to the lunchtime lectures. Lectures at both the time slots were very well attended and appreciated by the public; the evening lectures are often fully booked and attracted a different, more diverse, generally younger audience. The speakers also appreciated the difference in the audience dynamic.

The Society partook in 'Courtyard Lates' - an open evening held in August featuring a range of activities hosted by all the Societies of the Courtyard; the public were invited to come along and 'Explore the Cosmos' with talks & demonstrations by astronomers and library tours. Around 100 people attended.

SIGNIFICANT ACHIEVEMENTS (continued)

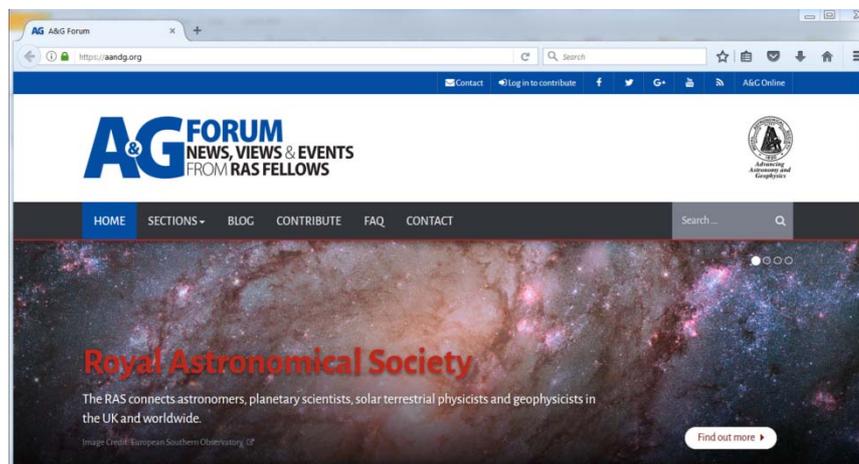
a) Public Engagement (continued)

Other outreach and education activities (continued)

During the year, the Education, Outreach and Diversity Officer interacted with over 6,000 people directly, in varied events such as Brownie stargazing nights, school assemblies, workshops for gifted and talented students, keynote speeches at conferences and hands-on demonstrations at science festivals.

The GCSE Astronomy class, held in Burlington House, continues and 15 students are enrolled to take the exam in summer 2017. Teacher training courses took place at the Society during 2016 on various topics such as the Tim Peake Primary Project and GCSE Astronomy.

The Society's magazine, A&G, very often carries articles on activities in outreach, education and diversity; in 2016 this medium was complemented by the creation of the website 'A&G Forum' which is a site for Fellows to share their news and activities, available at <https://aandg.org/>



The formal launch of the website was made in the A&G magazine in October. There has been enthusiasm for the site from Fellows contributing from the UK, Europe and the USA. Sixty Fellows have registered and provided contributions. The RAS 200: Sky and Earth programme and those representing overseas Fellows are establishing sections of the website to highlight their work.

SIGNIFICANT ACHIEVEMENTS (continued)

b) Public policy

The Society's profile in public policy matters has been increasing in recent years; the opinion of the Society is sought from advisory bodies to Government and is well respected. The Society was immediately active in response to the result of the Referendum on Membership of the European Union, presenting evidence to the House of Commons Science and Technology Committee inquiry 'Leaving the EU: implications and opportunities for science and research' and attending discussion events in Parliament.

The community has particular concerns about the significant Horizon 2020 funding that supports related fields; the future participation of the UK in, and access to shared facilities associated with, EU collaborations (e.g. those developed by Europlanet); and the movement of people needed for effective involvement in inter-governmental organisations.

Whilst the Society often makes individual contributions to inquiries and other consultations it also relies on bodies like the Campaign for Science and Engineering (CaSE) to represent the sector as a whole to senior politicians. The Society will contribute to the cost of a CaSE Policy Officer dedicated to work on the impact of Brexit on Science in the UK.

As the Government works through plans for the UK to leave the European Union the Society will continue to provide evidence to ensure that decisions makers are cognizant of the importance and effect of 'blue skies' research and its resultant applications coming from the study of A, G and related sciences. It will also urge the government to respond to international directives affecting scientists, such as restrictions on movement.

c) Governance

Following the review of the governing byelaws in 2015, the Society was committed to introducing a Code of Conduct for Fellows. The 'Code of Conduct for RAS Members and Procedure for Investigating Alleged Breaches of the Code' was approved by the governing Council in May 2016 and is referred to in membership (renewals) paperwork; by becoming or continuing to be a member of the Society, members are committed to abide by the Code. One allegation of a breach of the Code was made and investigated in 2016; the Fellow involved was found guilty and expelled from the Society in early 2017.

The Society also reviewed the criteria for the prestigious awards and medals that it makes annually and the regulations for use of the library; also a full review of the Human Resource Policies and Terms and Conditions of Service for the staff at the Society was carried out.

SIGNIFICANT ACHIEVEMENTS (continued)

c) Governance (continued)

Establishing the legal position in regards to the Society's occupancy of the premises at Burlington House was a significant undertaking during 2015 and 2016. The Society alongside the other Courtyard Societies (the Linnean Society, the Royal Society for Chemistry, the Geological Society of London and the Society of Antiquaries) have been engaged in a process of arbitration with their landlord, the Department for Communities and Local Government (DCLG), to seek clarity on a number of disputed aspects of the terms of their lease. The arbitration has been on-going since February 2015 following the end of the first ten-year lease, agreed in 2005. In December 2016 the arbitrator gave his award, and ruling on a narrowly defined set of legal questions ruled in favour of the landlord.

Whilst legal clarity on the lease has now been obtained the current lease:

- ◆ creates substantial uncertainty over future costs and length of tenure;
- ◆ acts as an impediment to investment in the premises;
- ◆ restricts greatly the Societies' ability to generate income that might contribute to rent;
- ◆ offers the Societies little influence over maintenance of the fabric of the building despite this being entirely funded by the Societies.

The Societies are continuing to work together and to pursue the matter through other avenues. However the Society considers that it will be able to pay the anticipated increased annual rental charges for the premises for the second 10 year term. This gives the Society an opportunity to consider alternative accommodation options if a more acceptable agreement is not reached with the Government.

Elections to Council 2016/2017

A disappointingly small number of Fellows voted in the elections to Council for 2016/2017 that were held in May 2016. Whilst work had been undertaken throughout the year to improve the electronic systems for membership matters, including introducing a new e-voting platform, the process of election of Fellows to positions on Council did not go well with significantly reduced numbers of Fellows voting.

SIGNIFICANT ACHIEVEMENTS (continued)

c) Governance (continued)

Elections to Council 2016/2017 (continued)

In 2016, only 485 Fellows voted: 459 electronically, 16 by post and 10 handed in at the Annual General Meeting (AGM). The number of votes cast was much lower than in recent years; 11.8% of eligible voters had used their right to vote in comparison to 32.3% in 2015 (where the election of President-elect may have accounted for a higher turnout), 26.5% in 2014 and 29.4% in 2013. In particular, the number of paper ballots received before the AGM was significantly lower (16 in 2016 in comparison to 459 in 2015).

The main reason for the low number of paper ballots cast was that, in error, ballot papers and associated manifestos were only sent out to Fellows whose emails were not known to the Society or on request. Whilst historically more than 80% of votes are normally cast electronically (83% in 2014, 85% in 2015) it is believed that the arrival of a hard copy ballot paper may have served as a prompt to remind Fellows to vote (electronically or by post).

The introduction of the new e-voting platform may also have accounted for lower voting rates; the new system requires Fellows to create an account with a username and password and some Fellows had experienced difficulty logging onto the new system.

This problem was discussed at some length at the AGM in May 2016 and it was agreed that Council should review the election process and take the findings into account when planning the elections for 2017/18 and also that all Fellows should be contacted by post and asked to confirm their preference on method of correspondence from the Society (including for the ballot for the election of Council).

A correspondence preference and data update exercise was carried out during the autumn; a letter was sent to all Fellows, encouraging them to:

- ◆ sign up for a user account on the new membership database, found on Fellows website <https://fellows.ras.ac.uk/>
- ◆ check their personal details and confirm whether or not they were content for their personal data to be shared with other Fellows
- ◆ confirm their preferred method of correspondence from the Society (including for the ballot for the election of Council)

Council considered the outcome of the exercise and agreed the following process for the 2017/18 elections:

- ◆ Ballot communication will be made by email to the Fellows who have stated that they would like to receive ballot communication electronically.

SIGNIFICANT ACHIEVEMENTS (continued)

c) Governance (continued)

Elections to Council 2016/2017 (continued)

- ◆ Hard copy ballot communication will be sent to all other Fellows who have either expressed a preference to receive hard copy papers or who have not expressed a preference for correspondence.
- ◆ A link to the RAS Fellows website will be sent to all Fellows for whom the Society holds an email address; this will enable those who receive the ballot communication by post but prefer to vote electronically to do so.
- ◆ Electronic reminders to vote will be issued to all Fellows for whom the Society holds an email address and by social media and a 'remember to vote' announcement made at the April Ordinary meeting.

The Society remains committed to the ambition that most correspondence is done electronically by the Society's bicentenary in 2020. However, it recognises that communication by electronic means is not feasible for all members of the Fellowship and will try to accommodate reasonable requests for the provision of hard copy correspondence on key Society matters.

OTHER SIGNIFICANT ACHIEVEMENTS

Publications

The RAS owns two primary research journals, Monthly Notices of the Royal Astronomical Society (MNRAS) and Geophysical Journal International (GJI). These journals are world-leading in respect of both size and quality and publication is the main activity undertaken by the Society in regards to turnover and income generation. The Society's publisher is Oxford University Press and the partnership has been very successful.

A summary of key annual data is set out below:

- ◆ The number of papers submitted to MNRAS in 2016 (4,491 submissions) increased by 8%.
- ◆ The number of papers submitted to GJI in 2015 decreased by 6% (1,045 submissions).
- ◆ MNRAS and GJI received 2015 Impact Factors of 4.952 and 2.484 respectively.
- ◆ There were almost 3 million full-text downloads from the two RAS journals and the in-house magazine in 2016 (MNRAS, 2 million; GJI, 852,000; A&G, 135,000), a 20% increase compared to the previous year.

OTHER SIGNIFICANT ACHIEVEMENTS (continued)

Publications (continued)



As in previous years a workshop on publishing in astronomy, for authors and referees, was held at the National Astronomy meeting. This covers good practice in writing research papers and getting them published, and is aimed at early-career researchers. The presentation is available at: <https://www.ras.org.uk/publications/other-publications/2700-nam-2015-author-workshop>

Professor Joerg Renner (GJI Editor-in-Chief) and Professor Duncan Agnew (GJI Deputy Editor in Chief) had a successful first year. There were two winners of the GJI student prize in 2016: (https://academic.oup.com/gji/pages/student_auth_or_award_scheme). This prize is designed to acknowledge the 'best papers' submitted to GJI

by early career scientists in the field. The winners receive a cash prize, a framed certificate, their paper is made freely available throughout 2017 and acknowledgements are made at the American Geophysical Union and European Geosciences Union General Assembly meetings.

Scientific meetings

A monthly programme of meetings (excluding the Summer break between June and September) was held in Burlington House, comprising parallel Specialist Discussion meetings (covering topics in astrophysics, solid-earth geophysics, solar-terrestrial physics, and planetary sciences), followed by the A&G ('Ordinary') meeting, with a broader programme of more general interest open to the public. Meeting reports were published, with financial assistance from the RAS, by 'The Observatory' journal. Details of the Specialist Discussion and A&G ('Ordinary') meetings held in 2016 are provided on page 42.

Typically audiences for the Specialist Discussion meetings exceeded 50 and for the A&G ('Ordinary') meeting 100.

Support to professional astronomers and geophysicists and students

The Society awarded two Research Fellowships, and the applications received for the two extremely highly sought-after positions were of very high calibre. The Society has supported 16 Fellowships since it began to offer them in 2010. In addition, the Society made 162 awards totalling £163,028 to support travel, research and educational projects. Details on these grants are provided on the Society's website.

OTHER SIGNIFICANT ACHIEVEMENTS (continued)

Support to professional astronomers and geophysicists and students (continued)

A full list of 2016 grantees is on the RAS website and summary grant information is disclosed in notes 5 and 21. The terms and conditions of the various awards are displayed on the Society's website: <http://www.ras.org.uk/awards-and-grants/grants-for-studies/2319-applying-for-a-grant>

The Society also introduced a childcare grant to assist carers to attend the National Astronomy Meeting (NAM), held in Nottingham in 2016; two individuals applied for and received a grant.

OTHER ACHIEVEMENTS

Other achievements for 2016 are summarised below and further detail provided in the Activities section and/or on the Society's website: www.ras.org.uk

Personnel/Resources

Details of staff changes in 2016 are provided in the Activities section. Details on the remuneration of key management personnel are disclosed in the financial review section.

External meetings

The Society continued to host the Astronomy Forum, Solid-Earth Geophysics Forum and External Geophysics Forum; these are informal bodies that bring together senior academics and policymakers.

The Society's premises were made available to outside organisations including the following:

Association of Pall Mall Libraries, Association of Retired ESA Staff UK branch, Astronomical Heritage Committee, British Antarctic Survey, British Astronomical Association, British Broadcasting Corporation, British Geophysical Association, Daphne Jackson Trust, Discovery Channel, Aura Solar Observatory Council, London Cosmology, Imperial College, Geologists Association, Institute of Physics, Space Connexions, Science & Technology Facilities Council, The Space, Open House, University of Southampton, University of Leicester, University of Sussex, University of Oxford, SEPnet, University College London, Queen Mary University London, UK Space Agency, Webb Society, Queens University Belfast, UK Solar Physics.

OTHER ACHIEVEMENTS (continued)

National Astronomy Meeting

The National Astronomy (NAM) meeting was held in Nottingham in 2016. The Society had a contract with Nottingham University Conference Facilities for the provision of conference and delegate accommodation on the University of Nottingham campus and a contract with academics at the university to undertake the tasks of the Scientific Organising Committee (SOC) and the Local Organising Committee (LOC) with the Society providing an e-platform for conference registration and accommodation bookings. This was an unusual, expensive and sub-optimal approach; in previous years the event has either been fully hosted by a university or held at a commercial venue but neither approach was feasible for NAM 2016. Whilst NAM 2016 was generally seen as a success with the main objective being met (attendees enjoying and learning at the conference) the Society will not enter into similar contractual arrangements again where the responsibility is split between three organisations.

Diversity

In support of the wider diversity agenda and to demonstrate the Society's commitment to improving the diversity of its membership and the scientific community, the Society was a founding signatory of the Science Council Declaration on Diversity, Equality and Inclusion in 2014.

In 2016, the Society continued to work with the Science Council on Diversity and Inclusion matters and published a policy on diversity and equal opportunities, covering members, staff and the communities that the Society represents. This can be found at: https://www.ras.org.uk/images/Diversity_Equality_Inclusion_policy_2015.pdf

In 2015 the RAS signed a Memorandum of Understanding with STEMNET, to support a new diversity ambassadors' scheme. This allows Fellows to claim for the expenses associated with outreach visits to schools that meet certain criteria, for example a high percentage of children eligible for free school meals.

Since the scheme launched there has been a low take-up, with just two enquiries and no awards made in 2015/2016.

In partnership with STEMNET and others, the Society will make further efforts to promote it in the year ahead.

OTHER ACHIEVEMENTS (continued)

Diversity (continued)

In addition, the Society was the platinum sponsor of the first LGBT+STEMinar. This was an opportunity for members from both the RAS and the Institute of Physics (IOP) to share their thoughts about the support that professional membership organisations could offer and their experiences of current good practice with regard to successful LGBT+ networks in their places of work and study. This was a successful event, which 130 people attended; three of the speakers were from the field of astronomy/physics and 40 attendees were registered as astronomers/physicists.

Consultations

The Society contributed direct evidence to 4 parliamentary or government consultations, a list of which is provided in the Activities section.

Education and Outreach programme

In addition to the events highlighted in the significant achievements section of this report, the Society maintains a substantial annual programme of other education and outreach activities. Details of key events in 2016 are provided in the Activities section.

Bicentenary planning

During the summer the Society held two meetings of a planning group established to consider how to celebrate the bicentenary of the Society in 2020.

The planning group considered the rationale behind the type and scope of activities that the Society should undertake whilst celebrating the bicentenary and recommended that:

- ◆ The Society should commemorate the historic occasion by launching a year-long programme of events that celebrate Astronomy & Geophysics, looking back over 200 years of achievements and looking forward to exciting opportunities for future generations.
- ◆ The Fellowship should have the opportunity to celebrate the bicentenary; a range of social events (at various costs) should ensure that as many Fellows as possible are able to participate in the celebrations.
- ◆ The Society should celebrate with its international compatriots.
- ◆ The Society should hold events regionally, across the UK, working with amateur A&G organisations.

OTHER ACHIEVEMENTS (continued)

Bicentenary planning (continued)

- ◆ The results and ongoing legacies arising from the outreach and education projects funded by RAS 200: Sky and Earth should be celebrated throughout 2020.
- ◆ The opportunity to promote A&G to the wider community should be considered as proposals are developed.
- ◆ The Society should make best use of its heritage assets as part of the celebrations.

They considered 36 proposals, including a number of proposals made by Fellows, and agreed to do further exploratory work on 20 proposals. Further work on planning for the Bicentenary was postponed during the latter part of 2016 as it was felt that the Society needed to be more aware of the likely future financial commitments for accommodation in Burlington House before committing to significant financial plans.

International

The Society continued to support the International Astronomical Union (IAU) Office for Astronomy Development (OAD). In April the Society reviewed its working arrangements with the OAD and agreed that it will provide up to £10,000 annually to support the OAD in its plans to establish a repository (for a range of resources, such as peer reviewed and assessed curricula) and continue with the international exchange programme.

Public lectures and talks given at A&G ('Ordinary') meetings continue to be recorded; 58 lectures are available online via the RAS YouTube channel and the website. This serves as a benefit to the community based overseas who are unable to attend meetings in person and also to interested members of the public.

Awards and Medals

The Society's awards and medals continued to be highly valued by their recipients and the community, representing, as they do, the recognition by their peers of outstanding achievement. Details on the recipients of the 2017 medals and awards, selected in 2016, are available on the RAS website: <https://www.ras.org.uk/awards-and-grants/awards/2553-winners-of-the-2015-awards-medals-and-prizes>

OTHER ACHIEVEMENTS (continued)

Friends of the RAS

The Friends of the RAS scheme allows members of the public with an interest in astronomy or geophysics to support the Society's work, and to have opportunities through the Society to find out more about these sciences. The scheme was started in January 2009 to coincide with the International Year of Astronomy; building on the success of the Society's Public Lectures launched the previous year.

There were approximately 201 Friends of the RAS during 2016. Marcus Hope, the volunteer leader of the Friends programme, provided an impressive programme of lectures; topics included Pluto: then and now; the Eclipse of 2015 Revisited; Martian meteorites; the History of the Solar System Revealed by Lunar Samples; and a visit to Leicester Space Research Centre, plus a Christmas drinks reception with the RAS President.

IT and information Management

During 2016 substantial progress was made on the following websites that have been built and developed:

- ◆ <http://mercury.ras.ac.uk> – A site with useful information about the Mercury transit where visitors could also place a pin for their location when viewing the Mercury transit.
- ◆ <http://women.ras.ac.uk> – A website celebrating 21 women of the RAS, to mark the 100th anniversary of the election of women to RAS Fellowship.
- ◆ <http://nam2016.org> – This year Fellows were able to pay online for registration, accommodation and events.

The Society introduced a new membership website for Fellows, covering subscriptions and renewals, the management of personal information such as address details and an e-voting system for elections to Council. <https://fellows.ras.ac.uk> (The previous system had become outdated and did not meet the relevant standards set out in the Data Protection Act and those set by the PCI Securities Standards Council covering financial transactions.)

In addition, preliminary work was done to develop a new Society website <http://ras.ac.uk> that will replace the existing www.ras.org.uk website. It was hoped that more progress would be made on this in 2016. However, competing priority IT projects limited the amount of time available to work on the new website.

OTHER ACHIEVEMENTS (continued)

Cunard

Fellows provided astronomy lecturers for Cunard cruise liners as part of the on-board Insights programme.

Library

Progress continued on making the RAS Library collections more accessible to the public and researchers. Details of library visits are provided in the Activities section.

Press releases

The Society strives to inform the public and specialists about developments in Astronomy and Geophysics. Details on activity undertaken in 2016 are provided in the Activities section.

Social Media

The main RAS Twitter account <http://twitter.com/royalastrosoc> has 15,040 followers; the main account typically achieves an engagement rate of around 2%, which spikes to greater than 10% for major stories. The following selection of tweets generated a large numbers of 'impressions' (i.e. people seeing the tweets) during 2016: RAS medals awards announcement in January, a tweet about Annie Jump Cannon, one of the first women Fellows, in February, a mention of Margaret Hamilton (who wrote code for the Apollo missions) in May, RAS 200 Stakeholder Meeting in July, the Perseid meteor shower in August and the PhD careers day in October.

The RAS Facebook page <https://www.facebook.com/RoyalAstroSoc/> has 7,598 'likes', and the RAS LinkedIn page <https://www.linkedin.com/groups/2757561> has 1,976 members.

Donations

Details of contributors are available on the RAS website.

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 above 60%)
- ◆ Open Access Publishing
- ◆ affordability of rent and service charges for the premises at Burlington House

RISKS (continued)

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 systems that have been established to manage those risks. In regards to the three most significant risks:

The Society insists that rigorous peer review is used to maintain the quality of the two 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.

The trustees are mindful of the uncertainty that the potential impact of UK and International policies on Open Access Publishing provides. Together with Oxford University Press, the Society's publishing partner, the Editorial Boards and staff monitor developments in this area and consider how the RAS business model would be affected if Open Access had a significant effect. A designated fund for the possible impact of Open Access has been established.

In 2005, to ensure affordability of rent and service charges for the accommodation in Burlington House, the Society and four other Courtyard Societies signed a lease with the Government for their accommodation in Burlington House. A series of eight, 10-year leases secured accommodation in Burlington House until 2085. The Courtyard Societies, as tenants, have the automatic right to renew their lease on the same terms at every 10-year break point. The first 10-year lease expired on 31 January 2015. With the other Courtyard Societies (excluding the Royal Academy that has a different lease) the Society entered into arbitration with the landlord, the Department for Communities and Local Government, on the process to conduct rent reviews, (and thereby increase rental charges) and did not sign the lease. The Society has continued to pay service charges during this period whilst it has been in negotiation over the rental charges and has set aside funds for rent payable pending the resolution of the arbitration. The arbitration concluded in December 2016; unfortunately the arbitrator ruled in favour of the landlord. This presents considerable uncertainty for the Society in regards to future rental and other accommodation charges. The Societies are continuing to work together and to pursue the matter through other avenues.

The Society had previously stated (Annual report 2015) that regardless of the outcome of the arbitration the trustees believe that the Society has resources to cover the estimated increased rental charges for the next decade and stands by that position. Deliberations are ongoing in regards to the future rent and other accommodation charges.

RISKS (continued)

Other key risks identified and their mitigation measures include:

- ◆ Maintenance of the (listed) premises (by regular repair and refurbishment).
- ◆ Maintenance of the size of the membership (by regular review of services and subscriptions and outreach activities to potential new members).

The trustees consider the fluctuations in investment fund values and variability of investment returns to be a risk of the Society. The fund, Newton Growth and Income Fund for Charities, is actively and expertly managed and administered by Newton Investment Management. Funds are invested in a diverse portfolio comprising commodities, equities, bonds and gilts. 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.

STRUCTURE, GOVERNANCE AND MANAGEMENT

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 May 2015. The RAS's objectives, charters and byelaws are detailed on the society's website www.ras.org.uk.

The control of the Society rests with the General Meeting of Fellows. Subject to that, direction and management is the responsibility of the Council (that serves as the Board of Trustees). The Council consists of a President, a Treasurer and three Secretaries together with four Vice-Presidents and twelve Councillors. In addition the President-elect attends Council for one year prior to taking up 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. Voting can be done electronically, by post or in person at the Annual General Meeting.

Members of the Council are elected by ballot at the Annual General Meeting, 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.

STRUCTURE, GOVERNANCE AND MANAGEMENT (continued)

Trustee recruitment and appointment (continued)

There were two anomalies to the election process in 2016. There were five Councillor positions available, four for the standard term of three years and one for a two year term as a member of Council had resigned part of the way through their term (and in accordance with byelaw 22 and 32 this position is offered for the remaining term length and the elected candidate with the lowest number of votes would take up the two year term.) One of the candidates died during the election process: it was decided that voting and scrutiny of the ballot would continue as normal and that in the event that the individual who had died was allocated enough votes to be appointed as a Councillor then the candidate who would have been in sixth position would be allocated the Councillor position for the two year term. All of the candidates were informed of this approach before the ballot closed.

Trustee induction

New members of Council attend a Trustee Induction programme before their first Council meeting. All members of Council are asked to complete a conflict of interest declaration and to sign a Trustee declaration form.

Organisational structure

The RAS Council normally meets 6 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, International, Membership, Library, Astronomical Heritage, Committee for 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 and Geophysical Journal International 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.

STRUCTURE, GOVERNANCE AND MANAGEMENT (continued)

Organisational structure (continued)

- ◆ The Society is represented on a number of organisations including the Science Council, the Parliamentary and Scientific Committee and the Campaign for Science and Technology.
- ◆ The Society recognises the appeal of astronomy and geophysics to the general public by offering annual membership to 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 'house journal' Astronomy & Geophysics.

EVENTS SINCE THE YEAR END AND PLANS FOR THE FUTURE

In 2017 the Society will be proactively involved in ensuring that Government and other bodies are aware of the requirement for sustained and significant public funding of astronomy and geophysics research and teaching and the benefits that this brings to the UK and wider society. Also, the Society will continue to broaden its engagement with the public through the provision of education, outreach and diversity projects.

On the former the Society will engage with elected representatives and senior public servants in the UK and Europe. As part of this the President will meet with MPs, MEPs, members of the devolved assemblies/parliaments, and staff in the research councils, setting out the impact of Brexit on astronomy and geophysics, including the potential loss of research funding, and the challenges it presents to continued UK involvement in some European partnerships. In the UK, the Society will submit evidence to the green paper on the industrial strategy, and will make the case for support for our sciences from domestic R&D funding, at a level that is sufficient to maintain and enhance their internationally competitive status.

Looking more widely, the Society will continue to note and respond to international developments where they have a potential impact on astronomy and geophysics. A recent example of this is the ban that the Trump administration is trying to introduce on entry to the US by nationals of Muslim-majority countries, which undermines the scientific collaboration that underpins the global research community.

The Society will also assemble evidence on the health of the astronomy and geophysics communities to support our political engagement. It will publish the results of the Demographic Survey commissioned in 2016 which, in combination with our earlier membership survey and with UCAS data, will give a picture of the demographic composition and research interests of the communities we represent.

EVENTS SINCE THE YEAR END AND PLANS FOR THE FUTURE (continued)

Key tasks to broaden the Society's engagement will include:

- ◆ Scrutinising the second tranche of RAS 200: Sky and Earth projects and making awards to the winning projects that will begin in 2017.
- ◆ Continuing to evaluate the RAS 200 Sky and Earth first tranche projects and monitor progress with the new projects.
- ◆ Providing a free GCSE Astronomy course and the GCSE Astronomy exam for the students.
- ◆ Working with primary schools across London for the Tim Peake Primary Project and encouraging school group visits to Burlington House.
- ◆ Working with BBC Learning to develop resources for a new science website.
- ◆ Supporting a schools conference in conjunction with the National Space Centre and the Royal Society of Chemistry.
- ◆ Arranging various education and outreach events at NAM 2017.
- ◆ Utilising the library more to promote outreach and education activities and to further extend access to RAS Library collections.

Diversity

The Society's work on diversity and inclusion will focus on the BAME (black and minority ethnic) community, families and students from challenging socio-economic backgrounds in 2017.

Events planned by the Education, Outreach and Diversity officer include SMASHFest, a free festival for all ages based mainly in Deptford, South East London over the February Half Term 2017, Accenture's Girls in STEM event, a special public lecture for International Women's Day and an autism-friendly diversity lunch at the National Astronomy Meeting in Hull, supported by the National Autism Society who are a partner organisation through the RAS 200: Sky & Earth programme.

Also, the Society will:

- ◆ complete the Science Council's diversity and inclusion framework in 2017 that will provide a benchmark for the Society's work in diversity and inclusion.
- ◆ continue to support the annual LGBT+STEMinar and hope to act as host in 2019.

EVENTS SINCE THE YEAR END AND PLANS FOR THE FUTURE (continued)

Diversity (continued)

- ◆ write a harassment and bullying questionnaire that will be disseminated to Fellows and professionals in astronomy and geophysics and the results analysed later in the year.

Bicentenary planning

The Society will return to planning for the Bicentenary once the financial picture in relation to likely accommodation charges for Burlington House is clear.

Governance

The Society, along with the four other Courtyard Societies will continue to work together to promote Burlington House as a unique and important arts and science cultural hub and to pursue the matter of the lease and accommodation charges through other avenues.

The Society has a number of agreements that vary in nature from formal (often outdated) Memorandums of Understanding to informal working arrangements with a range of other bodies; these agreements/arrangements will be reviewed and standardised in the summer of 2017.

The Society will review the terms and conditions for the RAS Research Fellowships. They will be updated to include detail on maternity, paternity, parental and long-term sick leave for university staff holding RAS Research Fellowships and publicised in calling notices and application paperwork.

International

The Society will appoint a member of Council to be the Champion for International matters; this should raise the profile of the views of the membership based overseas and options proposed to better involve and support the overseas members.

Other

In addition to the specific objectives listed above the Society will continue to deliver its set of high quality outputs. The Society will:

- ◆ Continue to publish high quality peer reviewed journals on Astronomy and Geophysics.
- ◆ Sustain its support of students and early career scientists by continuing to provide RAS Research Fellowships and grants.
- ◆ Continue to recognise achievements in Astronomy and Geophysics by the award of medals and prizes.

EVENTS SINCE THE YEAR END AND PLANS FOR THE FUTURE (continued)

Other (continued)

- ◆ Continue to review the business model to embrace and benefit from the move towards Open Access publishing.
- ◆ Maintain a renowned programme of specialist discussion meetings and public lectures series.
- ◆ Continue to support the successful 'Friends of the RAS' programme.
- ◆ Host a National Astronomy Meeting; this will be held in Hull in early July 2017.

ACTIVITIES

The Fellowship

The RAS comprises some 4,042 Fellows and Honorary Fellows, of whom approximately one third are based in some 64 overseas countries; 20% are under the age of 34 and 31% are over 65; approximately 17% of the total membership is female (of which 38% are under 34, 47% are aged 34 to 65 and 12% are over 65, 3% have not declared their age.) It is entirely funded by subscriptions from its members, gifts from donors, and the income generated by its activities, largely from its scientific journals, and investment income.

Personnel/Resources

The following staff changes occurred in 2016.

The Society employs 18 full time members of staff, 2 part-time cleaners and a senior accountant on a consultancy basis. The following staff changes occurred in 2016:

- ◆ Annie Hogan was appointed as Membership Officer in June 2016; replacing Meron Kassa.
- ◆ Sheila Kanani, the Education, Outreach and Diversity Officer, returned from maternity leave in September 2016. Clare McLoughlin had covered that post in the interim.
- ◆ Nush Cole, Admin Officer began a secondment to cover maternity leave for Fern Storey, Editorial Assistant in October 2016. Richard O'Sullivan has been employed as an Admin Officer to cover Nush Cole's front-of-house role.
- ◆ A part-time temporary documentation officer was appointed on a five month contract (May to September 2016) to document the collection of instruments currently located in Burlington House. An accurate inventory of objects will serve as a useable, sustainable resource which will be a foundation for future activities, such as exhibition loans.

ACTIVITIES (continued)

Personnel/Resources (continued)

- ◆ An HR consultancy firm was used to prepare the revised Human Resource documentation and revised Terms and Conditions of Service for the staff of the Society.

Consultations

The Society gave evidence to:

- ◆ House of Commons Science and Technology Committee: Leaving the EU: Implications and opportunities for science and research inquiry (2016)

http://www.ras.org.uk/images/stories/ras_pdfs/Policy%20Papers/Leaving_the_E_U_Sci_Tech_Committee_final.pdf

- ◆ House of Commons Science and Technology Select Committee inquiry into Satellites and Space (2016)

http://www.ras.org.uk/images/stories/ras_pdfs/Policy%20Papers/Satellites_and_Space_final_2016.pdf

The Society also issued statements before and after the EU referendum, noting the advantages of EU membership for science, and the need to preserve UK partnership in EU projects after Brexit.

Commons Science and Technology Committee: Inquiry into Science Communication

http://www.ras.org.uk/images/stories/ras_pdfs/Consultations/Science_and_Technology_Select_Committee_final.pdf

DfE consultation on changes to assessment of GCSE Astronomy

http://www.ras.org.uk/images/stories/ras_pdfs/Consultations/GCSE_Astronomy_Consultation.pdf

In addition, earlier in the year the Society commented on the financial settlement for the research councils.

Policy research

The Society carried out a full demographic survey of the UK astronomy and geophysics communities. More than 1,000 researchers responded, along with the overwhelming majority of research groups. The full analysis should be published in late spring of 2017, and will take account of other work last year on undergraduate numbers using UCAS data.

ACTIVITIES (continued)

Policy research

Written by the A&G editor, the Society also distributed copies of a new book on the wider impact of astronomy and space science to MPs, MEPs, members of the devolved assemblies, and senior public servants. See <http://www.ras.org.uk/publications/other-publications/2798-astronomy-means-business>

Political engagement

The Society continued an active programme of engagement with elected politicians and policymakers in government. Key events during 2016 include attendance (with an RAS stall and publications) at the Parliament in Edinburgh, the Assemblies in Cardiff and Belfast, as well as at the UK parliament at Westminster. In Cardiff the Deputy Executive Director gave a presentation on the wider impact of space science.

Staff and Officers also attended a number of less formal events in Parliament, meeting with MPs, peers and others.

RAS-nominated young scientists attended the 'Voice of the Future' question time event, to ask ministers, MPs and senior civil servants about the future of UK science.

The Society was immediately responsive to the EU referendum; Fellows were encouraged to write to MPs arguing for a good budget settlement for science to compensate for the impact of Brexit.

Collaboration with other learned societies such as the Geological Society and the Institute of Physics shaped consultation responses. The Society also collaborates with the Campaign for Science and Engineering and the Science Council, and participates in policy events in areas such as immigration, diversity and postgraduate funding.

The Deputy Executive Director regularly attends the pan-science Parliamentary Affairs Committee, and the policy network meetings of the Royal Society and the Royal Academy of Engineering.

Education and Outreach programme

- ◆ Via the Space Ambassadors programme the Education, Outreach and Diversity Officer worked with over 900 pupils in 5 schools and reached 400 teachers.
- ◆ In 2016 the Education, Outreach and Diversity officer gave public lectures, keynote speeches, ran geophysics workshops, made moon bases with primary students and took gifted and talented groups on a 'mission to Mars' reaching over 6,000 people.
- ◆ Three school groups visited Burlington House in 2016, with a total of 150 students.

ACTIVITIES (continued)

Education and Outreach programme (continued)

- ◆ The RAS supported two UK pupils with bursaries to attend the ESO Astronomy Camp.
- ◆ With the IOP and STFC, the Society supported a careers event for astronomy PhD students.
- ◆ The Open House London family event attracted 90 people
- ◆ Teacher training sessions continue to take place at Burlington House, with 30 teachers trained between September and December 2016.
- ◆ The GCSE Astronomy class began in September 2015, and will run for two school years until June 2017.

Library and Archive

- ◆ 1,324 visits were made to the Library in 2016, 290 by Fellows and Friends, and the rest by external researchers, people attending public lectures and other events like Open House, and groups of school and university students; for comparison, there were just over 1,000 recorded visits in 2015 and 343 in 2014. Visitors included a group of seven researchers from the National Astronomical Research Institute of Thailand.
- ◆ Over 70 rare books, manuscripts, photographs and drawings were displayed to the public during outreach events and public lectures.
- ◆ The education, outreach and diversity officer has worked with the librarian to continue delivering an innovative programme for visiting primary school children. In 2016, 130 pupils had the chance to learn about comets and Caroline Herschel through drama, and interacting with Caroline Herschel's observation notebooks.
- ◆ Many of the 16 articles commissioned by the editor of A&G to highlight the achievements of early women Fellows drew on the Society's library and archive collections. As well as portraits used to illustrate the articles, authors used letters, books, articles and magic lantern slides to bring these historical figures to life.
- ◆ On Ada Lovelace Day, the Library held an open afternoon to allow members of the public to drop in and look at the Society's collection of popular astronomy books written by women, as well as magic lantern slides used by Mary Proctor in her public astronomy lectures from the late 1890s onwards.

ACTIVITIES (continued)

Library and Archive (continued)

- ◆ In July, the Society worked with the other Courtyard Societies to host the first ever Burlington House 'Courtyard Late'. In addition to talks and demonstrations given by Fellows, the library was open to the public with a display of rarely-seen drawings of Mars in conjunction with a talk delivered by the Dr Marek Kukula, the Public Astronomer from the Royal Observatory Greenwich.
- ◆ A key item in the RAS photograph collection, a glass plate image of the Moon taken by Warren De La Rue in 1857, was used as the opening image in Sky at Night's special programme on the five best images of the Solar System in March 2016.
- ◆ A sextant, thought to have belonged to Captain Cook, was returned by the Science Museum after being displayed in an exhibition in Seoul, Korea ('Science and Splendour: Treasures from the Court of King George III').
- ◆ Over 300 enquiries from researchers across the world were received and dealt with by email, phone and social media, a 20 per cent increase on 2015.
- ◆ New acquisitions for the archive include the working papers of Nigel Calder, kindly donated by his children, and the astronomical journal of Rev. Samuel J. Johnson FRAS.

Press Releases

In 2016 the Society issued 59 press releases on a wide variety of topics in astronomy and planetary science. These covered stories including the sponsorship of Ada Lovelace Day, the transit of Mercury, the estimated two trillion galaxies in the observable Universe, a possible surge in activity for the Perseid meteor shower, a giant void in the Milky Way, evidence for a direct collapse black hole, Jupiter's Great Red Spot heating the upper atmosphere, an automatic analysis for Euclid data, a 6,000 year old 'telescope', planet Nine being stolen from another star, and Hubble images of 'monster stars'.

Every release led to some media coverage, and over the year stories were featured on the BBC website, major national news outlets such as the Guardian, Telegraph, and Daily Mail, in international news outlets around the world, and in the specialist astronomy press.

Five members of staff, (the Deputy Executive Director, the Education, Outreach and Diversity Officer, two Assistant Editors and the Librarian) gave a total of 16 TV and 51 radio interviews and contributed to podcasts for Wired, Space Boffins and the Asos website. The Education and Outreach Officer and the A&G Editor were both interviewed for online features on the 100th anniversary of women first being admitted to the Fellowship of the Society.

ACTIVITIES (continued)

Press Releases (continued)

Other highlights included multiple TV and radio interviews on the transit of Mercury and on the end of the Rosetta mission.

At NAM a member of the RAS press team also experimented with a Google Hangout, where a planetary scientist specialising in Jupiter spoke with and took questions from more than 300 schoolchildren. The Society plans to extend this in 2017, covering both the Ordinary Meetings and the NAM.

Scientific meetings

The following Specialist Discussion meetings and A&G ('Ordinary') meetings were held in 2016:

RAS Specialist Discussion Programme 2016

Date	Astronomy	Geophysics
08 Jan 2016	Multiwavelength Surveys for Extragalactic Astrophysics	Modern data analysis in solar physics: progress in the automated analysis of solar features and their dynamics
12 Feb 2016	Cosmology with Maps	Joint inversion of geophysical datasets for enhanced imaging of the Earth (NAG 2-day meeting)
11 Mar 2016	Star formation studies with the JCMT in the new era	Turbulence in solar, space and astrophysical plasmas
08 Apr 2016	High-redshift galaxies and their low-redshift analogues	The use of extraterrestrial resources to help facilitate space science and exploration
13 May 2016	Astrophysics and Astroparticle Physics in the CTA Era	Solar Flares: new insights from the lower atmosphere
14 Oct 2016	Industrial revolution in galactic astronomy	Flux emergence and its consequences in the solar atmosphere
11 Nov 2016	Fine-Tuning on the Cosmological and the Quantum Scales	Crustal Differentiation on Mars: A new View of the Red Planet Forty Years after Viking
9 Dec 2016	Radio Galaxies in the Local Universe	Frozen Worlds and Landscapes of our Solar System

ACTIVITIES (continued)

Scientific meetings (continued)

RAS A&G 'Ordinary' Meeting Programme 2016

8 Jan 2016

"The Way to the Stars" - a dramatized celebration of the history of female astronomers leading up to their admission as Fellows of the RAS in 1916

RAS 2015 GROUP AWARD (G)

- ◆ Louise Harra (UCL)
Exploring solar activity with the Hinode spacecraft
- ◆ Paul O'Brien (University of Leicester)
The STFC Exoplanet Science Review

12 Feb 2016

RAS 2015 GROUP AWARD (A)

- ◆ Dr Simon Garrington (Manchester)
High resolution radio imaging with e-MERLIN
- ◆ Professor Alberto Vecchio (Birmingham)
Searching for gravitational waves

RAS 2015 HAROLD JEFFREYS LECTURE

- ◆ Professor Tony Watts (University of Oxford)
Plate flexure and its implications for geological processes

11 Mar 2016

RAS FELLOWSHIP 2012 - 2015

- ◆ Dr Sarah Badman (Lancaster University)
The aurorae of Jupiter and Saturn

RAS FELLOWSHIP 2012 - 2015

- ◆ Dr Nick Wright (Keele University)
The dynamics of star clusters

ACTIVITIES (continued)

Scientific meetings (continued)

RAS A&G 'Ordinary' Meeting Programme 2016 (continued)

11 Mar 2016 (continued)

2016 EDDINGTON LECTURE

- ◆ Professor Eric Ford (Pennsylvania State University)
Kepler, the Architectures of Exoplanet Systems & Implications for Planet Formation

8 Apr 2016

- ◆ Martin Elvis (Harvard Smithsonian Center for Astrophysics)
Quasar rain: The origin of the Broad Line Region
- ◆ Andrew Kuh (UK Space Agency)
Tim Peake, Human Spaceflight and Space Environments Research in the UK
- ◆ Matt Mountain (Association of Universities for Research in Astronomy)
U.S. Optical-Infrared Observational Astronomy: challenges and opportunities
- ◆ Paul Spudis (Lunar and Planetary institute)
The New Moon: Some Results from Recent Exploration

13 May 2016

2016 PRESIDENTIAL ADDRESS:

- ◆ Professor Martin A. Barstow (Leicester)
Diamonds in the Sky – The Importance of White Dwarfs in Modern Astrophysics

14 Oct 2016

FOWLER AWARD

- ◆ Dr Andrew Pontzen (UCL)
Genetically modified galaxies
- ◆ Dr Guillem Anglada-Escudé (QMUL)
Proxima b and the search for terrestrial planets around the nearest red dwarfs

ACTIVITIES (continued)

Scientific meetings (continued)

RAS A&G 'Ordinary' Meeting Programme 2016 (continued)

14 Oct 2016 (continued)

2016 GERALD WHITROW LECTURE

- ◆ Dr Neil Turok (Perimeter Institute, Canada)
Universe

11 Nov 2016

- ◆ Professor Gerry Gilmore (Cambridge University)
Gaia: the 6-D Milky Way map is coming to you
- ◆ Dr Simon Mitton (St Edmund's College, Cambridge)
Georges Lemaître: Life, Science and Legacy

RAS 2016 HAROLD JEFFREYS LECTURE

- ◆ Dr Jenny Collier (Imperial College)
Making Britain: evidence for catastrophic flooding in the English Channel

9 Dec 2016

PATRICIA TOMKINS UNDERGRADUATE PRIZE

- ◆ Ms Samantha Stever
Investigation of Alternative Capacitor Designs for High-Sensitivity Astronomical Applications

KEITH RUNCORN THESIS PRIZE

- ◆ Dr Matteo Ravasi (Statoil ASA, Norway)
New advances in seismic imaging: can we get the most out of our data?

RAS 2016 GEORGE DARWIN LECTURE

- ◆ Professor Michael Kramer (MPIfR, Bonn/University of Manchester, Jodrell Bank Observatory)
Probing Einstein's Universe and its physics - the joy of being curious

FINANCIAL REVIEW

The Society's total funds increased from £19,140,306 to £19,863,597 during the year, both figures including a large contribution from the Society's heritage assets (rare books, clocks, telescopes and fine art) which totalled £9,440,879 (2015: £9,440,879). Income increased to £4,299,415 (2015: £4,139,808) due to additional publishing income and scientific meeting income from the National Astronomy Meeting 2016. The Society's expenditure decreased from £4,416,207 to £4,239,986 which is mainly due to research supported by fellowship grants ending earlier than anticipated. Net investment gains totalled £663,862 (2015: £113,671).

Investment policy

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. Transfers from the endowment funds to the restricted income fund of total returns for the year were £239,155 (2015: £77,205).

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. The total funds are now £19,863,597 of which £9,440,879 are held in heritage assets, leaving funds of £10,422,718 to cover the main risks and the operational needs of a going concern.

During the year, the Society reviewed its restricted reserves and reclassified these with consideration to the nature of the original bequest and the intended use of the fund. Some restricted funds were reclassified to either endowment funds, designated or general funds. These are detailed in notes 15, 16, 17 and 18.

As previously stated in the investment policy, the trustees, by resolution, adopted a total returns approach to the invested endowment funds.

The requirement for significant reserves falls into two areas:

- ◆ The need to have contingency plans in place to maintain publication income if Open Access regulations threaten the current business model for academic journals; and

FINANCIAL REVIEW (continued)

Policy on reserves (continued)

- ◆ The need to make some provision for either substantial increases in rent, or alternatively, a change in the status of our accommodation. This has come under closer review during the year when the Society and four other Courtyard Societies completed arbitration proceedings with the landlord. The Society's right to remain at Burlington House under the present lease is not in doubt, but the scale of future rent increases is as yet undetermined.

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 £5,077,992 and these would allow operation of the Society for at least 12 months if publishing were continued and expenditure incurred during that period and 39 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.

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) the Norman Lockyer Fellowship (in Solar and Solar Terrestrial Physics) and Daphne Jackson Fellowships enabling scientists to return to work after career breaks. Of these fellowships 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.

FINANCIAL REVIEW (continued)

Grant Making Policy (continued)

The grants, fellowships and awards are funded from two sources. The Society has its restricted and endowment funds invested with Newton Investment Management and the income and gains from these investments are used to support the grants expenditure in accordance with the bequests.

The grants panel deliberates twice a year. It comprises the Treasurer (Chair) and the three secretaries. About 160 applications are 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.

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 a senior accountant, accountant, a further three managerial level officers and other staff.

On behalf of the RAS Council the Treasurer 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 2013.

In 2013 the analysis included consideration of the job function, complexity and location. For the majority of posts the current salary was well aligned with those of similar posts based in London. The salaries of the key management staff members were compared with those of similar appointees in other Learned Societies, consideration given to the size of the organisation (financial turnover) and the number of staff employed and salary levels set to ensure that the remuneration was appropriate for the level of managerial responsibility held.

The Society does not have a performance related pay scheme. The Trustees annually consider a salary increase in regards to cost of living that applies to 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 four deferred members only and 11 annuitants. The Society operates a defined contribution group personal pension scheme and completed its auto-enrolment obligations in readiness for staging compliance on 1 January 2017.

FINANCIAL REVIEW (continued)

Legacies and donations

The Society encourages Fellows to include donations to the Society in their wills and receives sporadic donations during the year from Fellows and members of the public. During the year the Society received donations of £3,239 (2015 - £4,845) and no legacies (2015 - £21,969).

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.

Investment Policy

The Society has made no changes to its investment policy, with the funds now invested with BNY Mellon in a Growth and Income Fund managed by Newton Investment Management. The Society's Investment Policy has been agreed by Council and is published on the Society's website and the key elements are:

- ◆ Funds will be invested in stable, legally constituted bodies chosen to maximise the Society's investment income in the medium and long term.
- ◆ No investment will be made in any financial concern whose activities in practice threaten the charitable purposes of the Society, namely the encouragement of Astronomy, Geophysics and related subjects.
- ◆ No investment shall be made in a financial concern if there is evidence that it would be disapproved of by a majority of RAS members.

Investment Performance

The Newton Growth and Income fund for charities provided income of 3% and net gains of 10.4% in the year.

TRUSTEES' RESPONSIBILITIES IN THE PREPARATION OF ACCOUNTS

The trustees are responsible for preparing the Trustees' report and the accounts 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 accounts 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 accounts, the trustees are required to:

- ◆ select suitable accounting policies and then apply them consistently;

TRUSTEES' RESPONSIBILITIES IN THE PREPARATION OF ACCOUNTS

(continued)

- ◆ observe the methods and principles in Accounting and Reporting by Charities: Statement of Recommended Practice applicable to charities preparing their accounts 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 accounts;
- ◆ prepare the accounts 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 accounts 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 2017 will be proposed at the Annual General Meeting.

Approved by the Council and signed on its behalf by:

Professor John Zarnecki
President

Date: 12 May 2017

Independent auditor's report to the trustees of the Royal Astronomical Society

We have audited the accounts of the Royal Astronomical Society for the year ended 31 December 2016, which comprise the statement of financial activities, the balance sheet, the statement of cash flows, the principal accounting policies and the related notes. The financial reporting framework that has been applied in their preparation is applicable law and United Kingdom Accounting Standards (United Kingdom Generally Accepted Accounting Practice), including FRS 102, the Financial Reporting Standard applicable in the UK and Republic of Ireland.

This report is made solely to the 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 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 trustees as a body, for our audit work, for this report, or for the opinions we have formed.

Respective responsibilities of trustees and auditor

As explained more fully in the Trustees' responsibilities statement set out in the Trustees' report, the trustees are responsible for the preparation of accounts which give a true and fair view.

We have been appointed as auditor under section 144 of the Charities Act 2011 and report in accordance with regulations made under section 154 of that Act. Our responsibility is to audit and express an opinion on the accounts in accordance with applicable law and International Standards on Auditing (UK and Ireland). Those standards require us to comply with the Auditing Practices Board's (APB's) Ethical Standards for Auditors.

Scope of the audit of the accounts

An audit involves obtaining evidence about the amounts and disclosures in the accounts sufficient to give reasonable assurance that the accounts are free from material misstatement, whether caused by fraud or error. This includes an assessment of: whether the accounting policies are appropriate to the charity's circumstances and have been consistently applied and adequately disclosed; the reasonableness of significant accounting estimates made by the trustees; and the overall presentation of the accounts. In addition, we read all the financial and non-financial information in the Trustees' report to identify material inconsistencies with the audited accounts and to identify any information that is apparently materially incorrect based on, or materially inconsistent with, the knowledge acquired by us in the course of performing the audit. If we become aware of any apparent material misstatements or inconsistencies we consider the implications for our report.

Independent auditor's report 31 December 2016

Opinion on the accounts

In our opinion the accounts:

- ◆ give a true and fair view of the state of the charity's affairs as at 31 December 2016 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.

Matters on which we are required to report by exception

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

- ◆ the information given in the Trustees' report is inconsistent in any material respect with the accounts; or
- ◆ sufficient accounting records have not been kept; or
- ◆ the accounts 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.



Buzzacott LLP
Statutory Auditor
130 Wood Street
London
EC2V 6DL

18 May 2017

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 2016

	Notes	Unrestricted funds £	Restricted funds £	Endowment funds £	2016 Total funds £	2015 Total funds £
Income						
Donations and legacies	1	2,793	446	—	3,239	26,814
Other trading activities		44,948	—	—	44,948	53,478
Investment income	2	146,156	5,152	56,611	207,919	200,118
Charitable activities	3	4,043,309	—	—	4,043,309	3,859,398
Total income		4,237,206	5,598	56,611	4,299,415	4,139,808
Expenditure						
Raising funds		20,687	—	—	20,687	16,336
Charitable activities	5	4,257,602	(38,303)	—	4,219,299	4,399,871
Total expenditure		4,278,289	(38,303)	—	4,239,986	4,416,207
Net (expenditure) income before investment gains and losses						
		(41,083)	43,901	56,611	59,429	(276,399)
Net gains on investments	11	464,704	16,614	182,544	663,862	113,671
Net income (expenditure) and net movement in funds		423,621	60,515	239,155	723,291	(162,728)
Gross transfer between funds	15	—	239,155	(239,155)	—	—
Net movement in funds		423,621	299,670	—	723,291	(162,728)
Reconciliation of funds:						
Total funds brought forward at 1 January 2016 as restated	16	17,297,487	190,137	1,652,682	19,140,306	19,303,034
Total funds carried forward at 31 December 2016		17,721,108	489,807	1,652,682	19,863,597	19,140,306

All income from other trading activities and expenditure on raising funds is unrestricted in the above financial years.

All gains and losses for the year are recognised in the above statement. All activities are classed as continuing.

The notes on pages 63 to 80 form part of these accounts.

Balance sheet 31 December 2016

	Notes	2016 £	2016 £	Restated 2015 £	Restated 2015 £
Fixed assets					
Tangible assets					
. Heritage assets	11	9,440,879		9,440,879	
. Other assets	11	1,114,508		1,226,035	
Investments	12	7,032,364		6,368,502	
			17,587,751		17,035,416
Current assets					
Debtors	13	588,727		643,027	
Cash at bank and in hand		3,753,225		3,464,777	
		4,341,952		4,107,804	
Creditors: amounts falling due within one year	14	(1,755,269)		(1,829,574)	
Net current assets			2,586,683		2,278,230
Total assets less current liabilities			20,174,434		19,313,646
Creditors: amounts falling due after one year	14		(310,837)		(173,340)
Total net assets			19,863,597		19,140,306
The funds of the charity					
Endowment funds	15	1,652,682		1,652,682	
Restricted income funds	16	489,807		190,137	
Unrestricted income funds					
. Designated funds	17	12,643,116		12,990,807	
. General funds		5,077,992		4,306,680	
			17,721,108		17,297,487
			19,863,597		19,140,306

The accounts were approved by Council on 12 May 2017 and signed on its behalf by

Professor John Zarnecki
President

The notes on pages 63 to 80 form part of these accounts

Statement of cash flows Year to 31 December 2016

	Notes	2016 £	2015 £
Cash inflow from operating activities			
Net cash provided by operating activities	A	85,865	100,973
Cash inflow from investing activities			
Dividends and interest from investments		207,919	200,118
Purchase of tangible fixed assets		(5,336)	(73,646)
Net cash provided by investing activities		202,583	126,472
Change in cash and cash equivalents in the year		288,448	227,445
Cash and cash equivalents at 1 January 2016	B	3,464,777	3,237,332
Cash and cash equivalents at 31 December 2016	B	3,753,225	3,464,777

Notes to the cash flow statement for the year to 31 December 2016.

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

	2016 £	2015 £
Net movement in funds (as per the statement of financial activities)	723,291	(162,728)
Adjustments for:		
Depreciation charge	116,863	112,608
Net gains on investments	(663,862)	(113,671)
Dividends and interest from investments	(207,919)	(200,118)
Loss on disposal of heritage assets	—	148,870
Decrease in debtors	54,300	24,344
Increase in creditors	63,192	291,668
Net cash provided by operating activities	85,865	100,973

B Analysis of cash and cash equivalents

	2016 £	2015 £
Total cash and cash equivalents: Cash at bank and in hand	3,753,225	3,464,777

Principal accounting policies 31 December 2016

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

Basis of preparation

These accounts have been prepared for the year to 31 December 2016.

The accounts 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 accounts.

The accounts have been prepared in accordance with Accounting and Reporting by Charities: Statement of Recommended Practice applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (Charities SORP) issued on 16 July 2014, 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 accounts are presented in sterling and are rounded to the nearest pound.

Critical accounting estimates and areas of judgement

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

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

- ◆ estimating the liability for multi-year grant commitments;
- ◆ estimating the useful economic life of tangible fixed assets; and
- ◆ estimating the accrual for Burlington House rent and fees associated with the arbitration.

Assessment of going concern

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

The Trustees are fully cognisant of the risks that the Society is carrying such as the uncertainty and risks of increased rental charges 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 Societies publications will decrease.

Principal accounting policies 31 December 2016

Assessment of going concern (continued)

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 on pages 46 and 47 of the Trustees' report provides more detail.

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 accounts are mentioned above and detail provided in the section on risks in the Trustees' report.

With regard to the next accounting period, the year ending 31 December 2017, the most significant areas that affect the carrying value of the assets held by the charity are expected to be the same as for 2016.

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 accounts 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.

Principal accounting policies 31 December 2016

Income recognition (continued)

Income from 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

Liabilities are recognised as resources expended 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 accounts 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 investment management fees 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 accounts 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.

Principal accounting policies 31 December 2016

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 now 100% held by Royal London.

The latest actuarial valuation at 31 December 2016 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.

Foreign currencies

Monetary assets and liabilities denominated in foreign currencies are translated at the rate of exchange ruling at the balance sheet date. Transactions in foreign currencies are recorded at the rate ruling at the date of the transaction. All differences are taken to the statement of financial activities.

Principal accounting policies 31 December 2016

Heritage assets

Heritage assets are included in the accounts 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 the latest valuation by Christies in 1996, with a number of items re-valued by Quaritch in 2011. The valuation basis was High Auction Estimate.

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

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.

The majority of heritage assets have been acquired by donation. In the early days, the Society purchased some rare books and manuscripts using a fund established for this purpose.

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.

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. They have been discounted to the present value of the future cash receipt where such discounting is material.

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. Deposits for more than three months but less than one year have been disclosed as short term deposits. Cash placed on deposit for more than one year is disclosed as a fixed asset investment.

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. They have been discounted to the present value of the future cash payment where such discounting is material.

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.

Principal accounting policies 31 December 2016

Fund structure (continued)

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 £	Endowment funds £	2016 Total funds £	2015 Total funds £
Donations	2,793	446	—	3,239	4,845
Legacies	—	—	—	—	21,969
2016 Total funds	2,793	446	—	3,239	26,814
2015 Total funds	1,159	25,655	—	26,814	

2 Income from investments

	Unrestricted funds £	Restricted funds £	Endowment funds £	2016 Total funds £	2015 Total funds £
Income from listed investments	144,083	5,151	56,599	205,833	197,951
Bank interest	2,073	1	12	2,086	2,167
2016 Total funds	146,156	5,152	56,611	207,919	200,118
2015 Total funds (restated)	146,191	4,690	49,237	200,118	

3 Income from charitable activities

	Unrestricted funds £	Restricted funds £	2016 Total funds £	2015 Total funds £
Publications (note 4)	3,640,392	—	3,640,392	3,541,840
Membership	242,361	—	242,361	305,885
Scientific meetings	147,035	—	147,035	3,944
Public policy	930	—	930	349
Library	5,341	—	5,341	4,130
Educational	3,250	—	3,250	3,250
Other	4,000	—	4,000	—
2016 Total funds	4,043,309	—	4,043,309	3,859,398
2015 Total funds	3,859,398	—	3,859,398	

Notes to the accounts 31 December 2016

4 Publications

	2016 £	2015 £
Income		
Monthly notices of the Royal Astronomical Society	2,632,520	2,532,900
Geophysical Journal International	923,063	924,925
Astronomy & Geophysics	77,732	76,110
Other	7,077	7,905
	3,640,392	3,541,840
Expenditure		
Monthly notices of the Royal Astronomical Society	1,941,639	1,910,610
Geophysical Journal International	589,905	570,818
Astronomy & Geophysics	141,985	112,396
Other	21,795	11,411
	2,695,324	2,605,235

5 Charitable activities

Breakdown of costs of charitable activities:

	Direct costs £	Support costs £	2016 £	Direct costs £	Support costs £	2015 £
Publications (note 4)	2,343,931	351,393	2,695,324	2,255,133	350,102	2,605,235
Scientific meetings	213,061	160,235	373,296	87,674	146,585	234,259
Membership	10,912	31,790	42,702	7,865	33,073	40,938
Educational	432,406	41,805	474,211	663,448	36,575	700,023
RAS 200	194,479	3,500	197,979	260,969	10,000	270,969
Library	86,258	249,950	336,208	226,580	243,177	469,757
Public policy	57,142	42,437	99,579	34,527	44,163	78,690
	3,338,189	881,110	4,219,299	3,536,196	863,675	4,399,871

Grants and awards, in support of research, are principally included under Educational above to reflect the responsibilities for the management and administration of grants. 171 grants totalling £648,795 (2015: £848,569) were made to institutes and 19 grants totalling £16,373 (2015: £16,767) were made to individuals. Research supported by the Sir Norman Lockyer Fellowship and 2 research fellowships ended early resulting in credits to expenditure totalling £113,972.

Total grant making support costs were £24,000 (2015: £20,000).

A full list of all grantees and analysis can be found on the Society website. <http://www.ras.org.uk/awards-and-grants/grants-for-studies/2319-applying-for-a-grant>

6 Support costs

Support costs analysed by function are as follows:

	2016 £	2015 £
Executive	97,541	100,087
Finance	69,827	82,720
Facilities	67,675	76,505
Membership	23,398	20,000
IT	54,647	53,647
Policy development and Press	69,217	68,723
Burlington House	109,180	104,771
Other	282,549	235,097
Governance (note 7)	107,076	122,125
	881,110	863,675

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

	2016 £	2015 £
Auditor's remuneration (note 8)	21,900	20,500
Trustees' expenses	11,301	30,834
Trustees' remuneration	5,384	5,307
AGM expenses	4,445	6,411
Committee expenses	5,908	5,347
Staff time	47,594	39,348
Other expenses	10,544	14,378
	107,076	122,125

8 Net income (expenditure) for the year

This is stated after charging:

	2016 Total funds £	2015 Total funds £
Depreciation	116,863	112,608
Auditor's remuneration:		
. Charity audit – current year	15,100	15,000
. Charity audit – prior year	—	(1,400)
. Pension scheme audit – current year	4,750	4,500
. Pension scheme audit – prior year	—	(600)
. Other services	2,050	3,000
Operating lease rentals		
. Office equipment	12,909	11,449

9 Staff costs and remuneration of key management personnel

	2016 £	2015 £
Wages and salaries	712,120	652,938
Social security costs	64,338	66,648
Pension costs (see note 20)		
. Stakeholder pension scheme	47,998	28,346
. Death in service contributions	1,940	1,189
	826,396	749,121

During the year one employee of the Society earned between £70,000 and £80,000 (2015 - one). No other employee of the Society earned over £60,000 in 2015 or 2016. Employer contributions to the stakeholder pension scheme for this employee were £nil (2015 – £nil).

The average number of employees was 18 (Administration 4, Outreach 1, Editorial 9, Library 1, House 2, Press & Policy 1) (2015 – 18).

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 contributions) of the key management personnel for the year was £138,239 (2015 - £136,543).

10 Transactions with Trustees

The Trustees receive reimbursement for travel expenses actually incurred in attending meetings. The amount reimbursed during the year for 23 Trustees was £13,021 (2015 - £36,354).

Remuneration of £5,384 was paid to one Trustee during 2016 (2015: £11,307). By agreement with the Charity Commissioners (dated 14 June 2004, case No 299189, Sealing No 344/04) the Treasurer is paid an Honorarium of £5,300 per year, uplifted by inflation at the RPI rate and formally approved each year by Council.

10 Transactions with Trustees (continued)

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:

- ◆ Workshop on Chondrules and the Protoplanetary Disk supervised by Professor Sara Russell, University of Nottingham, Councillor, £3,000
- ◆ Undergraduate bursary supporting the study of Radial Gas Flows in Spiral Galaxies, supervised by Professor Brad Gibson, University of Hull, Councillor, £1,200
- ◆ A Comet Revealed: Rosetta and Philae at Comet 67P (Exhibit for the Royal Society Summer Science Exhibition, 2016), supervised by Dr Geraint Jones, University College London, Councillor, £1,500
- ◆ Education and Outreach - Prizes for the IOAA UK team, Mr Charles Barclay, Marlborough College, Councillor, £480
- ◆ Short term visit by MSc student, supervised by Professor Martin Bureau, University of Oxford, Councillor, £550
- ◆ Sir Norman Lockyer Memorial Trust as disclosed in note 22 (which shares the same board of Trustees as the Society)
- ◆ Paneth Meteorite Collection as disclosed in note 22 (Professor A.M Cruise was a Trustee until May 2016 and from then Dr Nigel Berman became a Trustee)

10 Transactions with Trustees (continued)

Grants Made to Councillors (continued)

- ◆ A Trustee applied for a RAS Research Fellowship, presenting a conflict of interest in its own right but additionally the father of the individual was the Chair of the Trustee board at that time. Following an open and competitive competition the individual was successful at interview but was not offered the position until after she had resigned from Council. The Charity Commission were informed and their permission to make the award obtained. The Charity Commission confirmed that the Society could offer the individual a Research Fellowship position as they were reassured that she had taken no significant part in the development of the role, had participated in an open and fair competition process and had resigned before the offer was made. The individual was offered and accepted the Research Fellowship. The value of the three year fellowship is approximately £150,000, with £50,000 being recognised as an expense in the 2016 financial statements under educational charitable activities.

11 Tangible fixed assets

a) Heritage assets

	Rare books and manuscripts £	Fine art and collectibles £	Total £
At 1 January 2016 and at 31 December 2016	4,951,500	4,489,379	9,440,879

There have been no movements in heritage assets during the year. In 2015 net disposals for rare books and manuscripts (£100,000) and fine art and collectibles (£48,870) were made. There were no movements between 2012 and 2014.

11 Tangible fixed assets (continued)

b) Other assets

	Leasehold improvements £	Plant and machinery £	Telephone, security & computer equipment £	Past Presidents' Portraits £	Total £
Cost					
At 1 January 2016	1,877,265	22,754	230,593	9,466	2,140,078
Additions	—	292	5,044	—	5,336
At 31 December 2016	<u>1,877,265</u>	<u>23,046</u>	<u>235,637</u>	<u>9,466</u>	<u>2,145,414</u>
Depreciation					
At 1 January 2016	730,600	758	182,685	—	914,043
Charge for the year	93,964	2,280	20,619	—	116,863
At 31 December 2016	<u>824,564</u>	<u>3,038</u>	<u>203,304</u>	<u>—</u>	<u>1,030,906</u>
Net book values					
At 31 December 2016	<u>1,052,701</u>	<u>20,008</u>	<u>32,333</u>	<u>9,466</u>	<u>1,114,508</u>
At 31 December 2015	<u>1,146,665</u>	<u>21,996</u>	<u>47,908</u>	<u>9,466</u>	<u>1,226,035</u>

12 Investments

	2016 Total funds £	2015 Total funds £
Market value at 1 January 2016 (Restated)	6,368,502	6,254,831
Net unrealised investment gains	663,862	113,671
Transfers	—	—
Market value at 31 December 2016	<u>7,032,364</u>	<u>6,368,502</u>
Historical cost as at 31 December 2016	<u>4,917,081</u>	<u>4,917,081</u>

Investments comprise BNY Mellon: Global Growth and Income Fund.

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

Notes to the accounts 31 December 2016

12 Investments (continued)

	Base value £	Unapplied total return £	Total £
At 1 January 2015	1,652,682	—	1,652,682
Add: Total return			
. Investment income		49,237	49,237
. Investment gains on listed investments		27,968	27,968
		<u>77,205</u>	<u>77,205</u>
Less:			
. Extraction of income from total return		(77,205)	(77,205)
		<u>—</u>	<u>—</u>
At 31 December 2015	<u>1,652,682</u>	<u>—</u>	<u>1,652,682</u>

	Base value £	Unapplied total return £	Total £
At 1 January 2016	1,652,682	—	1,652,682
Add: Total return			
. Investment income		56,611	56,611
. Investment gains on listed investments		182,544	182,544
		<u>239,155</u>	<u>239,155</u>
Less:			
. Extraction of income from total return		(239,155)	(239,155)
		<u>—</u>	<u>—</u>
At 31 December 2016	<u>1,652,682</u>	<u>—</u>	<u>1,652,682</u>

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 base value of the funds. 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.

13 Debtors

	2016 £	2015 £
Trade debtors	23,077	15,612
Prepayments and accrued income	560,072	602,132
Other debtors	5,578	25,283
	<u>588,727</u>	<u>643,027</u>

14 Creditors

a) Amounts falling due within one year

	2016 £	2015 £
Trade creditors	40,985	53,750
Accruals	137,338	98,714
Grants payable	445,547	523,425
Tax and social security	186,671	196,140
Deferred income	912,382	930,009
Other creditors	32,346	27,536
	1,755,269	1,829,574

b) Amounts falling due after more than one year

	2016 £	2015 £
Grants payable	310,837	173,340

c) Deferred income

	2016 £	2015 £
Balance as at 1 January 2016	930,009	1,020,223
Released to income	(930,009)	(1,020,223)
Income received from Fellows in advance	32,382	30,009
Publications income received in advance	880,000	900,000
Balance as at 31 December 2016	912,382	930,009

d) Contingencies

Since 2000 Gift Aid has been claimed on fellows' subscriptions. In December 2016 it was discovered that Gift Aid may not be claimed on membership subscriptions listed on HMRC's list 3 from 2007.

A total of £106,000 of Gift Aid has been claimed during this period. The RAS is currently liaising with HMRC about the possible need to repay this sum. The £54,000 of unclaimed Gift Aid formerly listed as a debtor has already been written off at 31 December 2016.

There is considerable uncertainty as to whether the already claimed Gift Aid will have to be repaid as the RAS makes it very clear on the Gift Aid declaration, that Gift Aid can only be claimed if the fellow does not claim tax relief as permitted under List 3 and early feedback from HMRC suggests that having to repay this sum is by no means certain or even probable.

14 Creditors (continued)

d) Contingencies (continued)

The total expenditure relating to the legal expenses of the Courtyard Societies in relation to the Burlington House lease since 2015 is over £100,000. It is understood that there are similar, but possibly lower legal expenses incurred by the landlord over the same period. A decision regarding these costs has been delivered and is favourable to the Society but pending final settlement. No adjustment has been made in these accounts for any costs incurred that may now be recovered.

15 Endowment funds

	Restated 1 January 2016 £	Income £	Investment gains £	Transfers £	31 December 2016 £
Research and Grants funds:					
· Sir Norman Lockyer fund	1,277,845	43,552	140,437	(183,990)	1,277,845
· Other funds	128,218	4,465	14,396	(18,860)	128,218
	<u>1,406,063</u>	<u>48,017</u>	<u>154,833</u>	<u>(202,850)</u>	<u>1,406,063</u>
Benevolent fund	80,473	2,823	9,103	(11,926)	80,473
Library fund	38,226	1,341	4,324	(5,665)	38,226
Lectures and awards fund	127,920	4,430	14,284	(18,714)	127,920
	<u>1,652,682</u>	<u>56,611</u>	<u>182,544</u>	<u>(239,155)</u>	<u>1,652,682</u>

The transfer of £239,155 from the endowment fund to the restricted income was the extraction of investment income from the total return on fixed asset investments.

16 Restricted income funds

	Restated 1 January 2016 £	Income £	Expenditure £	Investment gains £	Transfers £	31 December 2016 £
Research & Grants fund	89,602	2,111	45,091	6,807	202,850	346,461
Benevolent fund	3,759	—	—	—	11,926	15,685
Library fund	19,248	786	(900)	1,887	5,665	26,686
Education fund	73,280	2,701	(2,000)	7,920	—	81,901
Lectures and awards fund	4,248	—	(3,888)	—	18,714	19,074
	<u>190,137</u>	<u>5,598</u>	<u>38,303</u>	<u>16,614</u>	<u>239,155</u>	<u>489,807</u>

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

The funds were reviewed in 2016 and in some cases reclassified to endowment, designated or general funds based on the original purpose and nature of the funds. A fund summary can be found on the RAS website:

http://www.ras.org.uk/index.php?option=com_content&task=view&id=260&Itemid=27

16 Restricted funds (continued)

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

Benevolent fund

E Lee & Jansen Trust Fund (1834/1879)
E Gerald Merton Fund (1986)
G Donald R. Barber Fund (2001)

Library fund

E Turnor 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)
G 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 Roger Tayler Memorial Fund (1998)
E AT Price Medal Fund (1999)
E Gerald Whitrow Memorial Lecture Fund (2001)
E Fowler Prizes Fund (2004)

16 Restricted funds (continued)

Funds restatement

The funds have been reclassified with effect from 1 January 2015 as follows:

	General funds £	Designated funds £	Restricted funds £	Endowment funds £	Total funds £
As at 1 January 2015 as previously stated	5,301,269	11,854,206	2,147,559	—	19,303,034
Reclassification	195,745	141,724	(1,990,151)	1,652,682	—
As at 1 January 2015 as restated	5,497,014	11,995,930	157,408	1,652,682	19,303,034
Net movement in funds as previously stated	(1,118,130)	590,161	365,241	—	(162,728)
Reclassification of:					
. Income	3,662	—	(52,899)	49,237	—
. Expenditure	(78,008)	(185,284)	263,292	—	—
. Transfers	—	590,000	(512,795)	(77,205)	—
. Investment gains	2,142	—	(30,110)	27,968	—
Net movement in funds as restated	(1,190,334)	994,877	32,729	—	(162,728)
As at 1 January 2016 as previously stated	4,183,139	12,444,367	2,512,800	—	19,140,306
As at 1 January 2016 as restated	4,306,680	12,990,807	190,137	1,652,682	19,140,306

17 Designated funds

	Restated 1 January 2016 £	New designation £	Utilised/ released £	31 December 2016 £
Burlington House fund	1,116,760	—	(93,964)	1,022,796
Heritage Asset fund	9,440,879	—	—	9,440,879
Building fund	747,698	93,964	—	841,662
Open Access fund	400,000	—	—	400,000
RAS 200	739,031	—	(194,479)	544,552
Research and grants fund	546,439	—	(153,212)	393,227
Total designated funds	12,990,807	93,964	(441,655)	12,643,116

17 Designated funds (continued)

(i) Burlington House fund

Under lease agreements signed in 2005 with the Department of Communities and Local Government (previously Office of the Deputy Prime Minister - ODPM), the Society and four others in the Burlington House courtyard secured future occupancy on the basis of paying rent and additionally, being responsible for the external fabric of the building, following a renovation programme, carried out by the ODPM in mid-2006. 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.

(ii) 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.

(iii) Building fund

The repairs and maintenance of the exterior of the building, its insurance and some security costs are carried out by the landlord for all the occupants and a proportion recharged to the Society. The Building Fund should provide for internal and external maintenance of the building and provide for the possibility, at the end of lease, if necessary, to obtain a building for the Society's use. 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 five years.

(iv) Open Access fund

A fund has been established to provide against the risk of the possible collapse of the current business model for learned publishing due to various forms of open access. The timescale for expenditure is difficult to forecast but could in principle start within five years.

(v) RAS 200

The original fund balance of £1,000,000 was the total committed grant expenditure for RAS 200. RAS 200 grant expenditure is being charged to this fund from 2015 to 2022.

(vi) Research and grants fund

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

18 Analysis of net assets between funds

Fund balances at 31 December 2016 are represented by:

	General funds £	Designated funds £	Restricted funds £	Endowment funds £	2016 Total funds £
Tangible assets					
. Heritage assets	—	9,440,879	—	—	9,440,879
. Other fixed assets	91,713	1,022,795	—	—	1,114,508
Investments	3,596,158	1,326,497	486,041	1,623,668	7,032,364
Current assets					
. Debtors	588,727	—	—	—	588,727
. Cash at bank and in hand	2,457,233	1,235,573	4,766	55,653	3,753,225
Current liabilities	(1,555,839)	(171,791)	(1,000)	(26,639)	(1,755,269)
Non-current liabilities	(100,000)	(210,837)	—	—	(310,837)
Total net assets	5,077,992	12,643,116	489,807	1,652,682	19,863,597

19 Leasing commitments

At 31 December 2016, the charity had total future minimum commitments in respect of non-cancellable operating leases as follows:

	2016 £	2015 £
Lease expiring within two to five years – office equipment	26,613	37,828

20 Pension schemes

A qualified actuary carried out a triennial review of the defined benefit scheme as at 1 January 2016; the actuarial valuation showed that the market value of the Scheme's assets was £721,000, which represents 155% 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.

Pension costs comprise £47,998 (2015: £28,346) in respect of the defined contribution scheme and £1,940 (2015: £1,189) in respect of Death in Service contributions.

20 Pension schemes (continued)

Retirement benefits disclosure under FRS102

The actuarial valuation for FRS 102 purposes, at 31 December 2016, shows a pension surplus of £369,000 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:

	2016	2015
	£'000	£'000
Present value of funded obligations	(426)	(301)
Fair value of scheme assets	795	721
Surplus not recognised	(369)	(420)
Surplus in scheme at end of the year and available to the Society	—	—

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

	2016	2015
	£'000	£'000
Opening defined benefit obligation	301	301
Interest cost	11	11
Re-measurement arising from changes in assumptions & experience	114	(11)
Closing defined benefit obligation	426	301

Changes in fair value of scheme assets are as follows:

	2016	2015
	£'000	£'000
Opening scheme assets	721	707
Interest Income	27	25
Actual return on plan assets, excluding interest income	47	(11)
Closing scheme assets	795	721

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

	2016	2015
	£'000	£'000
Remeasurement of defined benefit obligation	114	(11)
Return on plan assets	(47)	11
Effect of surplus restriction	(67)	—
Total	—	—

The actual return on scheme assets was £74,000 (2015: £14,000).

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	
	2016 %	2015 %
Equities	43	44
Bonds	17	13
Property	15	26
Cash	10	15
Gilts	15	2
	100	100

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

	2016 %	2015 %
Discount rate at 31 December	2.6	3.8
Retail Prices Index	3.5	3.3
Consumer Prices Index	2.6	2.4
Increases in deferment	2.6	2.4
Future pension increases – pension earned before 6 April 1997	0.0	0.0
Future pension increases – pension earned after 6 April 1997	3.5	3.3

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:

	2016	2015
Retiring now		
Male	21.9	21.9
Female	23.9	23.8
Retiring in 20 years		
Male	23.2	23.1
Female	25.4	25.3

20 Pension schemes (continued)

Retirement benefits disclosure under FRS102 (continued)

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

Defined benefit pension scheme:

	2016 £'000	2015 £'000	2014 £'000	2013 £'000	2012 £'000
Defined benefit obligations	426	301	301	266	407
Scheme assets	795	721	707	662	848
Surplus	369	420	406	396	441

21 Grants committed

Grants (principally fellowships and RAS 200) to the value of £550,000 have been committed for future payment, subject to certain conditions, specified by the Society, having been met (2015: £483,000). 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 2016.

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 £24,916 (2015: £24,463), is included in Other Creditors. 9 Grants were awarded totalling £9,930 (2015 - £5,860). Total income was £10,000 (2015 - £9,986).

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 2013, 2016, 2019 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.

22 Connected Charities and related party transactions (continued)

The Society funds Fellows between spine points 35 and 40 (inclusive) on the UCU HE Framework single pay spine. The Norman Lockyer Fellowship is currently funding a three year fellowship from 2014, totalling £159,968. The fund balance is £1,538,887 (2015: restated £1,299,470). The 2014 fellowship ended October 2016, resulting in a credit of £55,407 committed expenditure to the fund.

The National Astronomy Meeting was held at the University of Nottingham. Two RAS Fellows were paid a total of £3,960 and £3,000 for providing administrative support.

Transactions involving trustees are disclosed in note 10.