

UKSEDS

ANNUAL REPORT 2017-18



MARCH 2018

At a time when Brexit and renewed American interest in the final frontier are raising questions about the UK's place on the global launchpad, it has been an exciting time to chair UKSEDS. The 2018 conference marks the 30th anniversary of UKSEDS and it has been another great year.

Fantastic efforts by our team have seen us advocate the space industry to more young people than ever, support the UK Space Conference and the Re-Inventing Space Careers Conference, improve the reach of our engineering competitions and reach out to students in new disciplines such as computer science and biology who traditionally have less engagement with the industry. The success of our careers website SpaceCareers.uk and the growing number and diversity of jobs available to young space enthusiasts is a great marker for the health of the industry. It has been encouraging to see companies continuing to hire and invest in the future.

As always, a massive vote of thanks to our sponsors across the industry, partner organisations and the UK Space Agency. This year's conference has the largest sponsorship income on record, and once again hosts the Airbus Student Presentation Competition. Thales Alenia Space, Oxford Space Systems, RAL Space have supported the Lunar Rover Competition, now in its second year, with funding and technical support. The UK Space Agency continues to support us through Space For All grants and enables our outreach programme to continue to reach children and students around the country.

I have also been on the UK board for the Space and Satellite Professionals International (SSPI) and supporting their mission to create a global community for young space professionals. Working with SSPI-UK has allowed us to tap into additional industrial resources and has enabled the satellite design competition and a webinar with SpaceX President and COO Gwynne Shotwell.

Two years ago we fundamentally altered our structure, moving to a wider model with six staff teams and six executives. Having had time to settle into the new structure, I can say it has been a resounding success and has dramatically improved our capability and resilience. The Staff are now a crucial part of our everyday operations, provide an excellent source of candidates for the executive committee, and increase our geographic diversity even further. Our expanded Board of Trustees, now six Executive Committee members and six external trustees, has provided us with great insight into change and strategy, and will continue to be an asset as we prepare for future challenges.

After three years on the Executive Committee I will step down and return next year on the Staff. The organisation has changed and improved dramatically since I joined, reacting rapidly to changing pressures and environments in an astounding manner. It has been a pleasure to work with my dedicated and amazing team, and I look forward to supporting UKSEDS in the years to come as future leaders take us to new heights.



James Telfer
Chair



Our Mission

Our mission is to engage young people with the space sector.

We have a vision of a thriving UK space sector in which young people play an active role.

We want to be an organisation that is an integral part of the UK's space sector, and that is recognised and engaged with as such by industry, government, and academia.

For students we want to be the go to place for space careers information, and provide a wide range of opportunities to gain new skills and engage with the sector.

For the sector we want to be the organisation that others come to when they are looking to recruit and engage with students.

The UKSEDS Magazine. MARCH 1990.

United Kingdom Students for the Exploration & Development of Space

HUBBLE DELAYED TILL APRIL 19th. ARIANE EXPLODES! MIR SWAP.

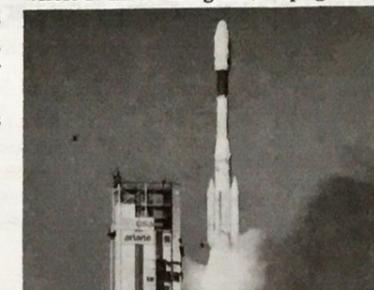
The launch of STS-31/Discovery, due to deploy the long awaited Hubble Space Telescope, has been delayed from March 26th to April 19th. The reason for the delay is that NASA engineers have decided to replace a segment and nozzle of the right-hand Solid Rocket Booster (SRB). Documentation for the segments failed to prove whether a 'leak-check' had been carried out by the manufacturers, Morton Thiokol. A fault in an SRB caused the Challenger disaster, hence NASA were in no mood to take chances.

The delay is bad news, not only because of lost observing time, but also because every day the HST is on the ground NASA has to spend a sizeable chunk of money keeping the satellite 'space-worthy'. The telescope has to be kept at constant temperature in a dust-free environment. In financial year 1990
(cont. page six)

On Thursday February 22nd the long run of Ariane launch success' came to an end.

Mission V-36, employing an Ariane 44-L variant, exploded in mid-flight, six miles from the launch pad in French Guiana. This is the first Ariane failure since 1987 and the sixth in the history of the project. The vehicle was carrying two communication satellites at the time of the explosion.

The president of Arianespace, the company that operates Ariane, reassured the owners of the 32 satellites currently on their waiting list by saying that the "project as a whole is in no danger."*(see page 4)*



On February 11th, the crew of Soyuz TM-9 blasted off from the the Baikonur Space Centre in the Soviet Union to relieve cosmonauts Aleksandr Serebrov and Aleksandr Viktorenko after five months in space.

The crew of Soyuz TM-8 had watched over delivery of re-equipment module (Kvant 2) and had conducted five EVA's (space walks). The EVA's were to test fly the new Soviet MMU's (Manned Manoeuvring Units - jet packs) and to set up a docking unit ready for the arrival of the technology module (Kvant 3) in late March/April.

The Kvant 2 module carries a 'garage' for the MMU's and a large airlock to allow freer access to space for cosmonauts on EVA, even if they are wearing one of the bulky MMU's.

Kvant 3 is a laboratory module, mainly for materials science. It also has a special port to allow the Soviet Space Shuttle to dock - this may occur on Burans first manned flight in 1991/1992.

GALILEO AT VENUS.



30 Years

This year is we celebrate our 30th anniversary. This is a hugely significant milestone, and a credit to the many students who have kept our organisation thriving and passed the idea of UKSEDS from one generation to the next.

We have looked back at our planet from low Earth orbit and from the edges of our solar system, and out at our universe in Hubble's glorious photos.

We have watched the launch of the first rovers, the first British Astronauts, and the first reusable rockets.

We have witnessed and embraced the birth of the internet, the UK Space Agency, and now a new era of private sector spaceflight.

We are excited to see what the next 30 years will hold for us and humanity as a whole.

Education

Our education programme aims to advance university students' knowledge, skills, and experience so that they are equipped to be active members of the UK's space sector.

The core parts of this programme are our careers website and our events, competitions, and projects, which provide opportunities to gain new skills and experience, both 'soft' and technical.

A key objective for the year was to increase the range of topics and locations of our events, to demonstrate the breadth of the sector and enable as many students as possible to learn.



SpaceCareers.uk

Our careers website, launched in December 2015, continues to grow. Views have reached over a quarter of a million per year, and our careers team has dramatically increased the number of positions being advertised to over 500 in two years.

The website is now widely regarded as a top resource for the space sector, and more students, companies, and schools than ever are getting in touch with us. The Careers team also take SpaceCareers.uk into schools, and have visited a number of careers fairs and delivered career sessions on space careers.

Two of our volunteers, Portia Bowman and Joseph Dudley were recognised by the Prime Minister, Theresa May, for their outstanding work in creating SpaceCareers.uk.

“you have created a crucial service to thousands of people across the country that want to learn more about careers in the space industry”

Theresa May
Prime Minister

Events Programme

Student Propulsion Forum

April 2017 | London | 40+ attendees

The first Student Propulsion Forum brought together students from across Europe for a day of talks on the topics of rocketry and spacecraft propulsion. These included presentations from industry professionals at companies such as Reaction Engines, Airbus, and Moog, as well as updates on student projects from universities as far away as Warsaw, Delft, and Milan. On top of the talks and opportunities for networking, attendees had the chance to visit Kingston University's rocket lab and see a miniature hybrid rocket motor being fired.

Lunar Challenge Day

July 2017 | Harwell | 40+ attendees

Last year's Lunar Rover Competition concluded in July 2017 at the competition day at the RAL Space Robotics Trials Area in Harwell, Oxfordshire. Teams from Bath, Bristol, Cranfield, Manchester, and Surrey universities passed their Critical Design Reviews and were able to compete.

They attempted to collect a sample of dry ice from a mock lunar surface, with the support of experts from Airbus, Thales Alenia Space, RAL Space, and Oxford Space Systems. Surrey's rover prevailed, whilst its competitors lost wheels, malfunctioned, and were shaken apart on a vibration table.



Reinventing Space Careers Event

November 2017 | Glasgow | 90+ attendees

This was our fourth year organising the Reinventing Space Careers Event at RISpace in collaboration with SGAC and the British Interplanetary Society. Attendees heard from Christina Giannopapa from ESA and Women In Aerospace, and a panel of industry representatives who discussed their personal experiences of the space industry. This was followed by speed mentoring session, where attendees split into small groups and had the talked with industry representatives individually, and a deep dive discussion run by SGAC.

National Student Space Conference

March 2018 | Guildford | 300+ attendees

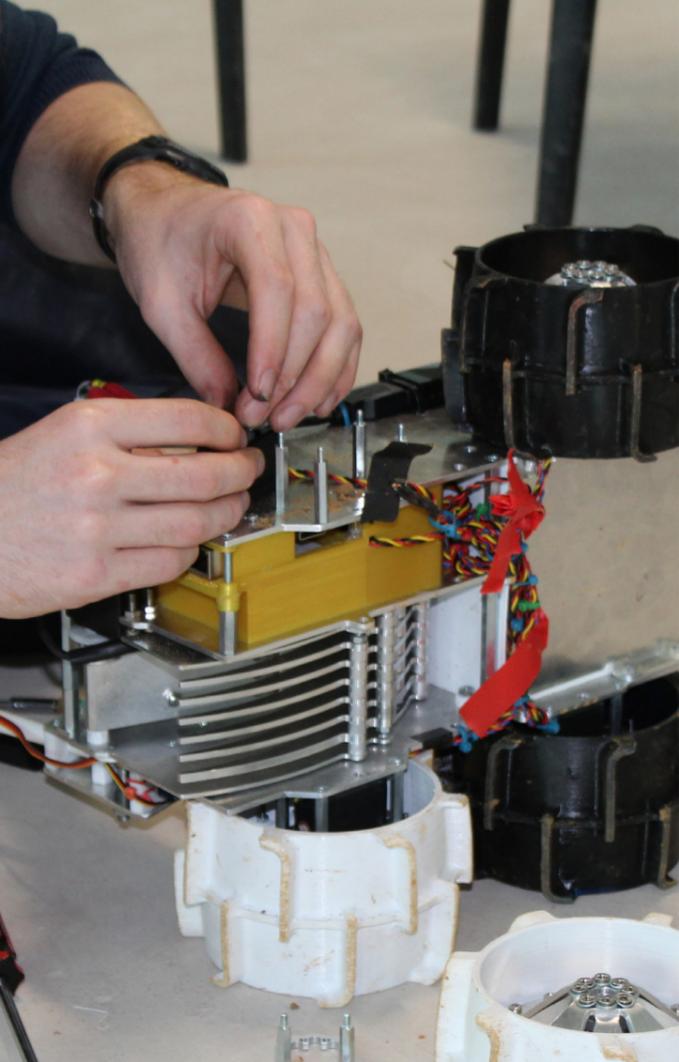
Our National Student Space Conference is the premier student space event in the UK, bringing together students, academics, and professionals from across the world to share knowledge and network.

This year's event takes place at the University of Surrey and includes keynote speakers Prof. Kai-Uwe Schrogl, Chief Strategy Officer of the European Space Agency.

For the third year running we are collaborating with Airbus Defence and Space to bring their student presentation competition to the conference.

Future Events

We already have several events planned for the rest of the year, including a space-themed hackathon and Reinventing Space Careers 2018, both set for October.



Competitions

National Rocketry Championships

14 teams

Our 5th National Rocketry Championships (NRC), launched this year, with a record 14 teams competing to design and build mid-power amateur rockets with the goal of reaching the greatest apogee. Many branches use this competition to introduce students to their activities and projects.

Lunar Rover Competition

15 teams

Our second Lunar Rover Competition in association with Thales Alenia Space UK, and supported by Airbus, RALSpace, and Oxford Space Systems, is well underway.

The competition challenges teams to design, build, and test small rovers with the objective of driving into a 'lunar' crater, collecting a sample, and returning to the lander.

Last year's competition concluded in July 2017, and was a resounding success, with 5 out of 11 teams passing the Critical Design Review and competing at RAL Space.

15 teams are busy working on their designs for this year's event.

Project Grants

SunbYte: Solar Astronomy on a Budget

Sheffield SpaceSoc, our branch at the University of Sheffield, were awarded a £400 grant for Project SunbYte, a high-altitude balloon experiment which aims to revolutionise solar telescope technology. This funding allowing five students to attend a critical design review at ESTEC in the Netherlands in May 2017.

High Powered Rocketry

ICSEDS, our Imperial College branch, was awarded £100 to help fund their High Powered Rocketry project which will run later this year.

Mancunian Balloonian

Manchester SEDS' alliteratively named high-altitude balloon project was awarded £200. The first launch will take a small payload to an altitude of 35km where it will study the density distribution of dust particles in the stratosphere.

“the development process has given us an excellent insight into the technicalities of the space industry and was a very rewarding learning opportunity”

Pete Blacker
Member of Surrey's winning LRC team

Advocacy

Our advocacy programme aims to promote the views and concerns of students and young people within the space sector. In particular we push for greater support of students, and the involvement of students in the development of strategy and policy.

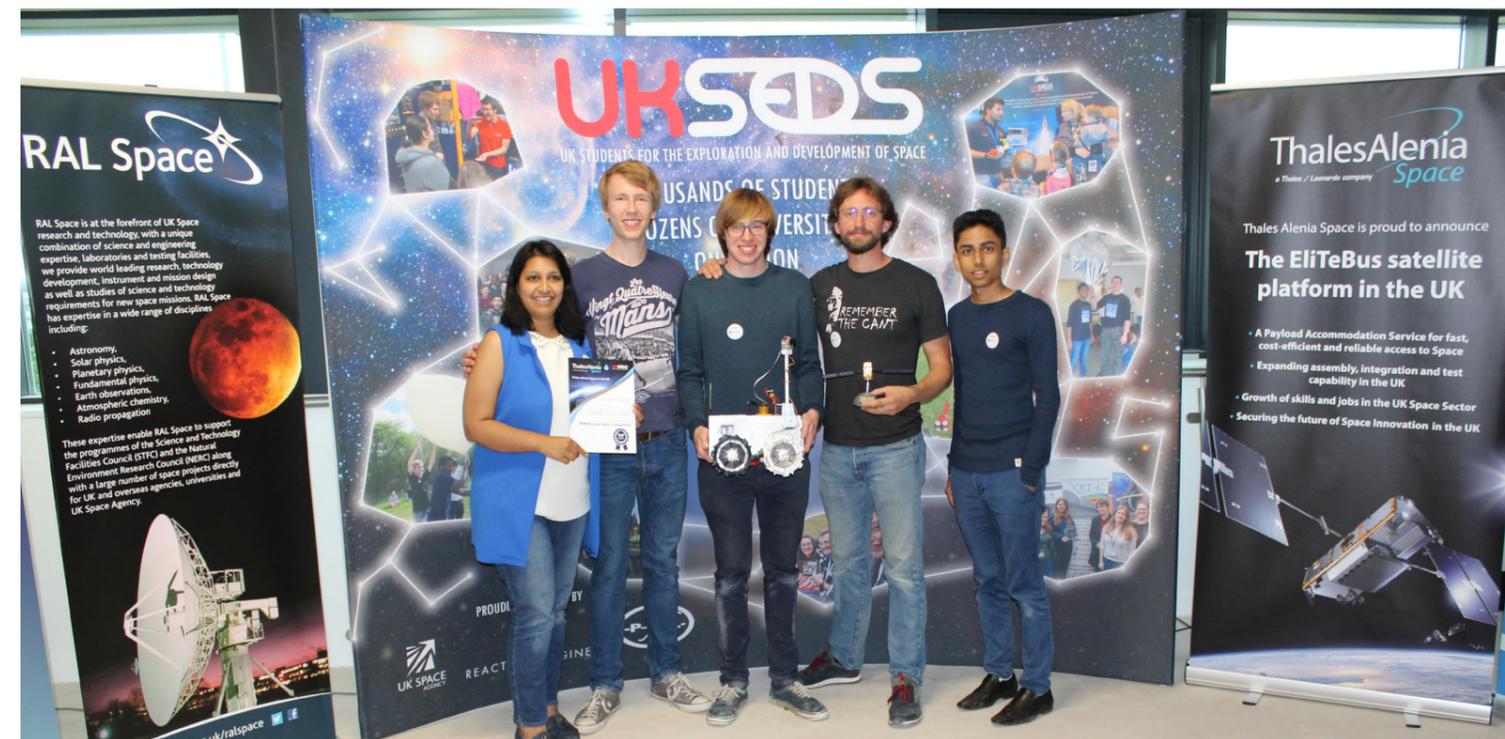
SSPI UK

James Telfer, our Chair, has sat on the board for Space and Satellite Professionals International UK this year representing student interests. We have been partnering with SSPI on new student engagement activities such as the UKSEDS-SSPI satellite design competition and better student visibility of SSPI-UK networking events. SSPI has been very vocal in their support both for us and for our sister organisations overseas, and this has had a very positive impact on our engagement with a number of partner companies, in turn improving support for students across the industry.

Space Universities Network

This year UKSEDS became a partner organisation of the Space Universities Network (SUN). SUN connects space science and engineering university teaching staff to encourage closer collaboration in educating the next generation of graduates.

Portia Bowman, a member of our Non-Executive Board, sits on the SUN working group representing students interests, and building a close partnership between SUN and UKSEDS so that both our organisations can better achieve our common goal of giving students the skills and knowledge to start successful careers in the space industry.



Outreach

Our outreach programme is focused on promoting space to the public, including primary, secondary, and parts of further education. We believe a good public understanding of space and its importance to life on Earth is vital to the growth of our space sector.

This year we attended 18 outreach events, reaching just under 7,000 students of all ages around the country. These included events at the RAF Cosford, the UK Space Conference, the Royal International Air Tattoo, the Science Museum, and dozens of schools and careers fairs as far afield as the Orkney Islands. UKSEDS also lead a rocketry project with Space Studio Banbury with 3 teams of A-level students. One team beat 11 other teams to win the regional finals, and competed in London against 6 other schools, finishing in third place.

This year, the Outreach team will be working with Dauntless Daughters to run events in schools in Oxfordshire to encourage young people, especially girls, into STEM.

Our outreach programme is enabled by generous support from the UK Space Agency's Space for All grant scheme. We were awarded £5850 for our 2017-18 programme.



Outreach Equipment

This year we invested in outreach boxes for our branches, including VR headsets, 4D space cards, space Lego, stickers, and bespoke UKSEDS colouring pages and guides. We have worked hard to develop new activities for classrooms and fairs, and have written straightforward usage guidelines to allow any volunteer to take part in running using these resources.

Outreach Volunteers

This year alone we have had at least 30 outreach volunteers supporting events around the country. As a thank you to our wonderful volunteers, without whom none of this would be possible, we will be implementing a Space Ambassadorship scheme, to recognise their contribution to the mission of UKSEDS and the UK Space Agency, of promoting space science and engineering to the public.

“Volunteering with UKSEDS has helped me to better my public engagement skills an incredible amount”

Heidi Thiemann
Outreach Lead



Operations

Our operational programme concerns our work 'behind the scenes' to enable our other principal activities. Without a motivated staff backed by effective systems we aren't able to achieve anything.

Membership & Alumni

Our new Membership system saw over 300 new members register this year, in addition to more than 30 branch societies at universities across the country.

Having launched our Alumni Association last year, we have been using our 30th anniversary to get back in touch with more alumni. Part of this has involved asking alumni to contribute profiles so that we can create a 'Wall of Alumni' to inspire the next generation of students to get involved with UKSEDS. We are also holding our second (sold out) alumni meetup – a dinner and drinks on the evening before the conference – and have plans for another in the summer.

Public Relations

Social media

Our social media audience continues to grow healthily, and is now at almost 8000. This year saw the launch of our Instagram account, which is slowly gaining momentum.

Ecliptic

Ecliptic, our email newsletter, continues to bring space news and opportunities to the inboxes of our nearly 2000 subscribers.

Systems

As a remote organisation, we rely a great deal on effective systems for communicating and keeping track of everything. The tech sector's generous support for charities means the we are able to use professional software at no cost.

In the past year we have added many new features to SpaceCareers.uk and set up a number of custom integrations for Slack, our internal messaging tool, that allow us to more easily keep track of rota assignments.

Partnerships

We are proud to be part of a supportive global space community. We continue to have good relationships with our sister SEDS organisations overseas, as well as EUROAVIA, Space & Satellite Professionals International (SSPI), the British Interplanetary Society (BIS), the Space Generation Advisory Council (SGAC), and the Space Universities Network (SUN).

SSPI

We are very pleased to begin a new partnership with the SSPI, who already work closely with our friends at SEDS-USA, and are keen to expand their presence in the UK. Several UKSEDS alumni are active members of SSPI, so this was a natural friendship.

Members of our Executive Committee met with SSPI Executive Director Robert Bell to organise the SSPI Satellite Design Competition, and also attended an SSPI UK board meeting in December, where they presented about our work and discussed areas for collaboration. We are excited to continue working together in the coming year.

SGAC

We are very pleased to have UKSEDS alumni Akash Trivedi and Graeme Taylor as SGAC National Points of Contact for the UK.

We collaborated with SGAC for the fourth year running to organise the Reinventing Space Careers Conference at RISpace 2017 in Glasgow, where Graeme ran a fantastic deep dive discussion in which delegates threw themselves into tackling current problems in the space industry.

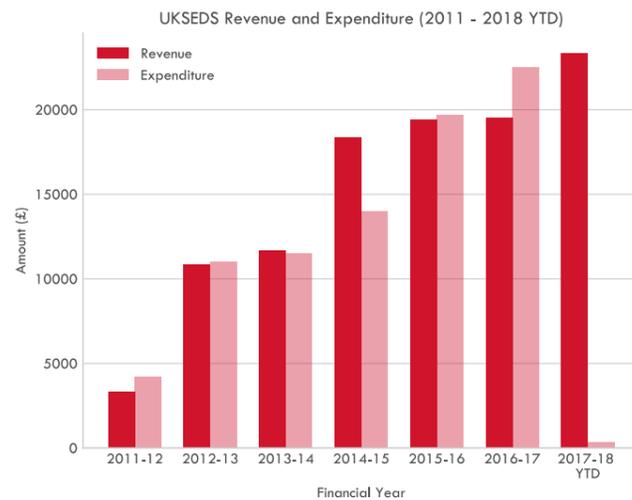


Finances

The 2017-2018 financial year was excellent, with an income in excess of £20,000 and an end of year balance on close to £7,000. Our end of year accounts show a loss of £2,875, but this is due to an outstanding debt of £2,200, and a significant investment in outreach materials. We received £5,850 as part of the Space from All grant from the UK Space Agency, and have applied for the grant again this year coming.

Our financial stability over the past few years has allowed us to invest more money into our members than ever before. This financial year we spent over £15,000 on running events, supporting our outreach volunteers, training our staff, and supporting our branch's projects. Our biggest expense, as every year, was the NSSC, but thanks to our generous sponsors we were able to keep the ticket prices affordable, provide £900 of travel grants to branches travelling long distances, and make a surplus that will fund our activities throughout the year.

We are always looking to make sure we make best use of our money. This year, we are planning to monetise our careers website, SpaceCareers.uk, and put the money straight back into outreach, travel grants, and project funding.



Legal Changes

Last year, we took the next step in the overhaul of our structure, introducing a new constitution for a new legal entity, and expanding the Board of Trustees to include six Non-Executive trustees drawn from the wider space sector. The proposed constitution was approved by the Membership at the Annual General Meeting, and no further changes are being proposed this year.

Our intention was to form the new entity, a Charitable Incorporated Organisation (CIO) to replace our current unincorporated charity, immediately following the Annual General Meeting. Unfortunately, we have not yet completed this process. Additional documentation and delays mean we are now in the final stages of the changeover, and we are anticipating that the new Executive Committee will complete the process in the coming weeks.

Despite these delays in changing our legal status, we have had our intended Board of Trustees involved from the outset, which has been a fantastic and very beneficial experience, leading to improved partnerships with other organisations in the sector.

UKSEDS

We are a registered charity no. 1158580

Our charitable objects are to advance education for the public benefit, by making a forum for the communication and exchange of ideas between students, educational establishments, industry and the general public; and to act as a resource for young people in the UK with an active interest in space, by providing advice and assistance to improve their knowledge base, skillsets, and hands-on experience

Our Trustees and Executive Committee are elected by the Membership in accordance with our Constitution, and plan our activities with regard to the Charity Commission's guidance on public benefit, our Objects, and our long term strategy.



Trustees

Portia Bowman
Joseph Dudley
Robert Garner
David Jones-Gerrard
Ryan Laird
Ciara McGrath
Jeremy Nickless
James Telfer

Executive Committee

James Telfer (Chair)
Rosie Tilbrook (Vice Chair)
Karolina Nikolova (Secretary)
Heidi Thiemann (Treasurer)
Dawn Wickenden
Rob Sandford

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