I saw the wonderful pictures from the Science Museum in London and thought that was incredible, absolutely phenomenal support.

When 3000 schoolchildren counted down to launch Tim Peake’s mission in the Science Museum last December the noise, observed the BBC’s science editor on TV, was ‘louder than a Soyuz at full throttle’. It was one of our biggest ever public events, attracting 11,000 visitors throughout the 12-hour day.

Former Apache helicopter pilot Tim Peake’s mission had begun three years earlier when Science Museum Trustee David Willetts, then science minister, overturned the space policy that arose from what he called the misconceived British belief that human space flight ‘is an expensive luxury’. This paved the way to a press conference in the museum in May 2013 when Peake was unveiled as the ‘first official British astronaut’ for the European Space Agency, selected from 8000 candidates, on a momentous day, as the prime minister put it.

Peake returned to the museum last November to announce the countdown. ‘It’s a huge privilege to sit here,’ he said, adding that he hoped some of the children inspired by his Principia mission would be among the first people on Mars.

As Peake was subsequently launched from Baikonur in Kazakhstan, 3.8 million viewers looked on as BBC Stargazing Live was presented from the museum by Brian Cox and Dara Ó Briain (and later nominated for a BAFTA). In all, 11,000 people celebrated at the museum that day, including the director general of the BBC Tony Hall; science minister Jo Johnson; plus four cosmonauts and astronauts – Russia’s Alexei Leonov, Britain’s Helen Sharman, Denmark’s Andreas Mogensen and Canada’s Chris Hadfield.

Leonov, the first spacewalker, remarked on how many in the museum had been moved to cry with joy, just as the Soviet people were when Yuri Gagarin inaugurated human space flight in April 1961. And during his first press conference from space, Peake said, ‘I saw the wonderful pictures from the Science Museum in London and thought that was incredible, absolutely spectacular and phenomenal support.’
Our critically acclaimed Cosmonauts exhibition, visited by 140,000 people, saw the spiritual and the actual collide in the final gallery. There, a ‘golden man’ rested in the neon-blue space adorned with the founding father of rocketry Konstantin Tsiolkovsky’s most famous quotation:

‘Earth is the cradle of humanity, but one cannot live in a cradle for ever.’

The Russians had sent this life-size, gold-painted, tissue-equivalent phantom mannequin to the far side of the Moon to test for radiation, and the Science Museum team spotted it lying forlornly on the floor of a Moscow polytechnic museum. Senior curator Doug Millard says: ‘I knelt down to read the label and I was absolutely astonished that we were looking at something that had flown in space.’ In our blue room the face of the mannequin, that of the first man in space, Yuri Gagarin, gazed upwards towards a red light – the ‘cosmist’ dream destination of Mars.

TO MARS AND BEYOND!

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The increase in visitors to the Science Museum Group’s museums shows the public has a real appetite for knowledge and innovation, which bodes well for culture and the economy.

SIR VENKI RAMAKRISHNAN
NOBELIST PRESIDENT OF THE ROYAL SOCIETY

Cosmonauts is both a record and an example of the importance of soft power and cultural relations in maintaining dialogue between peoples at times of heightened political tensions.

ALEXANDRA SMIRNOVA CO-CURATOR ON COSMONAUTS

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Back cover Flying Scotsman reborn
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Inside back How we acquire and why
It has been a remarkable year for the Science Museum Group and this Review celebrates the exhibitions, gallery developments, acquisitions, education projects and research achievements that played their part in making it so. For us, the quality and strategic impact count as much as volume, and the past year saw us both break new ground and reach more people.

We tested new kinds of events, from pop-up interactive festivals at the Museum of Science and Industry in Manchester, to thought leadership debates at the National Media Museum with an emphasis on the greater science focus at the Science Museum. It was the happy realisation of Dame Mary Archer and Ian Blatchford, chair and group director of the Science Museum Group, respectively, that after almost five years of the toughest negotiations and research, the Science Museum really would be opening its ground-breaking Cosmonauts exhibition on the birth of the space age. It was a world-class collaboration with landmark objects that had never been seen outside Russia, and was greeted with critical acclaim and record audiences.

There can be little doubt that this kind of bold, internationally-minded thinking was one of the compelling reasons why the government acknowledged the importance of national museums through a flat cash settlement in the 2015 Comprehensive Spending Review. The second defining moment was the pleasure of steaming out of King’s Cross station on the inaugural run of the restored Flying Scotsman, with a mixture of relief and joy. The refurbishment of the world’s most famous locomotive has been protracted and costly, but as we watched the thousands of people waving and cheering every mile from London to York, it was clear that this locomotive commands a special place in national affection. And we were delighted that the chancellor of the exchequer should have chosen the National Railway Museum as the venue for the launch of the National Infrastructure Commission.

The third moment was the noisiest: being engulfed by 3000 schoolchildren, and a large broadcasting team from the BBC, to watch Tim Peake’s launch on his Principia journey to the International Space Station. Our mission to inspire felt very powerful indeed when surrounded by boys and girls from the most diverse backgrounds, all counting down live on national television as the rocket engines fired up. We were joined that day by the first man to walk in space, cosmonaut Alexei Leonov. He made the touching remark that it was so wonderful to see all these young people so proud of their fellow countryman.

At the time of writing our buoyant mood was tempered by the untimely death of Dame Zaha Hadid. Her glorious design for our new Mathematics gallery, which opens at the Science Museum in December, has blazed a trail for an imaginative approach to presenting maths as central to the rhythm of our lives. A maths graduate before she embarked on architecture, and a potent role model for many, Dame Zaha laid out restlessness, ambition, determination and fun. We hope that this Annual Review conveys something of that spirit too.
SMG IS THE PLACE TO BE

Our museums again prove to be magnets for distinguished guests, from China’s first lady to England’s chief medical officer, Jenson Button and Valery Gergiev.

1. China’s deputy prime minister Madame Peng makes a state visit to the Museum of Science and Industry where director Sally MacDonald and Manchester’s lord mayor Paul Murphy show her weaving in action in the Textiles gallery.

2. Chancellor George Osborne and entrepreneur James Dyson meeting Imperial College undergraduates who will work in the Science Museum’s former Post Office Building, now the Dyson School of Engineering.

3. Formula 1 driver Jenson Button visits the Science Museum’s Flight gallery to launch the Santander Cycles Summer of Cycling competition.

4. Dame Anne Glover, former chief scientific adviser to the president of the European Commission, delivers the keynote speech at the Science Museum director’s annual dinner in 2015.

5. Musical VIPs visit the Cosmonauts exhibition (left to right): Alexandra Smirnova (curator), Ian Blatchford (director, SMG), Valery Gergiev (leading conductor and general director of the Mariinsky Theatre) and Peter Charow (vice-president of BP)

6. Musical VIPs visit the Cosmonauts exhibition (left to right): Alexandra Smirnova (curator), Ian Blatchford (director, SMG), Valery Gergiev (leading conductor and general director of the Mariinsky Theatre), Peter Charow (vice-president of BP), Caroline González-Pintado (CEO of the Mariinsky).

7. Chief medical officer for England Professor Dame Sally Davies joins a Cravings discussion with Roger Highfield, psychologist Charles Spence and chef Jozef Youssef.

8. Pop culturalist Sir Christopher Frayling with special effects guru Douglas Trumbull who gave the keynote speech at the National Media Museum’s Widescreen Weekend.

9. As sponsors of the new Mathematics gallery, MathWorks stakeholders enjoy a behind-the-scenes tour of the Science Museum and meet curator David Rooney, third from right.

10. In Professor Roger Kneebone’s Time Travelling Operating Theatre, Alex Cope and Laura Coates were among a dozen distinguished surgeons simulating operations at Science Museum education events.

11. At the Science Museum’s Kraszna-Krausz exhibition and Book Awards 2015 reception, philanthropist Michael G Wilson meets David Goldblatt (Fellowship award winner) and legendary newspaper editor Sir Harold Evans (Outstanding Contribution award winner).

12. Television traveller Michael Portillo enjoys Flying Scotsman’s inaugural run from London to York in February.

13. Paul Kirkman, NRM director, shows Rachael Maskell, MP for York Central, over his museum.
FINDING A HOME FOR 320,000 OBJECTS

The chancellor’s spending review last December not only signalled a flat cash settlement for the Science Museum Group but an additional major strategic investment that has far-reaching consequences – namely, a share of the £150 million earmarked for ourselves, the V&A and the British Museum to find alternatives to storing objects at Blythe House in west London.

As a storage facility it belongs in the last century and is in a state of poor repair. SMG will benefit from £40 million which – with some additional fundraising – will put us in a strong position both to improve care for our world-class collections at Wroughton, the former airfield in Wiltshire, and to build a new model for storage that is appropriate, sustainable and accessible.

We know that only a portion of our collections will ever be displayed at any one time. But we can reach more people if our stored collections are better known and can be accessed in many different ways, including large-scale digitisation.

The timing could not be better. Jack Kirby from the Museum of Science and Industry was already leading a significant review into how we register and care for the collection – from a group perspective rather than as individual museums – which in any case demands modernisation of our storage facilities in Wroughton [see page 44]. And SMG digital director John Stack has recently completed a strategy for increasing online access to our collections for a global audience. The digitisation of key items among about 320,000 small objects moving from Blythe House will give a huge impetus to this task.

RAIL’S RENAISSANCE IN THE NORTHERN POWERHOUSE

The National Railway Museum cemented its place at the heart of the debate about what role rail can play in creating the government’s Northern Powerhouse, a vision launched by the Chancellor George Osborne at the Museum of Science and Industry in June 2015.

In a special Thought Leadership event in October, 50 invited guests from the rail industry and beyond joined a discussion which the host, BBC Newsnight anchor Evan Davis, described as ‘an evening of many ideas vigorously debated’. The evening focused on how we can deliver modern connectivity in a region with largely 19th-century infrastructure and no city big enough to counter the gravitational pull of London. Unless, that is, you start thinking about the stretch of northern cities from Lancashire into Yorkshire as a single entity – the Northern Powerhouse.

The expert panel brought together insights from close to home with international perspectives from the Netherlands and Germany, where there is a longer history of joining up regions without an obvious single central city. David Hoggarth, newly appointed director of Rail North, highlighted the vital importance of connectivity offered by potential new northern and trans-Pennine rail services.

Labour peer Lord Adonis, who will chair the new commission, said at another NRM event: ‘Without big improvements to its transport and energy systems, Britain will grind to a halt. We will provide firm recommendations on major projects, strategic direction and investment.’

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The outcome will be of real benefit for the public, our collections and the group

KAREN LIVINGSTONE
DIRECTOR OF MASTERPLAN AND ESTATES

It is a credit to the case made by all our museums that at a time of widespread reductions in public funding we are embarking on serious investment in Wroughton in order to support our wider ambitions as the world’s biggest group of science museums.

Above: PhD candidate Rachel Boet leads a behind-the-scenes tour of Blythe House for corporate members of the museum. On the table, Robert Hooke type compound microscope (17th century)
Four years in the making, Cosmonauts: Birth of the Space Age was quite simply a blockbuster like no other exhibition in the Science Museum’s illustrious history. It quickly became a destination for pioneering cosmonauts and astronauts led by Valentina Tereshkova, Alexei Leonov and Buzz Aldrin. Their glowing reviews were matched by the responses from the diverse and knowledgeable audience of 140,000 who visited during the six-month run. The critics were won over too: ‘colossal’, said the Telegraph; ‘triumph against all the odds’, said the Independent; ‘gripping’, said the Observer; while Nature talked of being ‘uplifted, transported, taken out of this world’.

A tour de force such as Cosmonauts can be achieved only through vision and determination, along with enormous support from an array of partners and an army of volunteers.

First came the foresight to assemble the most remarkable and monumental collection of Russian spacecraft and artefacts ever to be seen outside Russia since its Sputnik satellite triggered the space race in 1957. Then came the conviction to describe the dream of the architect of the Soviet space programme, Sergei Korolev, and the astonishing influence of the cosmist movement and early innovators such as Konstantin Tsiolkovsky.

The Science Museum’s team also had to overcome significant logistical challenges during the tortuous journey taken by the largest objects. The majestic LK3 lunar lander, for example, had to be dismantled then transported by road from Moscow to Helsinki, by sea to the UK and painstakingly manoeuvred through the museum and hoisted up to the first floor to be reassembled by rigging experts and Russian engineers.

SMG director Ian Blatchford, who was recently awarded the Pushkin medal, Russia’s highest cultural honour for a foreign citizen, says that there is a wider message, one about the central role of museums in international diplomacy: ‘The experience of working with Russia’s cultural, industrial and political sectors has contributed not only to the loan of material of historic significance to the Science Museum’s exhibition, but more broadly changes perceptions about Russia and its space programme in the western world. Addressing the multiple challenges involved – legal, political and security, among others – it reveals the importance of many of the space objects themselves as well as demonstrating how the Science Museum has helped to maintain a dialogue with Russia even during the most testing times.’

**CONTINUED**
AN EPIC INTERNATIONAL COLLABORATION

It took years of shuttle diplomacy by SMG director Ian Blatchford and the Science Museum team, under the expert guidance of senior curator Doug Millard, to identify and secure the remarkable spacecraft, equipment and artefacts for the Cosmonauts exhibition. The LK1 lunar lander, an official secret in Russia, even had to be declassified.

Blatchford and Russian curator Natalia Sidlina explained in the Science Museum Group Journal: ‘The curators had to venture well beyond the museum sector and private collections. The content team found itself in uncharted territory in its search for original space equipment. The sealed doors of laboratories at technical universities, studios of forgotten artists and warehouses of classified enterprises had to open to enable them to identify and negotiate prospective loans.’

The leadership of deputy prime minister Olga Golodets proved essential, as was the assistance of Russian ambassador in the UK Alexander Yakovenko and his colleague Mikhail Shvydkoy, special envoy of the president of the Russian Federation for international cultural cooperation with the ministry of foreign affairs.

The enterprise demanded strong collaboration between the Science Museum, the State Museum Exhibition Centre ROSIZO and the Federal Space Agency in Russia, Roscosmos, embracing 24 crucial partners and 18 different lenders.

I believe these stories will inspire a new generation to take steps towards the further development of humanity

OLGA GOLODETS DEPUTY PRIME MINISTER OF THE RUSSIAN FEDERATION

We’ve been struck by the number of Russians who’ve been coming, including many who have made the journey from Russia

SIGNS MILLARD SENIOR CURATOR OF COSMONAUTS

Key organisations provided funding for Cosmonauts, including BP, Art Russe and the Blavatnik Family Foundation. From the outset, BP, the exhibition’s principal sponsor, was wholly encouraging and demonstrated its ongoing belief in the importance of increasing public engagement with science and technology.

To underline the exhibition’s significance, it was sponsored by The Times newspaper and celebrated with a series of events, including a concert by Public Service Broadcasting, interview with Oscar winner Alfonso Cuarón, space comedy with Robin Ince, Q&A between Buzz Aldrin and Brian Cox, and a Royal Society public event featuring Helen Sharman and Lord Rees.

In a dedicated Cosmonauts shop, the most successful range of exhibition merchandise the museum has ever produced generated three times as much profit as forecast.

Mystical undertow

Key exhibits on show in London had never been seen by Russian citizens and some had been declassified so that they could travel. Many more revealed the extraordinary roots of space exploration in 19th-century Russia. Senior curator Doug Millard said: ‘We wanted this exhibition to be more than a parade of technology, a far broader cultural treatment. For example, many Russians saw space in terms of philosopher Nikolai Fedorov’s mystical idea of “cosmism”, which envisaged man’s resurrection and ancestral revival through the medium of space.’

CONTINUED
Our Galaxy of Cosmonauts

Over the past year our IMAX auditorium was the place to be for space fans of all ages, and tickets sold out in record time to hear from an extraordinary array of distinguished space pioneers including Alexei Leonov, Valentina Tereshkova, Buzz Aldrin, Chris Hadfield, Aleksandr Lazutkin, Helen Sharman, Sergei Krikalev and Claudie Haigneré.

Cosmonaut Leonov, twice Hero of the Soviet Union and the first man to walk in space, joined us to announce the forthcoming Cosmonauts exhibition to the UK press, and then, with the help of chalk and blackboard, gave a vivid personal account of his first spacewalk to a spellbound audience. Afterwards, Stephen Hawking and the chairman of the board of trustees, Dame Mary Archer, presented Leonov with an honorary fellowship of the Science Museum. In return, Leonov presented Professor Hawking with a portrait he had sketched of him that day.

Our distinguished guest of honour at the exhibition’s opening was Valentina Tereshkova, the first woman in space, the first civilian and still the only woman ever to have flown a solo mission. At the official press preview the charismatic Dr Tereshkova wowed the gathered press with her humour and stories from her historic mission. She also asked to be launched into space with the director, Ian Blatchford, and was reunited with Vostok 6, the actual 2.6-tonne spacecraft that carried her into and back from orbit in 1963. She called it: ‘My lovely one, my best and most beautiful friend, my best and most beautiful man.’

This exhibition has got to be a blockbuster, this is going to be a once-in-a-lifetime experience
Helen Sharman
British Cosmonaut Speaking at the Exhibition Opening

Clockwise: Alexei Leonov presents Stephen Hawking with a portrait he had drawn... Valentina Tereshkova during her talk to the IMAX audience... Buzz Aldrin demonstrates gravity at the Science Museum...

Volunteers surprise with expertise
A volunteer team of 114 people gave their support to the Cosmonauts exhibition, contributing 5833 hours of their time as guides roving the gallery. Some were retired professionals within relevant disciplines such as physics, medicine or teaching, who often spontaneously addressed a circle of visitors. Some compiled research during the exhibition – a copy of which we have sent to our partners in Moscow. One volunteer, Stephen, reported: ‘It seems that each visitor to the exhibition has a special personal reason for being there. Russians of a certain age have a tear in their eye as they contemplate their past. This is an experience I shall never forget.’

Our visitors were equally impressed: ‘The volunteers are so knowledgeable and helpful’ (Elaine King)... ‘A wonderful volunteer called Sheila brought the exhibition alive for our children. She was patient and informative and truly inspired our 7-year-old son’ (visitor via feedback form)... ‘The volunteers were amazing – passionate and able to convey their knowledge to a wide range of audiences’ (via feedback form). One of those who rang to express their delight with the volunteers was Andy Green, world land speed record-holder.

The who’s who of space explorers drawn to our Cosmonauts exhibition
Buzz Aldrin
Charlie Bolden
Chris Hadfield
Claudie Haigneré
Don Johnson
Sergei Krikalev
Aleksandr Lazutkin
Alexei Leonov
Andreas Mogensen
Tim Peake
Helen Sharman
Valentina Tereshkova

An experiment for volunteers – page 52

Clockwise: Sergei Krikalev at the Cosmonauts press launch... Tim Peake eagerly helped promote the exhibition... Likewise, NASA administrator Charlie Bolden gave a lecture, Danish astronaut Andreas Mogensen tweeted a selfie and British astronaut Helen Sharman met legions of young space enthusiasts.
40 YEARS AS ONE OF YORK’S STAR ATTRACTIONS

The National Railway Museum celebrates a milestone in our heritage and unveils bold new plans

The nation has delighted in the return to steam of Flying Scotsman, but National Railway Museum director Paul Kirkman is equally proud of the museum’s other achievements over the past year as it celebrated its 40th birthday. While Scotsman is undeniably special, the teams here in York and in Shildon have grown our audiences in many wonderfully diverse ways in 2015, he says.

The award-winning collaboration between the museum and York Theatre Royal breathed life into railway stories for new audiences, from the iconic childhood favourite The Railway Children to the forgotten rags-to-riches story of York’s ‘Railway King’ in In Fog and Falling Snow. The versatility of the museum’s art gallery helped boost this year’s temporary exhibitions. For Playing Trains it became a play space where children explored railways big and small. With Destination Stations, dramatic lighting and design captured the impact of Britain’s most recognisable rail landmarks.

In July the York museum opened its improved Miniature Railway Ride. Bigger and better than before, the new ride takes visitors past railway objects in the re-landscaped South Yard. Our eager volunteers have had a huge role in its success, giving rides to 50,000 people since it reopened. In October the Great Hall was plunged into darkness as its famous engines took centre stage, transformed by lighting for Locos in a Different Light as part of the annual Illuminating York festival. In the same month one of Eurostar’s iconic first-generation trains was also unveiled, along with a display celebrating a new chapter of contemporary railway history.

To celebrate its 40th birthday, the museum joined forces with Virgin Trains East Coast. Before an audience of supporters at York station, managing director David Horne and Paul Kirkman recognised 40 years of Britain’s national railway history showcased in the North by unveiling a newly named locomotive, No. 43238 National Railway Museum 40.

Looking to the future, the potential transformation of York’s biggest brownfield site offers the greatest opportunity for the museum since that 1975 opening. The area, known as York Central and already dubbed the future ‘King’s Cross of the North’, was awarded Enterprise Zone status in the chancellor’s autumn statement and plans for its redevelopment were put to a public consultation in January 2016. Kirkman says: ‘York Central is the most important thing to happen to the museum yet. It has the potential to deliver a new city centre and a transformed National Railway Museum would be its cultural heart.’
Manchester grows in international influence

The MSI has long championed the creativity of science, consistently putting on events that inspire

Simon Chaplin, Director of Culture & Society, Wellcome Trust

This is the year we moved up a gear in Manchester,’ said SMG chairman Dame Mary Archer, ‘with the Museum of Science and Industry reasserting itself as an internationally significant museum with a serious purpose. Given the scale of our ambition, visitors can expect to see fresh fruits of the team’s work over many years.’

As director Sally MacDonald enters her second year at the helm, she is pleased to note that annual visit numbers exceeded 700,000, boosted by increases in both general visits and school bookings. But her sights are set on the future: ‘As an integral part of making Manchester a great European City of Science, the next 12 months offer more opportunities to expand our impact across the region while developing our first major home-grown temporary exhibition, about graphene, and pushing ahead with the Masterplan.’

The past 12 months have plenty to commend them. The growing band of visitors has responded well to MSI’s new visual identity featuring a steel hexagon, which references both historic engineering and the structure of graphene to encapsulate the museum’s heritage and contemporary purpose.

Highlights have included the museum’s exhibition, The Innovation Race: Manchester’s Makers Join the World. The museum won the Lever Prize – awarded by the North West Business Leadership Team – for a collaboration with Liverpool’s FACT (Foundation for Art and Creative Technology), exploring the interaction between art and science; and also triumphed at the Manchester Evening News’s City Life Awards, winning the Best Event category for the Manchester Science Festival’s adult ball pool.

Behind the scenes, the first major element of the museum’s Masterplan – a new special exhibition gallery – is now almost fully funded, thanks to significant investment of £1.8 million from the Wellcome Trust. The investment was welcomed by the leader of Manchester City Council, Sir Richard Leese, ‘as a coup for both the museum and the city’. He added: ‘Building a new gallery for contemporary science in the vaults of one of the most important and historic buildings in Manchester is such a fantastic way of showing how much the city has contributed, and continues to contribute, to science nationally and globally. This new gallery will further enhance our reputation for putting science at the heart of our cultural life.’

The museum has appointed award-winning architects Carmody Groarke to design this landmark exhibition space, which will open in late 2018.

So with big plans and a growing audience, the future is looking bright for a museum firmly rooted at the heart of the Northern Powerhouse.

Manchester Science Festival – page 35

View this
msimanchester.org.uk/collection

Opposite: Lates evenings for adults on themes of Graphene (top) and Cravings with visitors game for indulgence (beneath)

This page: Recording Radio 4’s The Infinite Monkey Cage at MSI, Brian Cox and guest Jon Culshaw... Geoffrey Piper of NWBLT and Jo Wright of FACT present MSI director Sally MacDonald with the Lever Prize for exploring the interaction between arts and science.
FESTIVALS BRING NEW AUDIENCES TO BRADFORD

Emphasis on light and sound attracts all the family

The past 12 months have seen the National Media Museum in Bradford make a deft but decisive step towards fulfilling its promise to begin using its collections and programme to create an inspiring home for the culture of science and technology. Three contemporary science festivals – themed around light, forensics and sound – have brought new family audiences into the museum, while playing host to the British Science Festival Fringe has put the museum in the shop window for serious science.

Professor Jim Al-Khalili’s lecture on the surprising history of optics could not have had a more appropriate setting than the home of the world’s greatest treasury of still and moving image technologies. The £1 million investment from Bradford Council is also helping the museum to dramatically improve the way it serves schools in the region, enabling it to react to their individual needs and combat long-term shortfalls in the number of students who go on to pursue careers in science, technology, engineering and maths (STEM).

Every area in the public programme has been electrified by the new focus: the summer exhibition, Light Fantastic – Adventures in the Science of Light, housed a striking new art installation that literally illuminated the scientific principles that underpin the formulation of white light. It also brought record audiences to the museum.

Widescreen Weekend – the festival of cinema technology – pushed its own barriers to bring two science-fiction pioneers to Bradford. Douglas Trumbull, who created the visual effects for 2001, laid out his revolutionary vision for the future of cinema [see page 34], and Paul Franklin gave a masterclass in the real science behind the Oscar-winning special effects he created for Interstellar. In total we attracted 460,000 visits this year – an annual increase of 11%. In part this resulted from the vastly improved IMAX cinema which is winning a younger audience and helping to drive income.

The planned investment of £7.5 million in the National Media Museum by 2021 is already improving its overall fabric, from the IMAX upgrade to the new £1.5 million interactive gallery, due to open in March 2017, which will explore the science of light, sound and perception. The new Treasures galleries will tell the complete history of the ‘age of the image’, cementing our new mission to explore the science and culture of light and sound technologies and their impact on our lives.

IMAX auditorium receives overhaul – page 48

Watching the political censorship of culture in many parts of the world, I’m convinced of the vital importance of museums like the National Media Museum which cherish our heritage

SAMIRA AHMED NMEM ADVISORY BOARD MEMBER AND BROADCASTER

VIEW THIS nationalmediamuseum.org.uk/collection/onthisday
opened in February to great fanfare. ‘Spectacular,’ remarked the Guardian, while the Daily Telegraph noted that this ‘ambitious interactive exhibition’ viewed the ‘great polymath from a scientific … perspective’ and predicted that it would be one of the most popular exhibitions of 2016.

The world’s leading Leonardo scholar Professor Martin Kemp lit up the launch event with a compelling speech, saying that despite the many legends that surround the genius who created Mona Lisa and Vitruvian Man, ‘the reality beneath the stories is no less exciting, as the Science Museum’s new exhibition makes abundantly clear’.

The exhibition explores how the ultimate Renaissance figure created hundreds of drawings to understand scientific and engineering concepts across a variety of disciplines. Kemp said they were ‘thrilling’ and showed how, more than his contemporaries, Leonardo was capable of ‘mental sculpture’ to visualise complex mechanisms and motions.

Generating ideas for machines of war, flight and manufacturing, Leonardo observed natural phenomena and the work of architect-engineers around him to make advances and efficiencies in mechanical processes. It was this unique approach to observation and understanding through drawing that sets him apart from his contemporaries.

Originally produced as a collaboration between Cité des Sciences in Paris, a Universcience site, and the Museo Nazionale della Scienza e della Tecnologia Leonardo da Vinci in Milan, the internationally acclaimed exhibition made its UK debut in London.

Here, the Science Museum shared its own historical link to Leonardo. Curated by keeper emeritus Jim Bennett, a small display opened the larger exhibition with three models from the Science Museum’s collection (including the amusingly named ‘boring machine’).

Leonardo visualised machines with a brilliance that no-one else had ever done, and drew them with a presence and potency that no-one else had ever done

PROFESSOR MARTIN KEMP
ART HISTORIAN

Clockwise: The Mechanics of Genius features 3D models based on Leonardo’s concepts... Curator Jim Bennett... Leading Leonardo scholar Professor Martin Kemp... Introducing Leonardo to Science Museum visitors

The models date from a 1952 exhibition at the Royal Academy, originated by a Science Museum associate curator to celebrate the quincentenary of Leonardo’s birth.

Leonardo was inspired by nature and to be as interested in bat wings as cogs was a radical departure in his day. The exhibition, supported by Airbus, also looks at what today is called biomimicry in modern robotics and aeronautics, such as the winglets of an Airbus A380 being inspired by the upward curl of an eagle’s feathers.

VIEW TRAILER
https://youtu.be/Kca2QhvL5aU
GROWING SUPPORT FROM DIVERSE FUNDING PARTNERS

Loyalty is crucial to investing in SMG’s future

‘Shared goals and museum plans that inspire.’ These two factors, says SMG development director Sue Fisher, lie at the heart of all of the funding partnerships that make possible the extraordinary ambition that reverberates through our plans for all the museums in the group. ‘And we are fortunate to enjoy the long-term support of many partners, such as BP, the engine behind our Enterprise Science programme. But even with established partners, a spark around a particular exhibition or programme can further deepen our relationship. And so it proved again this year. ‘Cosmonauts tells the story of the Russian space programme as never before,’ remarked Bob Dudley, group chief executive of BP, whose support was fundamental to the exhibition’s success.

A host of significant new partners have joined SMG this year. In Manchester, Haydale Limited is enabling us to explore one of the most remarkable scientific developments in Wonder Materials: Graphene and Beyond. MSI has plans for many more temporary exhibitions as work begins on its new special exhibition gallery supported by the Wellcome Trust.

In York, the joint commitment of rolling-stock companies Angel Trains, Porterbrook and Eversholt is key to NRM’s new Young Engineers programme. And in London, we are delighted to have significant support from Samsung and MathWorks for Mathematics: The David and Claudia Harding Gallery, named in honour of the Hardings’s extraordinary gift of £5 million to the Science Museum.

Among the most enjoyable ways of thanking our many benefactors are the annual dinners we stage in York and London. Paul Kirkman and Mary Kenny, of sponsors Eversholt Rail, welcomed 500 guests to the rail industry networking event of the year in June to celebrate NRM’s 40th anniversary, where the guest speaker was the chairman of Network Rail, Professor Richard Parry-Jones CBE. Guests at the Science Museum’s dinner, including John Whittingdale MP in his first public department as secretary of state for culture, media and sport and Airbus UK’s president Paul Kehoe, heard from Professor Anne Glover CBE, former chief scientific adviser to the president of the European Commission.

More than 600 guests attended the launch of the Manchester Science Festival, which also announced the city’s designation as European City of Science, past headline festival sponsors Siemens plc and the University of Salford as lead education sponsor.

During the festival, business, civic and academic leaders attended a Thought Leadership breakfast hosted by Siemens and the University of Salford as lead education sponsor. Looking forward to our forthcoming medicine galleries, we are delighted that the Wellcome Trust has agreed to award the Science Museum £10 million towards them, with £500,000 for project development. And the Heritage Lottery Fund has earmarked £8 million in funding, of which £600,000 has been received in development funding.
SOLVE PROBLEMS AND HELP CHANGE LIVES

The informal learning sector plays a crucial role in driving career aspirations in STEM and the Science Museum Group aims to be its national centre of excellence. In the past year 458,000 people visited the Science Museum in booked education groups – more than any other museum in the UK – while a further 147,000 visited our other museums in booked groups. SMG is a significant part of the solution to the UK’s skills shortage.

One of the highlights this year for Felicity Paynter and her contemporary science team at the Science Museum was the What’s Your Angle? festival, held in partnership with the London Mathematical Society to celebrate their 150th anniversary.

Felicity said: ‘Visitors were transported into a busy 24-hour newsroom to explore ways that researchers are using maths to solve problems and change lives. They could uncover the secrets of an archaeological dig, learn how best to surf a wave and even dress up as a cow to find out about herd health.’ More than 1200 visitors took part, with many tweeting their headlines or presenting them on camera.

The Evening Exchange, linked to the museum’s Ada Lovelace exhibition, piloted a new programme of free participatory events. Over three consecutive Fridays these explored computer programming beyond mathematics, and invited adult visitors to write their own interactive fiction, compose music using mathematics and create their own inventions.

Extra funding boosts STEM in Manchester and Bradford

Contemporary science has exploded this year at the Museum of Science and Industry and National Media Museum thanks to £300,000 of funding from two government departments for a series of pop-up programmes featuring STEM subjects such as light, wearable tech, forensic science and graphene. Each hands-on festival had bespoke schools days, a family weekend and an adult Lates evening, hitting all three target audiences and attracting around 27,000 visitors.

The National Media Museum developed festivals with 40 local scientists and partner organisations to involve local communities, focusing on girls and those from lower socioeconomic groups, building relationships with Bradford schools and colleges, and participating in British Science Week. The Make Some Noise and Light Fantastic festivals each attracted more than 4000 visitors.

MSI continues to run its popular monthly contemporary science Pi programme, Platform for Investigation, supported by Siemens. Natalie Ireland, MSI head of learning, said: ‘Pi is a portable learning pod that welcomes researchers to deliver lively STEM-based activities. Diverse themes have included nuclear reaction, the science of strokes, emotions and antimicrobial resistance.’ During the 11-day Manchester Science Festival alone a total of 6670 visitors attended Pi events.

Schools blast off with Tim Peake

The role of SMG Learning is to ignite curiosity in science. Nothing said this more loudly than the Science Museum’s live televised launch for astronaut Tim Peake in December [see inside front cover], when 70 different on-site events across 12 hours ran seamlessly from family activities into a Lates for adults.

Left: Evening Exchange at the Science Museum encouraged participants to combine music and maths
Above: Adults try out spacesuits on Tim Peake Day... Lazer Disco at National Media Museum... Researchers from London’s University of Roehampton ask visitors to Live Science... How much do you like to eat?“

Nobody should doubt the serious contribution SMG is making to the nation’s future prosperity by enthralling record numbers of children

IAN BLATCHFORD DIRECTOR AND CHIEF EXECUTIVE OF THE SCIENCE MUSEUM GROUP
Under its new director Tom O’Leary, SMG Learning is continuing to pursue two large research-to-practice projects, Enterprising Science and Building Bridges. These are significantly influencing our thinking and gathering evidence for the roles of museums and science centres in STEM education.

Enterprising Science, a partnership with King’s College London and BP, is focused on understanding what shapes people’s attitudes towards science, with the aim of helping young people find science useful, so that it enhances their lives and improves opportunities.

The Building Bridges project, similarly focused on STEM and supported by BG Group, continues to work with 11- to 12-year-olds and their families from diverse backgrounds through 20 schools in our London partner boroughs and Reading. Through our research partnership with Sheffield Hallam University, the first phase of the project has provided evidence that regular and extended experiences have a longer-lasting impact on student attitudes to science than simpler one-off events.

Findings from both projects are shaping SMG’s teacher engagement and training courses. This year the Science Museum hosted the first Transforming Practice conference, which explored the implications of this research for the informal learning sector with 80 museum and STEM practitioners.

Outreach targets new audiences

From Hong Kong to Gibraltar, the Outreach team has been busy igniting curiosity in science in the UK and across the globe. The team has worked with many different clients – from schools, to the British Council and Butlin’s – delivering shows and workshops to tens of thousands of people. Dr Kenny Webster, the Science Museum’s head of learning operations, emphasises that the focus of the Outreach team is to target under-represented audiences:

‘With projects like the Days at the Museum we have been able to involve schools that have high levels of free-school-meal entitlement and turn their pupils into museum visitors.’

Clockwise: Enterprising Science schools visit to the Science Museum... At Antenna Live, the Cowriter Robot learning system from France helps children improve their handwriting... Families attend a Building Bridges event... Transforming Practice conference for teachers at the Science Museum...
HOW TO FIRE UP TEENAGE ENGINEERS

During Tomorrow’s Engineers Week the National Railway Museum invited KS3 school students to workshops and demonstrations with engineers from the Institute of Civil Engineers, Institute of Mechanical Engineers, Institute of Electrical and Technical Engineers and Institute of Materials, Minerals and Mining. NRM’s learning manager Kirsten Berry said: “The museum is developing its STEM programme and discussing the future of rail engineering through our Future Engineers events in the year ahead.”

To coincide with the NRM’s partnership with York Theatre Royal, we ran a summer of activities called From Steam to Stage. Themed around on-site performances of The Railway Children, activities included a ‘make and take’ about set and costume design, and Twaddle Train – a performance for families based on overheard train stories submitted over social media.

Make ‘n’ do proves hugely popular

The Museum of Science and Industry encouraged visitors to ‘Imagine It, Make It, Move It’ in a vibrant summer programme of workshops, demonstrations and shows, all linked to the theme of making. Construct a Crane workshops illustrated engineering skills with the huge cranes used on the Castlefield site in 1912, while the fun, interactive science show Inventors Wanted brought home the science behind innovation.

MSI also produced its first MakeFest where a host of inventors, artists, hackers, crafters, coders and makers ran workshops and drop-in sessions showing off their skills. Hugely popular with visitors of all ages, it embraced traditional crafts and the latest innovations - all with a DIY element.

Explosive new show for Manchester

With a thumping 35% increase in the Museum of Science and Industry’s booked education groups in 2015, the learning team has launched a new show titled Explosions: A Blast from the Past where CSI meets Cluedo. It aims to illuminate the science behind bangs. Schools can also book a full-day learning experience for older pupils devoted to the concept of sound waves.
Twenty-six adult Lates events were held across the four SMG museums over the past year and 50,000 visitors took part. The format, which promotes science and participation by adults, has gone from strength to strength by partnering with leading institutions such as the Royal Society who collaborated on The Next Big Thing in Science. The National Media Museum was transformed into a crime scene for its CSI-themed Lates where 500 visitors became detectives and could attend an unsettlingly realistic forensic autopsy on a murder victim. This spring the National Railway Museum held its first Lates on a Roaring Twenties theme, which drew on sharing group expertise.

Astronights in jimjams
Building on the success of Science Night sleepovers for children, Astronights for adults was launched this January. The response was eye-opening as the Science Museum welcomed 200 campers for a unique evening when they expressed their creativity in workshops, played the role of curators and explored our collections behind the scenes. They were also treated to delicious food. After they enjoyed the freedom to explore an empty museum in their pyjamas, feedback from campers was so enthusiastic that Astronights have become a fixture.

STEMNET goes from strength to strength
In Greater Manchester the Museum of Science and Industry continues to run the UK’s most successful STEMNET programme. The team works with all 164 state-funded high schools across the city’s ten boroughs where 1113 STEM ambassadors delivered 1400 STEM activities, reaching 20,000 young people. The team also supports the STEM clubs running at 66% of Manchester schools.

Sharing science with Europe
As part of Manchester’s term as European City of Science (ECOS), the MSI learning team has been helping develop the Great Science Share as a schools project in hubs across Greater Manchester. Annie Koana, ECOS programme director, introduced the initiative at the Manchester Science Festival launch as a way of creating a buzz about the STEM ventures young people have been working on over the year. This summer’s concluding event is expected to involve 60% of schools across the region.

This page: A forest of candy at the Science Museum’s Cravings Lates... Visitors design spacecraft at a space-themed Lates event in the National Media Museum... At the Science Museum’s Astronights for adults sleeping bags are essential accessory...
The ninth Manchester Science Festival (MSF) recorded its highest level of visitor attendance last autumn with almost 120,000 people taking part in this 11-day city-wide celebration of contemporary science. It is proudly produced by the Museum of Science and Industry with headline sponsorship from Siemens plc as part of its Curiosity Project. Launched in conjunction with the announcement of the city’s designation as European City of Science 2016, MSF 2015 was hailed by the Manchester Evening News as ‘truly wonderful’.

More than 600 VIPs including SMG chairman Dame Mary Archer and celebrated ‘gastronaut’ Stefan Gates attended the official launch at the museum. Linking to the opening of Douglas Trumbull – one of the grandees of science-fiction film-making, director of Silent Running and the special effects guru behind 2001 – delivered the keynote speech at this year’s Widescreen Weekend at the National Media Museum in Bradford.

Drawing on his extensive knowledge of the film industry, Trumbull outlined his vision for the next steps in the evolution of cinema presentation. Having travelled the world exploring and comparing projection systems, he has come to the conclusion that increasing on-screen frame rates – the number of individual images passing in front of the eye each second – could revolutionise the way audiences experience cinema.

‘I discovered that by changing the frame rate dramatically – to 120 frames per second and using 4K cameras and 4K projectors available off the shelf and running them at 60 frames per second, which is standard on most of them, a completely new cinematic effect emerges, which is like a window onto reality.’

Trumbull demonstrated his unique MAGI process, including 3D imagery, on NMM’s Pictureville screen. While increased frame rates have been a talking point for some recent high-profile film releases, Trumbull’s system goes far beyond what the industry is currently contemplating. In the face of advances in downloading, streaming and digital technologies, he argued, cinema has to reinvent itself once again to offer audiences a unique storytelling spectacle. His aim is to remove any sense of a screen and create an image which the audience can perceive as reality.

The festival were two new exhibitions: Cravings, a Northwest version of the Science Museum’s original, and Evaporation, a sculptural celebration of the world’s seas and oceans, created by artist Tania Kovats, which Nancy Durrant of The Times found ‘wonderful’. Renowned composer Jonathan Dove created a new piece inspired by Kovats’s work, performed live from the heart of the gallery during the festival’s opening weekend.

Experiments, debates, comedy, theatre, music, drones, a food-themed Lates event and a recording of Radio 4’s The Infinite Monkey Cage with Brian Cox entertained the festival audience. But it was a white box, filled with 81,000 white balls, that helped the festival to trend on social media. Jump In!, the festival’s adults-only ball pool, tempted Cox, Dame Mary Archer and the University of Manchester’s Dame Nancy Rothwell to cast aside their inhibitions and ‘jump in for science’, celebrating the themes of creativity and playfulness.

BRADFORD: A NEW WINDOW ONTO REALITY

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Above: Douglas Trumbull revealing his secrets to the Bradford audience
Below: Paul Franklin entertains a packed Pictureville with stories of the making of Interstellar, which won him a second Oscar for Best Visual Effects – his first was for Inception on NMM’s Pictureville screen. While increased frame rates have been a talking point for some recent high-profile film releases, Trumbull’s system goes far beyond what the industry is currently contemplating. In the face of advances in downloading, streaming and digital technologies, he argued, cinema has to reinvent itself once again to offer audiences a unique storytelling spectacle. His aim is to remove any sense of a screen and create an image which the audience can perceive as reality.
Interactive experiences underpin everything we do

From interactive exhibits to mobile games and from websites to social media, the Science Museum Group has a long history of innovative digital initiatives. Building on this, 2015 saw its first digital director John Stack aiming to ‘embolden our ambition to make digital a part of everything we do’.

Recognising that digital technologies continue rapidly to transform audience behaviour and afford our museums new ways to fulfil their missions, the group launched a new multi-year digital strategy. This has five ambitions: reworking audiences’ digital experiences before, during and after their visits; scaling up our commitment to digitisation of the collection and creating open resources that audiences can reuse; interpreting the stories behind the collections; establishing a digital culture throughout the organisation; and ensuring that such initiatives are underpinned by a robust technical infrastructure.

A large-scale overhaul of the group’s websites is well under way. New websites have been launched for the Museum of Science and Industry, Flying Scotsman, the Science Museum Group and Science Museum event hire. The museums’ blogs were relaunched with bold images and multimedia. The blogs will provide a platform for telling the behind-the-scenes stories of our museums’ work and for the voices of those working in the group.

To promote Cosmonauts, as for most major exhibitions, a series of online videos introduced its themes, personalities and background. For the Ada Lovelace exhibition an interactive digital archive was developed to enable visitors to view letters, documents and technical drawings, and to explore Lovelace’s interest in Charles Babbage’s innovations in computing and their later collaborations. Visitors could zoom in and examine the documents on a 32-inch, high-resolution touch screen, in unprecedented detail.

It’s been a lively year for the Rugged Rovers game from the Engineering Your Future exhibition with downloads of the app exceeding 170,000. In June it was a gold winner at the prestigious Serious Play Awards, in October a gallery version was installed at MATLAB Expo at Silverstone; and in December it travelled to the Franklin Institute in Philadelphia, United States.

A number of bespoke digital pieces were created for the Cravings exhibition in Antenna, including the Kandinsky Salad Film, a triptych video at the start of the exhibition that shows how chef Charles Michel created a salad inspired by a Wassily Kandinsky painting. Also on offer was Craving Commander, a quick-fire quiz that asks visitors to approve or reject provocative statements on society’s role in controlling eating behaviour. This has been a very popular digital interactive with more than 83,000 plays and counting.

Opposite: Craving Commander, a digital interactive for exhibition visitors... and Rugged Rovers, now enjoying success as a downloadable app.
SMG SCHOLARSHIP:
A NEW PLACE FOR EXCHANGING IDEAS

The increased commitment to scholarship seen within the Science Museum Group under its director Ian Blatchford was marked early in 2016 by the opening of the stunning Dana Research Centre and Library in London.

An elegant reading room, designed by award-winning Coffey Architects, provides a calm space where our growing community of scholars and students can pursue research into our collections, and access our library and archive collections. Research fellows and students collaborate on the floor above, exchanging insights and mutual guidance arising from the several dozen projects now under way.

The Research Centre marked its opening with a major conference, bringing together scholars to discuss the current state and future potential of research and how it transforms all areas of our museums’ activities, including understanding collections and audiences and how to care for the objects we hold. More than 50 speakers, including SMG staff and students, research associates and collaborators, and senior academics from the UK, Europe and America, explored many fascinating aspects of the power of objects, our museums’ role in culture and the relationship of science and technology to the arts.

Welcoming visiting fellows to the Science Museum

The museum’s fellowship and associanship programme is thriving. Dr Barry Murnane is the first TORCH-Science Museum fellow, a scheme under which members of Oxford University’s humanities faculty come to work at the museum. Barry is contributing to research for the new medical galleries, focused on the history of respiratory medicine. Another fellow is Stuart Butler, with us in the Research Centre for two years, studying the history of civilian nuclear power in Britain as part of a major EU-funded project. Our own Dr Robert Bud is completing a second fellowship funded by the Arts and Humanities Research Council (AHRC), this time exploring the history of the idea of applied science. This project included a major conference on science and modernism, held in conjunction with the Institute of Historical Research.

The benefit that these new spaces provide to fulfilling our research ambitions is incalculable
IAN BLATCHFORD
SMG DIRECTOR

The latest event in the museum’s exploration of science, technology and music was October’s promenade conference Objects at an Exhibition. A joint enterprise between the museum, NMC recordings and the Aurora Orchestra, it featured six new commissioned pieces inspired by objects and spaces in the museum. The composers included Barry Guy, Thea Musgrave and David Sawer.

Background: The new Dana Research Centre and Library.

Clockwise: The Aurora Orchestra at the Objects at an Exhibition conference... Nuclear power in Britain as focus of Stuart Butler’s research... National Media Museum curator Colin Harding at the Research Centre inaugural conference.
SMG SCHOLARSHIP:
MORE AWARDS FOR THE GROUP

The Science Museum Group Journal has recently published its fifth issue online. With a combination of articles and comment pieces written by external researchers as well as SMG staff and students, the e-journal is rapidly establishing itself as the ideal place to publish scholarship on the role of museums, the histories of objects and approaches to studying audiences. In a new departure, this issue included pre-publication of some of the provocative plenary presentations from the inaugural conference.

VIEW THIS
journal.sciencemuseum.ac.uk

In Manchester MSi has explored new ways of working with its local academic and student communities

TIM BOON
HEAD OF RESEARCH AND PUBLIC HISTORY

Doctoral research students are pursuing studies across the Science Museum Group; a total of 24 studentships have been awarded under the first tranche of funding from the Arts and Humanities Research Council, and we have already agreed the first six in our second three-year award. Under this new award we welcome the Royal Society and the Royal Geographical Society to our consortium, in addition to BT Archives. Several of the successful projects will draw on material from these collections.

Current students include Rebecca Smith, who is undertaking the first in-depth study of the National Media Museum's Daily Herald archive of around 3 million images. This is a rare relic of Fleet Street photographic practice, still kept in the working order employed by the newspaper, which closed in 1964. Paul Coleman in Manchester contributed to the Spark of Life study day held in collaboration with Wellcome Collection, drawing on his research into high-voltage electricity to inform the development of an upcoming exhibition.

In Manchester, the Museum of Science and Industry has explored new ways of working with its local academic and student communities, notably participating in the University of Manchester’s REALab which asked partners to set challenges for postgraduate researchers. The interdisciplinary team which responded to the museum’s brief won first prize and has gone on to produce a consultation report.

Conferences and events have driven forward research collaborations at all our museums; at the National Railway Museum in York, expert historians, archivists, genealogists and even a singer explored the fascinating lives of railway workers across history in Work, Rest and Play: Exploring the Extended Railway Family. The conference was organised in partnership with family history event organisers Your Fair Ladies.

NRM has made key appointments to develop the museum’s research programme. Dr Oliver Betts, research fellow, is taking an active role in building academic partnerships and advising on research input to NRM’s Masterplan. Angélique Bonamy, associate curator of film and sound, is doing exciting work, exploring the museum’s little-known moving image and sound recordings.

VIEW THIS
sciencemuseum.org.uk/arr

In Manchester MSI has explored new ways of working with its local academic and student communities

Opposite: The NRM’s Work, Rest and Play conference... Manchester research student Paul Coleman

Clockwise, this page: NRM head curator Andrew McLean’s book Flying Scotsman: Speed, Style, Service... Medical research in a soundproof room in 1969, from the Daily Herald archive, subject of Rebecca Smith’s research... At NRM research fellow Dr Oliver Betts and associate curator of film and sound, Angélique Bonamy... Science Museum research student Jacob Ward who is studying 20th-century telecommunications.
PHOTOGRAPHIC DAZZLERS ACROSS THE GROUP

Setting the lead among the UK’s dedicated gallery spaces

Two of the Guardian’s top ten photography exhibitions of 2015 were created by the Science Museum Group. Gathered Leaves took the top spot, whilst Revelations: Experiments in Photography followed in third place. Revelations drew on Science Museum and National Media Museum collections to showcase the huge influence of scientific endeavour on the visual arts. As London’s leading photographic gallery, Media Space at the Science Museum hosted Gathered Leaves, the first major UK show by one of the world’s restlessly experimental photographers, Alec Soth. His renowned ‘unselfies’ led to a takeover of the Media Space Instagram channel for a week and undoubtedly advanced the museum’s reputation for innovation in digital media.

In December, the National Media Museum published some rarely seen images of Frank Sinatra to mark the showman’s centenary. These gems from the Daily Herald archive were revealed showing the many sides of ‘The Sultan of Swoon’.

This spring the vibrant annual Wellcome Image Awards, showcasing the best in science image-making, went on show simultaneously at the Science Museum and at MSI and science centres elsewhere. These astonishing images are chosen from all disciplines, among the most exciting showing the inside of a human stem cell; bacteria on a one-atom-thick slice of graphene; a premature baby receiving light therapy; and two intriguing views inside the human eye.

At the National Railway Museum, locomotive enthusiasts were invited outside opening hours to capture their own pictures of the world-famous Flying Scotsman while the locomotive itself was displayed in light steam to create an authentic atmosphere.

In January 2015 Gary Campbell blew the whistle at the Shildon platform of the National Railway Museum, after three years at the Museum of Scottish Lighthouses in Fraserburgh as its informal ‘principal lighthouse keeper’, by kick-starting a year full of exciting developments, major events and significant milestones. Locomotion, the museum jointly run by SMG and Durham County Council, welcomed to the team new expert education and volunteer development professionals, and the museum’s ever-popular public programme is flourishing as a result.

Diversification introduced an inaugural Steampunk event that brought in a whole new audience, as well as a Diamond Deltaic event supported by Locomotion Models that celebrated 60 years of the post-steam icon. Locomotion celebrated the National Railway Museum’s 40th anniversary at its highlight Autumn Steam Gala, followed soon after by the arrival of its landmark 2 millionth visitor, 11 short years after opening – an incredible achievement for a museum initially expected to attract 40,000 annual visitors. Simon Chambers, who was astonished to learn that he and his family were the lucky guests, said of Locomotion: ‘It is a great attraction for the Northeast. We love all the activities at the museum, there’s always something different happening. The museum keeps the children interested in our heritage.

The first Stockton and Darlington Railway Conference attracted speakers and delegates from throughout the UK, and marked the first step on an exciting ride towards the 200th anniversary of the S&DR in 2025. Looking back on his first year, Gary said: ‘With the shift from the sound of the foghorn and the flicker of the light to the sound of the whistle and the smell of the smoke well under way, I’m confident that a certain green locomotive will complete my transformation into a stationmaster in 2016!’

From top: Alec Soth speaks at the opening of Gathered Leaves... Rarely seen photographs of Frank Sinatra were given a showing in Bradford. A false-coloured cryogenic scan of a human stem cell from this year’s stunning Wellcome Image Awards exhibition.

Clockwise: Locomotive 777 provides a passenger service at the Steampunk event... Volunteer working on the 2HAP in the Shildon workshops... New manager Gary Campbell amid the Shildon collection.
This year the Science Museum Group brought together teams that were previously separately managed into a new national collections services department. Comprising all the people who conserve, care for, document and digitise objects, the new department symbolises the group’s bold decision to manage its wide-ranging collections as one for the first time.

Working in closer collaboration across the group is enabling and increasing sharing of skills and experience. As the three northern museums develop their Masterplan projects, the experience of the Science Museum conservation team in delivering large capital projects is helping colleagues to plan the extensive work that goes into moving and re-presenting objects in new exhibitions and galleries.

Exhibitions and Masterplan projects drive most tasks for collections services. The highlight of the year was undoubtedly Cosmonauts, where legally and logistically complex loans from Russia were skillfully negotiated, and creative solutions found to the challenge of bringing large and sometimes hazardous items into the Science Museum. Already attention has turned to the future, with extensive cleaning and preparation of 300 metal pieces that will be reassembled for the first time in decades to make up the Automation Lathe, which will be a highlight of our Robots exhibition in 2017.

As part of the Science Museum’s Masterplan, the team tackled the extraordinary challenge of packing and moving 6500 objects from the former medical galleries. The whole museum joined in to help, with 150 people from trustees and patrons to explainers and security staff receiving special training then rolling up their sleeves. This help meant that the team could concentrate on fragile objects such as anatomical waxes, which were carefully supported using clingfilm, plaster of Paris and bandages for their move down six storeys of the museum.

Each year thousands of items are lent to other museums for display (see page 64), and ensuring that these remain in good condition is paramount. The National Media Museum’s conservator repaired a tear in an early negative on tour in the exhibition Captain Linnaeus Tripe: Photographer of India and Burma, 1852–1860. The skilled repair meant that the 157-year-old image was seen in Washington DC, New York and London.

At the Science Museum, a loan from the Wellcome medical collection to the Chhatrapati Shivaji Maharaj Vastu Sangrahalya in Mumbai, India meant the team of object registrars had to ensure that the legal conditions of export were met.
NEW DIRECTION FOR COLLECTIONS

Safety is the first priority across the Science Museum Group, and historical science collections often contain hazardous materials that would be avoided or subject to licensing today. The group’s expertise in this area is recognised as leading best practice, with the collections hazards adviser involved in a partnership project to create an e-learning tool for museums.

In Manchester’s Museum of Science and Industry a year-long project has been completed to reassess 16,000 objects (97% of the relevant collection) for hazards such as asbestos and explosives. Specialist contractors have made objects safer where necessary, while retaining as much original material as possible to preserve an artefact’s integrity. The overall result is a collection that is ready for use by future exhibitions and researchers.

In York the National Railway Museum has focused conservation on the dynamometer car, a special railway vehicle for measuring a locomotive’s speed. Built in York in 1905, the car authenticated the record-breaking 100 mph run of Flying Scotsman in 1934, as well as the unsurpassed 125.88 mph set in 1938 by fellow Gresley-designed locomotive Mallard.

Most of the group’s activity is focused on stabilising the condition of objects, but occasionally restoration is appropriate. Here the team at Locomotion, the National Railway Museum at Shildon, comes into its own. Staff and volunteers are restoring the legendary 1960s Deltic locomotive King’s Own Yorkshire Light Infantry, affectionately known as ‘KOYLI’. The locomotive featured in NRM’s Scotsman season before operating on heritage railway lines.

In the digital sphere, expectations of both museum visitors and specialist researchers are rising: people expect to be able to find images of the group’s objects online. Looking forward, plans are being drawn up for an extensive programme of digitisation that will support a new collections online interface. While most artefacts will have a traditional photograph, technologies such as 3D scanning and rendering will enable visitors to explore star objects close up.

New head of collections

Meanwhile, Tilly Blyth has been appointed head of collections and principal curator for the Science Museum. Tilly joined the museum in 2004 as curator of computing, before becoming keeper of technologies and engineering in 2012. Most recently, she was the lead curator for Information Age, our biggest and most ambitious new gallery to date, as well as editor of the accompanying book, Information Age: Six Networks that Changed Our World.
FRESH LEASE OF LIFE FOR ENTERPRISES

From gaming to iconic Soviet art, the group is bursting with entrepreneurs

‘This year Enterprises has launched some exciting new projects,’ says Michelle Lockhart, commercial director, ‘from the upgrade of our IMAX cinema at the National Media Museum to our new improved Miniature Railway Ride at the National Railway Museum which has taken 50,000 passengers through the collection in the re-landscaped South Yard. We also began work on the design to convert the fourth and fifth floors of the Science Museum into a new dedicated corporate events space.’

Significant successes of the year were screenings of the new Star Wars episode The Force Awakens in the group’s two IMAX cinemas. In London it proved the Science Museum’s most successful cinema film ever, showing on Europe’s only 15/70 IMAX screen. More than 26,000 people attended, netting £339,000 at the box office, plus another £35,000 in popcorn and drinks sales. Batman v Superman followed over Easter.

In Bradford, our IMAX enjoyed a £780,000 upgrade – thanks to a loan from the Department for Culture, Media and Sport – which created state-of-the-art digital projection, high-spec sound, the region’s biggest screen and luxury seating. A new record was achieved when audiences for The Force Awakens totalled 19,000 to make ours the best performing Picturehouse in the country for Star Wars sales.

To celebrate the Science Museum’s blockbuster exhibition Cosmonauts, the retail team produced a beautiful catalogue, exclusive prints and a selection of limited-edition merchandise for a bespoke shop and online range. This included replicas of the first Shumanskoe watches – the first watch in space worn by Yuri Gagarin and the first spacewalk watch worn by Alexei Leonov. The Cosmonauts shop took £624,000, making triple the original profit forecast.

Our Flying Scotsman retail range drove e-commerce sales up 135% and revenue up 120% compared with the previous year. Visitors to the National Railway Museum also packed our Countess of York café for Flying Scotsman afternoon teas. The carriage, built in 1956 and restored in lavish style, receives appreciative reviews on TripAdvisor – and is currently ranked 15 out of 657 restaurants in York.

Enterprises has hosted ever more hands-on activities, notably when the Museum of Science and Industry mounted its first live retro and interactive gaming event, Play It! A collection of 120 playable consoles told the evolutionary tale of gaming and drew 13,000 visitors. By popular demand, Play It! returned over Easter and a similar event follows at the Science Museum.

The events team had great success at the NRM with their Christmas packages and exclusive nights, selling 4,477 covers, while the Science Museum hosted 200 commercial events across the year which were attended by 30,000 guests.

Highlight at Locomotionmodels.com: Exclusive Edition Bachmann Diamond Deltic models of D91 in east coast main line livery and KOYLI in BR blue, from £130 – to link with the Diamond Deltics event at Locomotion in October 2015.
FINE MINDS ON SHOW

The Science Museum this year celebrated three cultural giants and the acquisition of an exquisite collection.

What makes science tick
The marriage of the oldest horological collection in the world and the world’s greatest science museum was a time for royal celebration. And Princess Anne obliged by formally opening the Clockmakers’ Museum in its new home, a second-floor gallery granted on a 30-year lease by the Science Museum.

This collection of more than 1000 watches, 80 clocks, 25 marine chronometers, fine sundials and examples of hand engraving maps a story of innovation from 1600 to the present day. It was assembled by London’s Worshipful Company of Clockmakers and located in the Guildhall until its enforced closure in 2014. Prime among its treasures are a four-month-duration long-case clock by the father of English watchmaking, Thomas Tompion; and the fifth marine timekeeper completed in 1770 by John Harrison – the last in the series he made while attempting to win the famous £20,000 Longitude Prize.

VIEW THIS clockmakers.org

Einstein’s remarkable legacy
A century after Einstein published his general theory of relativity, the museum celebrated his achievements in Einstein’s Legacy: How Albert Einstein Changed the Way We See the World. This display explored his influence through fascinating scientific and cultural artefacts, while two films explored how his general theory of relativity for ever altered the way we see the universe.

Pioneer ahead of her time
A free exhibition celebrated the bicentenary of another pioneering Victorian, Ada Lovelace, champion of the computer. Lead curator Dr Tilly Blyth noted that ‘the exhibition revealed how Ada’s determination, knowledge and unbridled vision enabled her to anticipate the computer age a century ahead of her time’. Lovelace’s portraits, letters and notes, including the first published algorithm for the Analytical Engine, were displayed alongside the calculating machines with which she worked. Difference Engine No. 1, a prototype built c. 1832 by Charles Babbage, was shown with the Analytical Engine, which was the focus of Lovelace’s work and imagination. A digital display featured drawings and letters from the Science Museum’s Babbage archive, the British Library and the Bodleian Library. A series of accompanying evening events explored how technology can fuel the art.

Cameron the revolutionary
An exhibition in the Virgin Media Studio celebrated the bicentenary of pioneering Victorian photographer Julia Margaret Cameron and included the only existing print of the iconic portrait Iago. Cameron’s portraits of influential artistic and literary friends, acquaintances and family members including Alfred Tennyson, Thomas Carlyle, William Holman Hunt and several striking photographs of her niece Julia Jackson, mother of Virginia Woolf, both revolutionised photography and immortalised the Victorian age. Describing this founding figure of modern photographic portraiture, SMG’s head of photography Kate Bush said: ‘Her closely framed faces, bold, expressive and minimal, are as radical and visionary as the woman who created them.’
When it comes to harnessing the passion and energy of volunteers, this has been a record year for volunteering across the Science Museum Group. During the past year 850 volunteers contributed 71,930 hours of their time, skills, knowledge and enthusiasm to help us improve the visitor experience, care for the collection and help out behind the scenes.

In London the launch of Cosmonauts: Birth of the Space Age provided the catalyst for the most ambitious volunteering project to date. A total of 114 volunteers from 21 countries and a diverse range of backgrounds, including doctors, journalists and engineers, provided 5833 hours of their time sharing their expertise with visitors by wandering through the exhibition (see page 15).

Yet director of people and culture Judy McNicol feels there is potential for volunteers to make an even bigger contribution to our success: ‘Cosmonauts gave us a glimpse of how volunteer’s offer extraordinary potential to improve our visitors’ experience of our museums.’

This year saw the launch in Manchester and York of Volunteering for All, a new programme that brings staff and volunteers together – one of many new initiatives across the Science Museum Group designed to improve and grow volunteer involvement.

Veteran takes charge of Scotsman

New roles were developed for volunteers at the National Railway Museum ahead of the Flying Scotsman season, when more than 60 volunteers helped with diverse duties from communications and educational visits to the historic inaugural run between London and York.

Rob Tibbits has been a volunteer at the NRM since the museum opened, and was given the privilege of being train manager on board Scotsman for the big event.

In addition, MSI’s Inspiring Futures project continues to be a huge success. Its focus on health and wellbeing has helped the museum create more diverse, accessible volunteering opportunities and saw the team finish runners-up in the Spirit of Manchester Awards.

Volunteer opportunities continue to grow at the National Media Museum. This year a new team was recruited for Widescreen Weekend, which ran successfully as a stand-alone event for the first time, as well as at the CSI: Bradford and Light Fantastic contemporary science festivals.

Priceless feedback in Manchester

At the Museum of Science and Industry volunteers played a key role in festivals throughout the year, supporting Light Fantastic, MakeFest and Play It! events, as well as across the city during Manchester Science Festival.

Penelope Hill, Manchester Science Festival coordinator, said: ‘Our volunteers play a hugely important role as the public face of the festival. Their interactions with the audience provide us with priceless feedback about events and the Festival experience.’

In London, volunteers at COSMOS were also involved in the annual School Science Awards, and volunteers at MSI were involved in the annual School Science Awards. Volunteers also helped to staff the Science Museum Group’s stand at the annual Science Festival.

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Volunteers across SMG, clockwise: The experts who excelled during Cosmonauts at SM… Widescreen Weekend team at NMeM… Veterans at NRM in York… MSI’s GEC archives in Manchester
Jonathan Newby, SMG deputy director and chief operating officer (pictured), on the growth in visitors and other revenues

The chancellor announced the outcome of the latest Comprehensive Spending Review in his autumn statement in November 2015, and it was greeted with much relief in the heritage and cultural sector. As we had feared a further round of deep and potentially very damaging cuts, the flat-cash settlement for the next four years was better than even the most optimistic of us had expected. It was good news indeed, and a real recognition of the wider economic impact that museums and galleries have in the UK. However, the funding settlement provides a strong foundation on which to plan for the future.

We have continued to benefit hugely from our generous supporters – trustees, foundations and individuals – who have together made possible the wide range of programmes across our museums in 2015–16, from the opening of Cosmonauts at the National Railway Museum.

In particular, our visitors have made a huge difference, with record income from on-site donations exceeding £3 million. The core government funding fell again in real terms in 2015–16, however the autumn statement in November 2015 set out a more stable funding environment for the museums sector over the course of this parliament. Whilst we have experienced a cut in real terms over the coming years, the funding settlement provides a strong foundation on which to plan for the future.

We have maintained our focus on income generation during 2015–16. Excluding exceptional income from the sale of the Post Office Building, self-generated income represented 47% of total incoming resources this year. Profit from our commercial activities increased slightly. This income was supplemented by ticket income from our paid-for exhibitions, especially Cosmonauts and Leonardo, and from our international exhibition touring programme.

Jonathan Newby: behind him, the exclusive posters commissioned for the Cosmonauts shop.

The Science Museum enjoyed 3,419,000 visits in education groups, of which 390,000 were children and young people, a new record for the Science Museum group. This was the most googled museum on the planet with 680,000 visits from our paid-for exhibitions, especially Cosmonauts and Leonardo, and from our international exhibition touring programme.

The Science Museum (York and Shildon) enjoyed increases of visits in all locations, and achieved a total of 163,000 visits during the year (6%).

The Museum of Science and Industry also achieved increases in the number of visits, which included 17,000 in education groups, itself a 12% annual increase.

The National Railway Museum saw a strong rise in 640,000 attendances (+14%), including 30,000 visits to hands-on events in a new partnership with Horrible Science books.

SMG’s digital audiences: The group also recorded its best ever year for websites visits, with 12.7 million sessions in 2015–16. The methodology for her reporting and stats has changed so year-on-year comparison is not possible.

According to research by Google and London & Partners, the mayor’s official promotional company for the city, the Science Museum was the most googled museum in the planet during summer 2015.
The financial support of our visitors and partners provides critical funding for the museum’s core priorities and future plans. We are grateful to all those who have kindly made a donation to support the work of the Science Museum Group.

There are a number of different ways to become involved and support:

- Corporate supporters
- Trusts, foundations and government
- Corporate supporters: Cool Engineering Contractors
- Trusts, foundations and government: Alzheimer’s Research UK
- Corporate supporters: British Film Institute
- Trusts, foundations and government: The Morrisons Foundation
- Corporate supporters: British Kinematograph Sound and Television Society
- Trusts, foundations and government: Department for Business, Innovation & Skills
- Corporate supporters: Wellcome Trust
- Trusts, foundations and government: Science City York
- Corporate supporters: National Railway Museum
- Trusts, foundations and government: Friends of the National Railway Museum
- Corporate supporters: Marshalls plc
- Trusts, foundations and government: URENCO

We extend our grateful thanks to all those individuals, families and organisations that have chosen to support the work of the Science Museum Group.

SUPPORTING THE SCIENCE MUSEUM GROUP

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- Corporate supporters
- Trusts, foundations and government
- Individual philanthropists

For further information, please contact us on:

- Telephone: 020 7942 4000
- E-mail: development@sciencemuseum.ac.uk

The Science Museum Group’s annual dinner where we welcome our supporters.

NATIONAL MEDIA MUSEUM

Corporate supporters

- British Film Institute
- Science City York
- URENCO

Trusts, foundations and government

- British Kinematograph Sound and Television Society
- Wellcome Trust
- Media Sourcing Limited
- Sir Arthur Calvini

Individual philanthropists

- Alan E Moore CBE
- Eric Pickersgill
- Peter Jackson
- John Lasseter
- John McAslan + Partners
- Derek Arrand
- William N Smith
- Ian Macbeth
- Tom and Marie Spence (USA)
- Michael Harry Sacher Charitable Trust
- Mallard Circle
- Margaret Cecilia Scott
- Kenneth W Lovett
- Mr Christopher J King
- Legacies
- Roger Emerson
- John Chadwick
- Brian Moffat
- Peter Chadwick
- Margaret Cecilia Scott

Patriots

- Lord Rees of Ludlow
- Lord Archer and Dame Mary Archer
- Andrew Scott CBE
- Greg King

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The Science Museum Group Objectives

The Science Museum Group (SMG) is devoted to the history and contemporary practice of science, technology, industry and medicine throughout which the human being is a central theme. Our collections form an enduring record of scientific, technological and medical change since the 18th century. SMG incorporates the Science Museum, its library and archive and the Wellcome Collection of the History of Medicine in South Kensington; the National Railway Museum in York and Shildon; the Museum of Science and Industry in Manchester; and the National Media Museum in Bradford. Our two major collections stores are located at Wroughton in Wiltshire and Blythe House in West Kensington.

Our strategic objectives across SMG are to aspire to the highest international museum standards in the care and preservation of collections, scholarship, programming, learning and advocacy for our subject areas; strengthen our core narratives and deliver dynamic gallery displays; implement clear audience strategies that focus on providing audiences with experiences that are creative, entrepreneurial, efficient and dedicated to the development of great people.

The Charity

The Board of Trustees of the Science Museum was established under the National Heritage Act 1983. SMG is a charity registered under the Second Schedule of the Charities Act 1994.


Board of Trustees of the Science Museum Group

The Board of Trustees of the Science Museum is responsible for the whole of the Science Museum Group. The Trustees, who may number between 12 and 20, are appointed by and are responsible to the prime minister through DCMS. The director of SMG, as chief executive officer, is responsible to the Board of Trustees, and an accounting officer is accountable to DCMS for compliance with the Management Statement and Financial Memorandum.

All those named in this page held office during the year under review, 2015–16

Chairman: Dame Mary Archer CBE

Members

Mr Howard Chaney, until April 2016
Mr Matthew d’Ancona
Professor Dame Athene Donald DBE
Rt Hon, Lord Faulkner of Worcester
Miss Sharon Flood
Professor Russell G Foster CBE
Mr Andrew J Dixon
Lord Grade of Yarmouth CBE
Professor Ludmilla Jordanova
Mr Simon Linnett
Professor Averil McDonald CBE
Professor David A Phoenix CBE
Dr Gill Samuels CBE (Trustee), until August 2015
Mr Anton Valk CBE
Rt Hon, Lord Warsi
Dame Fiona West CBE

Our Distinguished Advisers

Science Museum Advisory Board
Chairman: Mr Howard Chaney (Trustee), until April 2016
Mr Roderick Youll, from March 2016
Dr Gill Samuels CBE, from 2015
Mr Matthew d’Ancona (Trustee), from April 2015
Ms June Alkemade
Dr Sarah Caddick
Professor Dame Athene Donald CBE (Trustee)
Dr Maxine de Smidt
Mr Malcolm Garret
Dr Luzie Green
Sir Tim Hunt, until February 2016
Dr Paul Nurse, from March 2016
Professor Michael J Reiss
Dr Gill Samuels CBE (Trustee), until March 2015
Professor Simon J Schaffler

National Railway Museum Advisory Board
Chairman: Dr Gill Samuels CBE (Trustee), until August 2015
Professor Russell G Foster CBE (Trustee), from September 2015

National Media Museum Advisory Board
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Professor Colin Bailey
Dr Maria Balshaw
Mr Michael Emmerich
Rt Hon, Lord Faulkner of Worcester (Trustee and observer)
Clare Huddon, from April 2015
Mr Sir Richard Leese CBE
Professor Andy Manley, from March 2016
Rt Hon, Baroness Morris, from December 2015
Dr Emma O’Hara
Professor David A Phoenix CBE (Trustee), from April 2015

New Fellows of the Science Museum

David Harding: in appreciation of his distinguished contribution to the advancement of science education, research and philanthropy.
Professor John O’Keefe: in appreciation of his distinguished contribution to the advancement of neuroscience.

New Fellows of the Science Museum

Professor Molly Stevens
Professor Helen Storey MBE

National Railway Museum Advisory Board
Chairman: Dr Gill Samuels CBE (Trustee)
Mr Philip Benham
Mr David Brown, from January 2016
Rt Hon, Lord Faulkner of Worcester (Trustee and observer)
Mr Brian Gray CBE
Professor Ludmilla Jordanova (Trustee)
Dr Ellen McAdam, from September 2015
Professor Clive Roberts, from June 2015
Dr Gill Samuels CBE (Trustee), until August 2015
Mr Adrian Shooter CBE
Ms Sarah Tinkham, until June 2015
Mr Anton Valk CBE (Trustee)
Mr Christian Wolmar

Museum of Science and Industry Advisory Board
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Professor Russell G Foster CBE (Trustee), from September 2015

Professor Colin Bailey
Dr Maria Balshaw
Mr Michael Emmerich
Rt Hon, Lord Faulkner of Worcester (Trustee and observer)
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Director: Ian Blatchford
Science Museum
Exhibition Road
London SW7 2DD
Tel 020 7942 3600
www.sciencemuseum.org.uk

Science Museum, London

The Science Museum is a must-see London destination, with growing numbers. The Science Museum attracts about 3.4 million visitors a year, half in family groups and 1 in 13 in education groups, typically 450,000 per year (more than 40% BAME). Our recent blockbuster exhibitions have attracted independent adult visitors in growing numbers. The Science Museum is a must-see London destination, with a third of general admissions from overseas. We are the most googled museum in the world, with 40% of our website traffic coming from abroad.

Highlights

The Science Museum traces its origins from the Great Exhibition of 1851 when it was renamed the Science Museum in 1857. From 1863 to 1969, it formed a part of the South Kensington museum and international centre and library. In 1969, the Science Museum was formed as an independent trust and in 1983 became an exempt charity under the second schedule of the Charities Act.

Audience

The Science Museum has a mission to make sense of the science that shapes our lives. This committed drives everything we do. Through our world-class collections of original historic objects, galleries, interactive experiences and our learning programmes we aim to be the leading international museum championing the understanding, enjoyment and prestige of science in modern society. To help create a scientifically literate society and inspire the next generation, our Strategic Ambitions focus on four core themes: climate science and sustainability, medicine, informatics and the science of technology and understanding the universe. This ten-year strategy, implemented in 2012, includes a commitment to focus on the urgent choices faced by society and the fundamental science and technology that underpin them.

Objectives

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Future ambitions

This year: impressive new temporary exhibitions about robots, big data and the medical innovations of the First World War. Plus the opening of a new constellation of exhibits at the South Kensington museum. Our new display will repurpose one-third of the museum between the Great Exhibition of 1851 and...
The National Railway Museum's vision is to be the prime showcase in the world for the huge impact railways and their technology have had in the past and will have in the future on people, the economy, society and the environment in Britain and the wider world. We focus on appealing boldly to non-specialist audiences, showcasing the modern railway industry, creating new public spaces and galleries and responding to developments in the museum's surroundings.

The NRM comprises a main museum in York housed in inspiring historic buildings and a second museum in Shildon, County Durham. The NRM in Shildon is operated in partnership with Durham County Council and houses some of the National Collection in a new building. A charismatic 19th-century site also features the former workshop of Timothy Hackworth, built for the world’s first passenger railway of 1825. Shildon is known as the ‘cradle of the railways’.

AUDIENCES
Our museum in York appeals successfully to family groups, who make up about half of our visitors. More than two-thirds of our audience are non-enthusiasts, including our growth audience of adult nostalgia-seekers. A large proportion of visitors come from outside the Yorkshire and Humber region, many from overseas.

FUTURE AMBITIONS
The museum’s highly anticipated Scotsman season illustrates the history of the locomotive and train service. An exhibition at our York site will tell the forgotten story of First World War ambulance trains, which transported the sick and injured to hospitals across Europe.

We continue our award-winning partnership with York Theatre Royal with a theatrical interpretation of our Ambulance Trains exhibition. Other collaborations include working alongside the rail industry and budding young engineers as part of our new Future Engineers event. Our Masterplan focuses on the Great Hall and opportunities presented by the development of York Central.

Director: Sally MacDonald
Museum of Science and Industry
Liverpool Road, Castlefield
Manchester M3 4FP
www.msssi.org.uk

OBJECTIVES
The Museum of Science and Industry is Manchester’s most visited museum. We aim to inspire visitors through ideas that change the world, from the Industrial Revolution to today and beyond. We pride ourselves on being uniquely placed to tell this story through our historic location on the site of the oldest surviving passenger railway station, right in the heart of a city steeped in scientific discovery and innovation. We combine this landmark feature with our vibrant, year-round contemporary science programmes created to inspire, surprise and enlighten our audiences of all ages.

HIGHLIGHTS
We care for a globally important heritage site comprising five listed buildings, two of them listed Grade 1. This site was the original terminus of the world’s first inter-city railway and our characteristic 1830 Warehouse epitomises ‘the warehouse of the western world’. Key objects in the collection include the models used by John Dalton to demonstrate his atomic theory, laying the foundations of modern chemistry; parts from the world’s first commercially available computer, the Ferranti Mark I; and one of the world’s largest collections of working steam mill engines, which visitors can see in action in the Power Hall. There are also daily demonstrations from spinning to weaving on original machines in the museum’s Textiles gallery.

One of the flagship events in our cultural calendar, enlisting science for people of all ages, is the 11-day multi-venue Manchester Science Festival. Each October half term it attracts the best scientists from Manchester and beyond to showcase current research and promote the region’s rich heritage of innovation.

FUTURE AMBITIONS
We aim to remain an essential and distinctive cultural venue in the heart of the city and a significant centre for science discovery and learning. To this end, we have created a long-term Masterplan which includes the creation of our new special exhibition gallery opening in 2018. This ambitious project will transform the viaduct and 1830 Warehouse into a venue for world-class contemporary science exhibitions located in the most significant part of our site – the 1830 complex.

This transformation will also enable us to continue our relationship with major STEM-focused organisations, such as the Wellcome Trust and Siemens plc, to help build and further develop our reputation and the city’s as a globally significant place for science innovation and understanding.
The National Media Museum is situated in the heart of Bradford, UNESCO City of Film. Traditional and interactive galleries located across seven floors investigate and celebrate the technologies that sit behind film, photography, television, animation and new media. The museum is home to more than 3 million items of historical significance in its national collections of photography, cinematography and television. Pivotal world firsts include the American-made camera that enabled mass photography from 1889; moving pictures in Britain; Kodak No. 1, the world firsts include the Leeds-made Gugnunc biplane that will feature in Europe, a magnet for enthusiasts worldwide.

**FUTURE AMBITIONS**

The next phase of development will be a major £1.8 million interactive gallery, expected to open in March 2017. This is being designed in partnership with leading agency Ab Rogers Design and will be the museum’s first new gallery in more than five years. Then the Treasures galleries will provide a worthy showcase for the extraordinary and earliest examples of technology in our collection. They will also draw on the wider SMG collection to broaden that story to cover sound, as well as other light-based technologies. Together, these new permanent galleries will give the museum a new lease of life.

The Science Museum Group’s collection contains a superb range of large objects available for both exhibitions and research. Huge artefacts are stored and brought out for display from a site of equally impressive scale, a 545-acre former airfield at Wroughton in Wiltshire. This year one of the largest objects conserved at Wroughton has been the Gugnunc biplane that will feature in the new Mathematics gallery. The plane was moved into a specially created dehumidification tent to dry out moisture inside it, ensuring that there will be no sudden changes that could damage its fragile surfaces once installed in the Science Museum.

The group’s new strategy for collection services (see page 44) designates Wroughton as a national hub that enables the collection to be accessed and used across and beyond the museums. Following the chancellor’s spending review in December and the announcement of strategic government investment in storage, Wroughton will be further developed to rehouse objects currently located at Blythe House in London as well as replacing some existing facilities. The year also saw the construction of a solar park in the centre of the airfield by British Solar Renewables. When energised, it will put four times as much electricity into the National Grid as we use as a group, while providing a reliable income stream. We are also looking at the potential to raise further income through Wroughton by providing storage to other museums there.

**HIGHLIGHTS**

Star exhibit: The Kodak No. 1 camera (1889) used roll film and produced photographs such as this, Woman in a Rowing Boat, about 1890.

Behind the preparations for the Science Museum’s forthcoming major galleries on mathematics and medicine lies Blythe House, the group’s small-object store at Olympia in London. Here, curators select artefacts for display, photographers digitise them and conservators prepare them. Highlights of the past year for the busy team of conservators included the meticulous cleaning of 300 pieces of an Automaten Lathe that will be reassembled for a future exhibition on robots, alongside thousands of objects decanted from the former medicine galleries at the Science Museum. The group currently shares a third of Blythe House with the V&A and the British Museum. It is, however, an ageing facility that is not a sustainable long-term solution for the storage of our collection, and offering only very limited access for researchers. Following the chancellor’s announcement of £150 million for the three museums to relocate storage from Blythe House to facilities fit for the 21st century, plans are being drawn up to move about 320,000 of our objects. As well as carefully packing the many fragile artefacts, the need to handle every one provides an efficient opportunity to digitise the collection.

Nobody is pretending that photographing and moving objects on this scale will be anything other than a giant undertaking, but the outcome – enabling greater access to the collection online and for researchers – will be a boon for the public, our collections and SMG.
WHAT WE LENT OUT

In 2015–16 the Science Museum Group loaned 2745 objects to 159 different venues in the UK and 154 objects to another 31 overseas. Here’s where ten ended up:

Sources:
SM – Science Museum, London
NRM – National Railway Museum, York and Shildon
MSI – Museum of Science and Industry, Manchester
NMeM – National Media Museum, Bradford

To: Fundación Mapfre, Madrid, Spain and George Eastman House, Rochester, USA
Fantasia (1957), by Alvin Langdon Coburn, photographic print loaned to the exhibition Alvin Langdon Coburn. Coburn was a key figure at the beginning of the avant-garde photography movement and one of the most important photographers of the first half of the 20th century.
Source: NMeM

To: Chhatrapati Shivaji Maharaj Vastu Sangrahalaya (CSMVS), Mumbai, India
Polychrome devil mask (1770–1920), representing a red-faced devil wearing a headdress adorned with cobras, used in Kolam, a type of folk drama performed in Sri Lanka. Loaned to Medicine and Healing in India.
Source: SM

To: Ironbridge Gorge Museum Trust, Telford, UK
Source: NRM

To: JCII Camera Museum, Tokyo, Japan
Talbot mousetrap camera (c. 1835), an example of the experimental devices William Henry Fox Talbot used in developing photography, loaned to The History of the British Camera.
Source: NMeM

To: The Louvre, Paris, France
Coalbrookdale by Night (1801), oil painting by Philippe Jacques de Loutherbourg. This archetypal image of the Industrial Revolution depicting flames from open coke hearths was loaned to A Brief History of the Future.
Source: SM

To: Royal College of Physicians, London, UK
John Dee’s crystal (1593), maker unknown. Used for clairvoyance and to treat disease. Loaned to Scholar, Courier, Magician: The Lost Library of John Dee.
Source: SM

To: National Maritime Museum, London, UK
Source: SM

To: National Football Museum, Manchester, UK
Model 14T3 black-and-white television (1952), by Ferranti Ltd, on long-term loan since 2012. This model was launched at a time when television sets were becoming much more popular in Britain, in the run-up to the Queen’s coronation.
Source: MSI

To: STEAM – Museum of the Great Western Railway, Swindon, UK
No. 3440 City of Truro, a 4-4-0 steam locomotive designed by William Dean and built by the Great Western Railway at Swindon, 1903. A new addition to our long-term loan of 1000 objects to this museum.
Source: NRM

To: Arlington Court and the National Trust Carriage Museum, Barnstaple, UK
Early Punch carriage (date unknown). An unusual design believed to have been built for a country doctor. Part of a long-term loan of 17 objects.
Source: SM

To: SM
Coalbrookdale by Night (1801), oil painting by Philippe Jacques de Loutherbourg. This archetypal image of the Industrial Revolution depicting flames from open coke hearths was loaned to A Brief History of the Future.
Source: SM

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What to acquire? Or, what not to acquire? This remains a continual dilemma for curators – particularly at a time when the future sustainability of growing public collections is a necessary topic for discussion and action. However, the Science Museum Group remains committed to building a world-leading collection that captures the landmarks of Britain’s industrial and scientific past and the infinite challenges of the present.

Across the group, we believe passionately in the unique power of objects to connect with history’s turning points, such as this key 19th-century map of the night sky (right). A major strength is reflecting breakthroughs, with acquisitions this year including the UK’s first HIV self-testing kit. Our collection is set in an international context through items such as photographs demonstrating the social impact of cinema in South Africa in the 1920s. And a humble quilt celebrating a romantic engagement or wedding of John and Mary Lomax. The recipients came from a family of weavers and the quilt shows that the use of traditional hand-weaving continued even after mechanisation.

WHAT WE COLLECTED AND WHY

Hadrian Ellory-van Dekker, Science Museum head of collections and chief curator, explains

Caddow quilt (1886)
A hand-woven decorative cotton quilt, made to commemorate the engagement or wedding of John and Mary Lomax. The recipients came from a family of weavers and the quilt shows that the use of traditional hand-weaving continued even after mechanisation.

Pixelvision video camera (1998)
Developed by toy company Fisher Price, the PXL-2000 black-and-white camcorder gained popularity with amateur and underground film-makers in the 1990s. The grainy, low-resolution, trailing images give a dream-like quality which has become something of a cult.

Soviet Railways leaflets and handbills (1963)
Collected by British Railways employee James Collin when he visited Moscow in 1964. The imagery and style make an interesting contrast with the launch of British Rail’s new corporate identity in 1965.

Manufactured by BioSure, Nazeing, Essex. The first over-the-counter self-testing kit to go on sale in the UK following the controversial legalisation of self-testing in 2014.

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This year marked the long-awaited return of the legendary steam locomotive, the sole survivor of the A3 class designed by Sir Nigel Gresley, to the tracks after a decade-long restoration project. The 1923 locomotive, the Flying Scotsman, roared up the east coast main line to its York home in February. As the UK’s oldest main-line working locomotive, Scotsman sported the British Railways green livery and the number 60103 it carried at retirement from regular service in 1963. Its eagerly anticipated inaugural run, a thank you to all those who made the restoration possible, kicked off the National Railway Museum’s Scotsman season—a homage to this most famous of all steam engines, which was the first to record an authenticated speed of 100 mph in 1934.

Buying Flying Scotsman for the nation at a cost of £2.3 million turned out to be the easy part. A restoration expected to last 18 months when it began in 2006 turned out to require replacement of nearly every vital part, including the boiler, all built to original specifications. ‘Anything else’, said engineering manager Simon Holroyd, ‘just wouldn’t be Flying Scotsman. You would have lost its heritage.’

The most complicated engineering jigsaw puzzles of recent times finally reached completion in the Bury workshop of Riley & Son (E) Ltd. The last lap of this complex project included the boiler being craned onto the icon’s frames in August. Next, the modern equipment that is needed for running on Britain’s main-line tracks was fitted by electrical engineer Mandy Sharpe.

In the final weeks of 2015 the fire was lit for the first time and Scotsman roared back to life. News crews have followed its every move since.

National Railway Museum head curator Andrew McLean summed up the steam giant’s appeal. ‘You can’t fly on Concorde now. You can’t cross the Atlantic on the original Queen Mary. But you will be able to travel on a train hauled by Flying Scotsman.’