SCIENCE MUSEUM GROUP

INSPIRING EVERY FUTURE

ANNUAL REVIEW 2022–23

HIGHLIGHTS

ON OTHER PAGES

APPENDIX

Cover *Technicians: The David Sainsbury Gallery* in the Science Museum, London

Conservators assemble a replica of the 'Maria' robot from Fritz Lang's 1927 film *Metropolis*, before it is photographed in the National Collections Centre studio

Right Dame Mary Archer speaking at the Director's Annual Dinner

CHANGING SPACES

Our museums outside London are being transformed into magnificent, sustainable spaces that will also celebrate their local histories, says our chair Dame Mary Archer

A once-in-a-generation transformation is under way at four of our five museums, shifting the centre of gravity of the Science Museum Group away from London and towards the birthplace of the Industrial Revolution.

Much of the impetus for this change has come from another revolution – of the green kind: in Manchester, the world's first industrial city, the Science and Industry Museum is on a path to become our first zero-carbon museum.

A very generous donation of £3 million from The Law Family Charitable Foundation will help us to deliver the Power Hall, which houses one of the UK's largest collections of working steam engines, as the museum pursues a site-wide decarbonisation project to help the Group reach net zero by 2033.

In York, the National Railway Museum's historic Station Hall closed in the new year for the installation of glazing and a thermally efficient and weather-tight roof to protect the collection. This was part of a £10.5 million restoration of the historic Grade II-listed structure, funded by the Department for Culture, Media and Sport.

The conservation of Station Hall heralds a wider redevelopment project called Vision 2025, which will see the launch of an interactive gallery for families called *Wonderlab: The Bramall Gallery* – enabled by a greatly appreciated £2.5 million donation by the Liz and Terry Bramall Foundation – followed by the construction of Central Hall, a new energy-efficient building at the heart of the museum.

Vision 2025 is also bringing change to the National Railway Museum's sister museum, Locomotion in Shildon, ahead of the Stockton and Darlington Railway's bicentenary in 2025: construction is under way of a £7 million building which will house up to 50 vehicles from the national collection, bringing the total number there to more than 100.

To underline how Shildon was the birthplace of the railways, historic steam engine *Locomotion No. 1*, the first to haul a scheduled passenger train, is already on display in Locomotion, alongside Stephenson's *Rocket*, which travelled to Shildon this year, uniting these two icons of early steam technology for the first time.

In Bradford, the National Science and Media Museum is preparing to play a central role in City of Culture 2025 through a £6 million capital project. *Sound and Vision* will feature two new galleries to showcase key objects and stories from our world-class collections of photography, film, television, animation, video games and sound technologies – all set in the heart of one of the UK's youngest, most diverse and fastest-growing cities.

It is fitting that in Bradford, the first UNESCO City of Film, we will mark another worldwide revolution by exploring the past, present and future of the moving image.

Fitting, too, that each of our museums should be undergoing significant renewal and evolution, meaning that our Group will be ready in the coming years to welcome more visitors than ever.

LEADING THE NEXT GENERATION

Through ground-breaking programming and galleries, our museums are playing a vital role in recruiting the next cohort of scientists and innovators – and laying the foundations for Britain's future success, says Group director Sir Ian Blatchford

Core to the Science Museum Group's mission to inspire futures is a passionate conviction that our five museums have the power to change lives. In helping to ignite the curiosity of the next generation of scientists, engineers and innovators, our museums are contributing to the well-being not just of our visitors but also the UK's future as a forward-looking economy.

If a single moment from the past year encapsulates how we might change the world, it is surely the opening of *Technicians: The David Sainsbury Gallery* and the reception it has had from industry, politicians, teachers and other visitors. The gallery's hands-on exhibits bring to life a wide variety of workplaces, from a blockbuster film set to a hospital, giving visitors a visceral experience of technicians' careers. We know from the research carried out by our expert partner, the Gatsby Foundation, just how many opportunities exist for technical careers – and the skills shortages facing so many industries, with an estimated 800,000 more technicians needed across the UK.

David Sainsbury's energy and generosity is the reason this gallery came into existence, but so many partners – from National Grid to the NHS – are contributing to its success. I cannot overstate the impact of the real-life technicians who are coming on site to talk to our visitors each week. Key to the huge numbers of teenagers choosing to explore *Technicians* is the allure of stepping into Shuri's Lab from Marvel Studios' *Black Panther* to control the film-set lighting. That was the result of a close collaboration with Marvel Studios, whose parent company Disney is working with us to take the technicians story beyond our museum walls.

Of course, *Technicians* is just one (excellent) illustration of our mission in action. Look forward even a couple of months at our Group's activities and we have *Wonderlab: The Bramall Gallery* opening at the National Railway Museum to inspire future engineers, *Operation Ouch!* at the Science and Industry Museum and the *Engineers* gallery at the Science Museum. Existing programmes include the SMG Academy which, thanks

Left A boy in the *Technicians* gallery learns about the huge range of jobs that technicians do every day

'Our new *Technicians* gallery is just one excellent illustration of our mission in action'

Sir Ian Blatchford, director, Science Museum Group

to the support of founding partner BP, offers research-informed training and resources for teachers and professionals working in museums, and in science, technology, engineering and mathematics (STEM). These initiatives are helping others to deliver inspiration beyond our museums' walls.

Engineers will feature the winners of this year's Queen Elizabeth Prize, 'the Nobels of engineering', who were announced on the day the government named a Secretary of State for Science with a seat at the Cabinet table for the first time in decades, alongside the newly formed Department for Energy Security and Net Zero.

There appears to be alignment across the political spectrum on the importance of science and innovation to the UK's economic future, and the Group's role in engagement, but the sector must continue to make its case strongly in these turbulent times. As we do so, the kinds of partnerships I have described above – and that you will find punctuating each page of this review – remain critical to our organisation, our mission and our visitors.

SCIENCE FICTION

VISIONS OF THE FUTURE

An ambitious exhibition exploring the connections between science fiction and science fact delighted audiences and critics

‘Wonderfully curated … It’s that optimistic, transporting magic of sci-fi that makes this enlightening show so much fun’

Debra Craine, *The Times*

‘It’s genuine props, battered and battle-scarred, such as Darth Vader’s helmet, that will give your inner geek the biggest thrill’

Jake Kerridge, *The Daily Telegraph*

The Science Museum Group’s guiding principle of ‘thinking big’ was epitomised in our most ambitious exhibition to date, *Science Fiction: Voyage to the Edge of Imagination*, which opened in October 2022. From the scale of the gallery space (1,100m^2) to its design and content, events programme, and a truly digital-first communications campaign – delivering the museum’s best ever pre-sale ticket figures for an exhibition – *Science Fiction* dazzled audiences and critics with its scope and creativity.

The exhibition places visitors at the heart of an interactive science fiction story filled with more than 70 objects, brought together in the UK for the first time, that explore how scientists and science fiction creators have inspired each other through innovation and imagination.

Curated by the Science Museum, and designed by BAFTA and Framestore, an Academy Award-winning creative studio, in collaboration with P&P Projects, this immersive journey begins the moment the visitor arrives.

The exhibition tickets provide flight details for an intergalactic adventure, and the entrance to the exhibition is a departure lounge, which leads to a shuttle that takes visitors to *Azimuth*, an extra-terrestrial spaceship.

Once ‘on board’, and accompanied by ALANN, an AI guide, visitors adventure through the cosmos, touch down on an unexplored world and gaze over planet Earth. The rich soundscapes, developed by Factory Studios, even include a bespoke alien language called Bhaux, devised by Framestore.

Within an expansive and inventive series of set-designed areas of the spaceship (including a vast Exploration Deck and Bio Lab), explorers are invited to discover fascinating connections between significant scientific innovations and celebrated science fiction works.

Mary Shelley’s *Frankenstein* introduces the world’s smallest pacemaker, while prosthetic arms sit alongside *Iron Man*’s iconic armour, and a model of a Saturn V rocket features alongside classic imaginary voyages beyond our atmosphere: a first edition of Jules Verne’s *From the Earth to the Moon* is just one highlight.

Also on display are clothes, artefacts and props from famous films and TV programmes that envisioned new forms of life and other worlds, such as the gold spacesuit in *Sunshine*, the costume won by Lt Uhura (Nichelle Nichols) in *Star Trek*, the xenomorph from *Alien* and a Darth Vader helmet created for *Star Wars: Episode V – The Empire Strikes Back*.

‘This is fascinating stuff, a refreshingly optimistic antidote to apocalyptic dread’

Jonathan Jones, *The Guardian*

Previous pages
A visitor inside the Off-World section of the exhibition
Left Liam Young’s Planet City model and Abeer Seikaly’s Weaving a Home project

Opposite, below The Observation Deck
Below left Sci-fi icons: the USS Enterprise from *Star Trek* and a Dalek from *Doctor Who*
Below right Replica of an Apollo 17 A7LB Lunar Extravehicular Mobility Unit Space Suit

‘An incredibly rich exhibition’

Front Row, BBC Radio 4

There are also artworks and stories from across the world that reflect contemporary concerns and explore alternative futures for humanity. Larry Achiampong, one of the featured artists – whose *Relic Traveller* series is represented with a beautiful Pan-African flag and Traveller Suit – joined Tilley Lockey, the Open Bionics ambassador, and Sir Ian Blatchford, director of the Science Museum Group, for the VIP launch, which featured an exclusive performance from Radiophonic Workshop. Members of the cosplay community and sci-fi celebrities were also present.

An accompanying book, *Science Fiction: Voyage to the Edge of the Imagination*, edited by curator Dr Glyn Morgan, expands on the themes explored in the exhibition.

A diverse events programme also explored the impact of science fiction literature, TV and film on the modern world. This featured music and dance performances, panel discussions, Lates and Astronights. The museum’s first ever Science Fiction Film Festival took place in March, hosting leading directors from the genre, including Christopher Nolan and Danny Boyle.

As befits the ambition of the exhibition, partnerships formed a key element to the communications campaign, and included Star Trek, Godzilla, Secret Cinema and Sky.

Recognising the importance of celebrating science fiction creators, the Science Museum also hosted the Arthur C Clarke Award, which celebrates the best in the genre’s writing, and launched a new sci-fi writing competition, Science Fiction Debuts, in partnership with Hodder & Stoughton. Winners of both were announced on 26 October at Science Fiction Lates.

After *Science Fiction* closes at the Science Museum in August 2023, the exhibition will embark on an international tour beginning in Asia.

Major funders
Science Fiction is generously supported by the Blavatnik Family Foundation
Supporters Bridget and David Jacob

‘Technicians are long overdue their time in the spotlight as one of the country’s most vital teams, driving economic growth in an amazing range of sectors’

Sir Ian Blatchford, director, Science Museum Group

TECHNICAL BRILLIANCE

A pioneering new interactive gallery in the Science Museum celebrates the vital roles of technicians in society, from health and manufacturing to the creative industries

TECHNICIANS: THE DAVID SAINSBURY GALLERY

The gallery has been shortlisted for Permanent Exhibition of the Year 2023 by the Museums and Heritage Awards

The world's first gallery dedicated to technician careers, *Technicians: The David Sainsbury Gallery*, opened its doors on 3 November 2022 at the Science Museum in London. The gallery offers an interactive experience for 11 to 16-year-olds, providing them with invaluable insights into the essential roles that technicians play across various industries. Live programming sessions for schools and families connect visitors with professional technicians, giving them a chance to learn first-hand how rewarding a technical career can be.

The gallery is divided into four key areas representing different sectors in which technicians play a crucial role, plus a careers hub encouraging visitors to explore even more technician roles to discover which one might suit their skills and interests.

Above The Energy Networks area of the *Technicians* gallery, featuring a wind turbine

CREATIVE INDUSTRIES
Highlighting the vital role that technicians play in bringing blockbuster movies to life, a replica of Shuri's Lab from Marvel Studios' *Black Panther* offers visitors the chance to try their hand at film-set lighting, post-production sound and visual effects. This immersive experience showcases the technical expertise and artistry required to create visual effects and captivating soundscapes in the film industry.

ENERGY NETWORKS
Focusing on the technicians who build, maintain and repair the networks that power our world, this area offers a glimpse into the challenging work environments these professionals navigate. Interactive exhibits allow visitors to diagnose problems as a wind-turbine technician would do, check for faults in an electricity substation, and pilot a remotely operated vehicle on the ocean floor, revealing the critical role technicians play in ensuring the efficient functioning of our energy networks.

HEALTH SCIENCE
Designed with an exterior inspired by the Royal London Hospital, this section emphasises the importance of pharmacy and healthcare laboratory technicians in the NHS. Interactive exhibits challenge visitors to prepare IV bags, check medicines for contaminants, and practise pipetting, showcasing the exceptional accuracy and attention to detail required of these life-saving professionals.

ADVANCED MANUFACTURING
Here, visitors can experiment with simple coding to control a recycling robot, test their precision-welding skills, and explore computer-aided design in the context of manufacturing wind turbine blades. This section highlights the innovative technologies and techniques employed by technicians to create and maintain the structures and machinery that drive modern industry.

Title funder Gatsby Charitable Foundation

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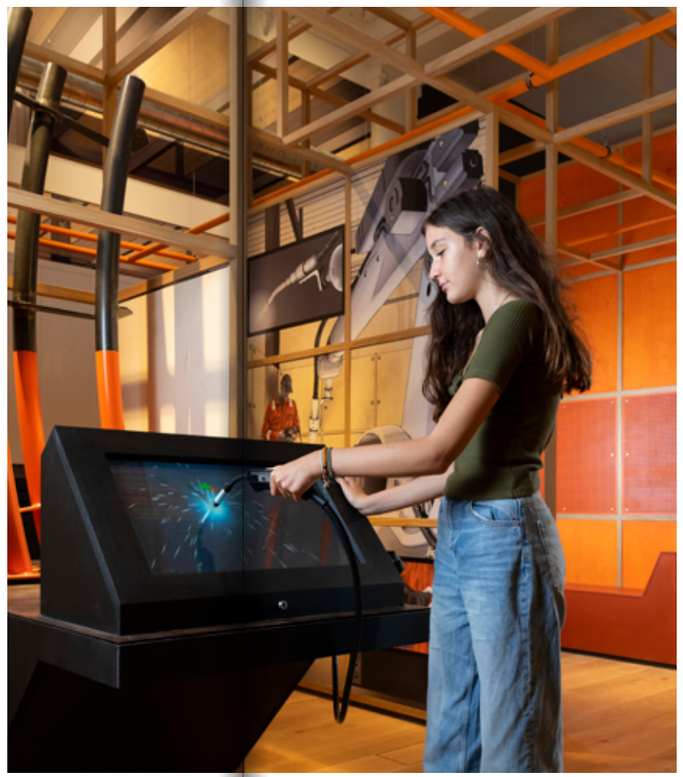
TECHNICIANS: THE DAVID SAINSBURY GALLERY



'The simulations are almost uniformly excellent … A timely contribution at a time of renewed focus on careers education'

Schools Week

Left A visitor tries out her welding skills
Below Discover all the jobs that technicians perform every day

A FUTURE ME
There are two careers hubs in the gallery that invite young people to explore 100 different technician roles achievable through apprenticeships and T-levels. The interactive Technicians Role Finder helps them discover potential careers tailored to their skills and interests. Visitors can then continue on to the *Technicians: We Make the Difference* website (technicians.org.uk), created by the Gatsby Charitable Foundation, to continue exploring the wide range of technician jobs.

LIVE PROGRAMMING
A regular programme of workshops with technicians, enabled by the Learning team, enhances a visit to the gallery. Visitors hear first-hand what it's like to be a technician through demonstrations, activities and Q&As.

Since opening, more than 4,700 schoolchildren have been booked in to meet a technician in the live programming workshops, many families have engaged with a technician, and BBC Bitesize hosted a live careers show to celebrate National Apprenticeship Week. Gillian Keegan, Secretary of State for Education, and education minister Nick Gibb also enjoyed visits to the gallery.

The gallery would not have been possible without the incredible technicians, careers advisers, young people and organisations, including Marvel Studios, the NHS, National Grid and the University of Sheffield Advanced Manufacturing Research Centre, who were instrumental in helping to create an authentic and accessible gallery.

By providing a one-of-a-kind space for young people to explore technician careers, the *Technicians* gallery is helping to inspire the next generation of skilled professionals and shaping a brighter future for the STEM sector.

MOVING TOWARDS NET ZERO

The restoration and reimagining of our historic Manchester site will be a landmark in sustainability for the Group, and deliver an exciting new experience for visitors

Conservation work on the Science and Industry Museum's historically significant site – one of the biggest heritage schemes under way in the UK – will create new and improved spaces for visitors to enjoy, and deliver a greener future for the museum.

The renovation of the Grade II-listed Power Hall is at the heart of this work. Built in 1855 as the shipping shed for Liverpool Road Station, the world's first purpose-built passenger railway station, the Power Hall is one of the most beloved industrial heritage galleries in the country.

Thanks to £6 million from the Department for Culture, Media and Sport, full renovation works to the roof, which is the length of a Premier League football pitch, are now complete. This mammoth task has involved retiling (retaining most of the original tiles), timber repairs, new guttering, roof lights to retain heat, and installation of sustainable wood-fibre roof insulation (made from the waste created when timber is sawn). This will ensure the Power Hall will continue to inspire visitors for years to come, as well as improving thermal performance and significantly reducing carbon emissions.

The gallery, which is home to one of the UK's largest collections of working steam engines, most of them built and used in Manchester, will be reimagined. When it reopens, visitors will be able to delve deeper into the lives of the skilled engineers, makers and technicians who operated and maintained these machines, powering the city's industries that continue to shape our lives today.

Thanks to a £3 million donation from The Law Family Charitable Foundation and a £224,974 grant from the National Lottery Heritage Fund the museum can provide better storytelling, inspirational learning and skills development. Using its historic working machinery and volunteering programmes, it can help to bridge the STEM skills gap and encourage the next generation of technicians, engineers and innovators.

Sustainability has been fundamental to the Power Hall's transformation and will be at the heart of the visitor experience. The latest green technology will be used not only to heat the building but also to power the historic machines that were once fired by coal.

'The restoration, transformation and decarbonisation of the Science and Industry's Museum's historic site is a bold symbol of how Greater Manchester can lead the drive to net zero'

Cllr Martyn Cox, Lead for Culture, Greater Manchester Combined Authority

The first phase of decarbonisation work is now complete. Made possible thanks to a £4.3 million award from the government's Public Sector Decarbonisation Scheme, delivered by Salix Finance, a new water source heat network is drawing water from the same underground aquifer that almost 200 years ago helped to power the world's first inter-city passenger railway station, and first railway goods warehouse in the world's first industrial city.

The new heat network, along with a new electric boiler and upgrades to the Grade II-listed Power Hall roof and windows, will save 515 tonnes of carbon per year, equivalent to the average CO2 emissions of more than 30 UK homes per year. Together with additional green infrastructure changes across the site, this work supports the Group's goal to reach a net zero target of 2033 and Greater Manchester's goal to become carbon neutral by 2038 (12 years ahead of the national target).

As well as ongoing work to restore the Power Hall, we have been awarded £14.2 million of government funding to complete further urgent repairs and improvements, including thermal improvements to our building fabric. This work includes repairs to the roof, gutters and masonry of the new warehouse, conservation of a historic gantry and improvements to the cobbled yards.

These works will begin in autumn 2023, with the museum remaining open with a packed programme for visitors. Taking inspiration from the site's live engineering projects, we will be hosting sustainability, construction, technical and heritage skills-themed activities for all ages, embracing engineering in action.

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Above and below The roof of the Power Hall is being fully insulated and renovated. Most of the original tiles are being retained

Right Andy Burnham, Mayor of Greater Manchester; Sally MacDonald, director, Science and Industry Museum; and James Bilefield, SMG trustee

'We are delighted to support the regeneration project of the Power Hall. As well as being steeped in history, science and industry in the Greater Manchester region is again of central importance both to further education and help drive economic growth'

Andrew Law, The Law Family Charitable Foundation

SOUL TRAIN

The legend of *Flying Scotsman* is woven into British culture. Its centenary was celebrated with poetry, dance, excursions, and a special exhibition and film at the National Railway Museum

'I feel privileged to be part of such a special celebration'

Michael Morpurgo, author

The opening lines of *The Making of Flying Scotsman*, by Simon Armitage, the British Poet Laureate, which was commissioned for the locomotive's centenary, paints a vivid picture of this legendary steam engine, forged from the past but surging towards the future:

The blueprint came from the future, plans/ for a spaceship powered by water and coal:/ they fired up the furnace with kindling and oily rags/ and strong-armed the bellows till the flames sang.

The poem was broadcast live from Edinburgh Waverley station at a special event held on 24 February 2023 – 100 years to the day since *Flying Scotsman* left Doncaster Works, and a highlight of the Science Museum Group's centenary calendar. The event was marked by performances from the Royal Scottish Country Dance Society and Celtic rock band the Red Hot Chilli Pipers, along with speeches by Dame Mary Archer, chair of the Group, Judith McNicol, director of the National Railway Museum, Ray MacFarlane, trustee of the National Heritage Memorial Fund, and Simon Kohler, marketing and development director of Hornby Hobbies, lead sponsor for the centenary.

After 100 years, 'class A3 locomotive no. 60103' still has an enduring appeal. It was designed by the Edinburgh-born engineer Nigel Gresley, built in Doncaster, and it hauled the first scheduled service to 'officially' reach 100 miles an hour. It was an LNER publicity machine and was saved for the nation (more than once) before joining our collection in 2004.

Although most people have heard of *Flying Scotsman*, they sometimes struggle to recall why exactly. After commissioning YouGov to track public awareness of the locomotive, we discovered this knowledge tails off in younger groups, which is a problem – and an opportunity – if we are to reach the next generation of engineers. The National Railway Museum and the Science Museum Group saw this a reason to make *Flying Scotsman* an ambassador for the collection and introduce it to a wider audience.

'The whistle as it comes through Doncaster station ... every time, it's moving'

Stuart Cutmore, railway enthusiast

Opposite *Flying Scotsman*'s nameplate
Above left *Flying Scotsman* at Waverley Station Edinburgh for the centenary celebrations
Above International Women's Day, East Lancashire Railway
Left The Red Hot Chilli Pipers with schoolchildren from Morningside Primary School and the Royal Scottish Country Dance Society
Far left Simon Armitage, Poet Laureate, reads his poem about the locomotive

To mark the centenary, we created a programme of events and activities designed to have as broad an appeal as possible, but with particular attention on families. *Flying Scotsman* would visit museums, heritage railways and haul main-line excursions as well as make some special appearances along the way.

We wanted to move beyond the traditional potted history of the engine and to reach people in new ways. An exhibition at the National Railway Museum in York called *Flying Scotsman: 100 Years, 100 Voices*, with a specially commissioned film, honours people with a connection to the locomotive from all walks of life and gives them a chance to tell their stories in their own words. People appearing in the film include engineers, drivers and even a couple who proposed on board. An exciting virtual-reality experience, which uses the latest technology to immerse people in the *Flying Scotsman* story, also opened over Easter with tickets in high demand and fully booked each day.

Colleagues and volunteers from across the Group have come together to bring the centenary programme to life in varied and creative ways. We have a treasure trove of official *Flying Scotsman* merchandise including gin, watches, flags, cuckoo clocks, teddies and the Michael Morpurgo book *Flying Scotsman and the Best Birthday Ever*. To reach an even wider audience, *Flying Scotsman* is featured on a collectable £2 coin and a set of Royal Mail stamps.

Flying Scotsman's legacy will continue long after the centenary celebration, but for now, a quote from Charley Perryn, who appears in the *Flying Scotsman* film, explains the engine's long-lasting appeal best: 'To me, it's like greeting an old friend when I see him.'

Lead sponsor Hornby
Made possible thanks to The National Heritage Memorial Fund, People's Postcode Lottery

‘Eye-opening, captivating and at times wildly uplifting, *Turn It Up: The Power of Music* is a hit for the whole family’

Manchester Wire

‘One of the best science festivals in the UK’

Manchester Evening News

‘An unmissable line-up of entertaining and playful experiences for everyone’

Visit Manchester

Clockwise, from top left: Panel discussion for the Future of Sex Lates; Andy Burnham, Mayor of Greater Manchester, speaks at the festival; Global Grooves perform; the ‘Hug Shirt’ at the Future of Sex Lates; trying out the ear gongs at the Family Fun Zones’ pop-up at Manchester Arndale Centre; a young girl enjoys a driving video game

Liquorice Black at the Future of Sex Lates

FUTURISTIC FUN

‘We are proud to be the principal sponsor for this year’s in-person return of the Manchester Science Festival, which will treat visitors to some truly entertaining, insightful and educational hands-on experiences’

John Boumphrey, UK country manager, Amazon

The Manchester Science Festival returned as a live event for the first time in four years to entertain and educate more than 100,000 people across the city in 10 days of discovery.

The biennial science extravaganza, produced by the Science and Industry Museum, explored one of life’s most crucial questions: What does the future hold for humanity?

After an opening action-packed schools’ day, world-first experiences at the museum included headline exhibition *Turn It Up: The Power of Music*, exploring the science of music’s mysterious hold over us. Acclaimed choreographer Corey Baker created the first ‘dance in space’ with Giant Leaps. Thousands of festival-goers saw their movements transported to outer space in this specially commissioned, immersive experience. It supported the Corey Baker Dance company’s ambition, in collaboration with the European Space Agency, to design a dance for astronauts.

The museum’s 1830 Warehouse became a hive of futuristic fun, where visitors could play with technologies and explore the ideas shaping the future of our world, thanks to the festival’s valued partnerships. The Young People’s Panel challenged families to create an everyday orchestra in an investigation into how we can make sounds more sustainably.

Sold-out after-hours events included *Turn It Up*: Live with headline artist Giant Swan, in partnership with From The Other, and the museum’s cheeky adults-only Late event, Future of Sex, featuring Anna Phylactic and The Family Gorgeous, and The Vagina Museum. The festival also offered an opportunity to explore Castlefield Viaduct in Sky Park After Dark: Nocturnal Nature Tour, in partnership with the National Trust.

Across the city thousands of people enjoyed sessions with museum Explainers, Noisy Toys’ sound workshops and Global Grooves’ squad of rhythmic robots at Manchester Arndale shopping centre, as well as hands-on activities with Manchester Urban Design LAB, the Environment Agency and the Central Library, which was part of the city’s Our Year celebrations.

Funders Manchester Science Festival is supported by Amazon (**Principal sponsor**) University of Salford (**Lead educational partner**) Waters Corporation (**Major sponsor**), PPG (**Major partner**) and AIG (**Associate sponsor**)

‘A toe-tapping, foot-stomping new exhibition’

Front Row, BBC Radio 4

MELODY MAKERS

The world’s first major exhibition to explore the science of music has been delighting audiences and received critical accolades in more than 200 pieces of media coverage.

Turn It Up: The Power of Music premiered at the Science and Industry Museum as the Manchester Science Festival’s headline exhibition. It joyfully explores how music makes us feel and how it inspires us to create, perform and share.

Through specially commissioned interactive installations, personal stories, musical tracks, dance and music-making opportunities, never-before-seen musical inventions, first-hand accounts from renowned musicians, artwork, cutting-edge research and unique instruments, visitors can discover the science behind music and what the future holds for melody-making.

From why certain music makes us feel certain emotions and how it might influence what we buy, to how it can be used to boost health and well-being and improve sleep, *Turn It Up* shows just how profoundly music can affect our lives. The exhibition examines scientists’ investigations into its effects on our minds and bodies and how innovators and musicians are expanding the possibilities of music-making, and creating new technologies to ensure experiencing music is more accessible.

The exhibition, which will travel next to the Science Museum in autumn 2023, immerses visitors in the musical world and includes a special commissioned Musical Playground from interactive design firm Amigo and Amigo. The show will move to the National Science and Media Museum in 2024.

Turn It Up has drawn on the expertise of an external advisory panel comprising professional musicians, sound and music scientists, a diverse representation and inclusion group, and more than 200 partners and participants worldwide.

The show uses sustainable materials, and accessible programming has included BSL interpreted tours, Relaxed Sessions and Early Years Experitots sessions. Volunteers also offer guidance to visitors through object-handling discussions. Hearing loops, closed captions and BSL mean d/Deaf visitors have full access to the exhibits.

Above A visitor listens to the aural accompaniment to Jack Coulter’s painting
Below Musical Playground, an interactive light and sound installation

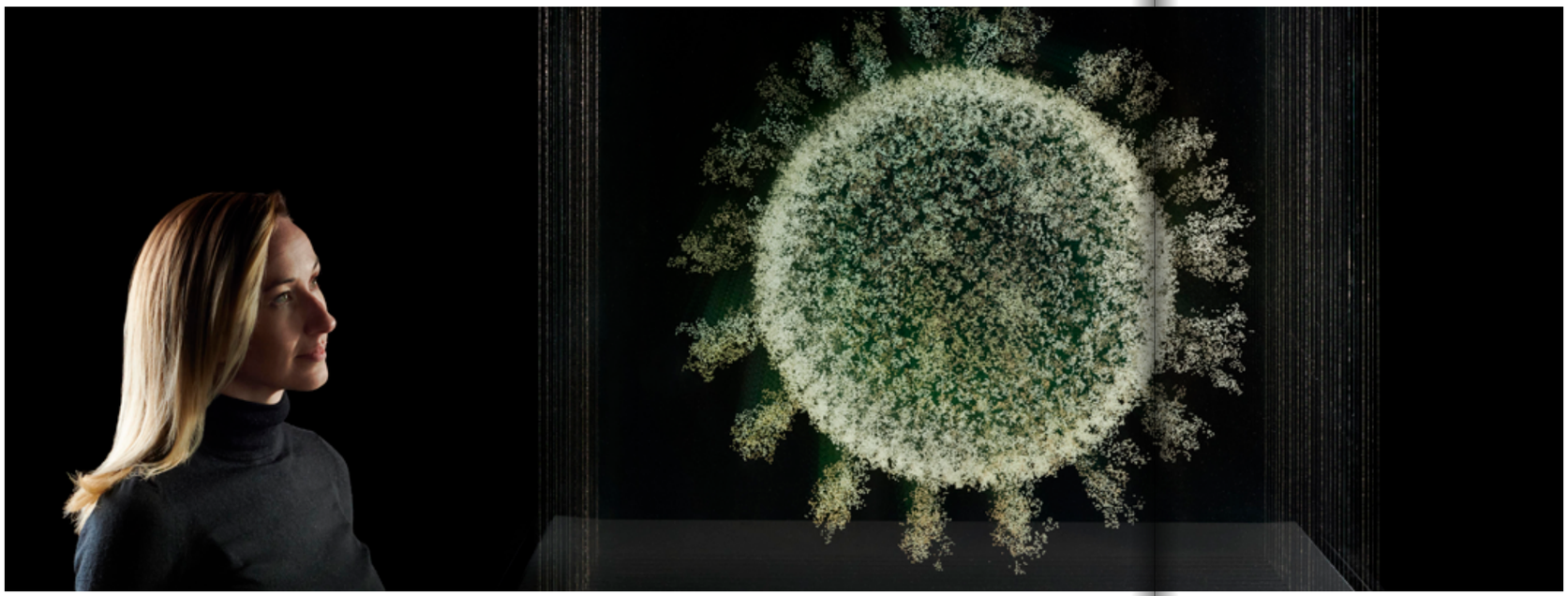
‘A fascinating new show’

The Guardian

Left Visitors enjoying the driving section
Below Guest curator Emily Scott-Dearing beside a display charting musical and listening equipment through the decades

THE RACE FOR THE JAB

A Science Museum exhibition detailing the global effort to develop a COVID-19 vaccine showcased the Group's important role in public understanding of the pandemic



Above A visitor with *2020: The Sphere that Changed the World*, by artist Angela Palmer. Palmer engraved cross-sections of the genomic model of the COVID-19 virus onto glass sheets to create the artwork

Opposite, left, from l-r: Julia Knights, Sir Ian Blatchford, Sarah Gilbert, Dame Mary Archer, Dame Kate Bingham and Philomena Gibbons at the opening of *Injecting Hope*

Left Film footage shows how vaccine production rates were ramped up to industrial scale

Lead funder Wellcome
Major funder The Huo Family Foundation

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'Wonderful to see the impact this exhibit had on attendees and to think about the number of people it will inspire and fill with hope during the run in Manchester and London'

Erling Donnelly, oncology lead, UK Pfizer Oncology

Exploring the worldwide effort to develop vaccines at pandemic speed, *Injecting Hope: The Race for a COVID-19 Vaccine*, opened at the Science Museum in November 2022.

The exhibition set out the scientific principles underlying the vaccines' creation, while sharing the behind-the-scenes work that accompanied their rapid development, production, transport and delivery. Highlights of more than 100 objects on display included stunning visual art and examples of ground-breaking vaccine technology from those at the forefront of the response to curb the virus's impact.

The exhibition endeavoured to make the invisible visible. Working with bioinformatics specialists, artist Angela Palmer engraved cross-sections of the genomic model of the COVID-19 virus by hand, layer by layer, onto glass sheets, to create a three-dimensional representation, *2020: The Sphere That Changed the World*.

From spending days plugging genetic code into laptops to create solutions, to taking their place on blue clinical chairs to test those answers, people are at the heart of the vaccine development story. These stories are picked out with highly personal items. On display are the notebooks of Dame Kate Bingham, chair of the UK Vaccine Taskforce from April to December 2020, which are filled with notes from meetings about the development and deployment of vaccines.

Moments of lightness were a crucial relief in the desperate urgency that haunted the creation of COVID-19 vaccines. *Injecting Hope* displays a pair of brightly coloured leggings with virus and bacteria motifs, part of the truly 'viral' outfit worn by Dr Elisa Granato as the first volunteer vaccinated in the Oxford COVID-19 vaccine's clinical trial.

The tea mug that belonged to Professor Dame Sarah Gilbert, one of the creators of the Oxford-AstraZeneca vaccine, stands as a reminder: 'Keep Calm and Develop Vaccines.'

The Pfizer/BioNTech vaccine vials are tiny and unassuming, but they made history when they were used for the first time worldwide as part of a mass COVID-19 vaccination programme. Margaret Keenan, the first person in the world to receive the vaccine outside trial conditions, was the start of the UK's COVID-19 vaccination rollout. Her charity T-shirt was displayed next to the syringe and vial which made history – all now in the Science Museum Group Collection.

In a first for the Science Museum Group, the exhibition was part of a major project with the National Council of Science Museums in India and the Guangdong Science Centre in China to highlight this global issue with a public programme in each country, opening in winter 2022.

In India the exhibition first opened at the National Science Center in October 2022, and was accompanied by a mobile exhibition bus visiting remote areas. In China, the Guangdong Science Center – the largest science museum in the world – was the first to host the exhibition in December 2022.

The overarching framework was developed collaboratively: as well as unpacking the background medical science and the adaptation of innovative research to face this new challenge, visitors could explore the logistical difficulties behind implementing a massive vaccination programme. In each country the exhibitions are supplemented with content focused on aspects relevant to local audiences.

This major international programme built on the important work the Science Museum Group undertook in response to the COVID-19 pandemic. From the COVID-19 collecting project, which acquired more than 1,000 objects to create a permanent record of the pandemic, to hosting an NHS vaccination centre in the Science Museum, publishing a popular blog series, and events such as a discussion about vaccine hesitancy, the Group has been at the forefront of the latest developments in the pandemic, and the worldwide response to it.

‘We not only want to inspire future generations, but to truly reflect our home city of Bradford, which is young and dynamic and one of the fastest-growing cities in the UK’

Jo Quinton-Tulloch. director, National Science and Media Museum

BRADFORD’S **NEW LOOK**

The *Sound and Vision* project is a once-in-a-generation reimagination of the National Science and Media Museum in Bradford. The £6 million capital investment will create two new galleries, a new passenger lift and improvements to the main entrance. We have also developed an extensive activity plan to make the museum more accessible and attractive to a broader range of audiences, and improve employment and volunteering opportunities.

This major project comes at a time when the city of Bradford is poised to take the spotlight as UK City of Culture 2025. The museum is a cultural cornerstone in Bradford and played an active role in the bid from the early stages. Bradford 2025 will mark the half-way point in the city’s 10-year cultural strategy. Since the designation was secured in May 2022, collaborative networks have strengthened across the district.

Sound and Vision will ensure the National Science and Media Museum is ready to welcome millions of visitors in 2025 and beyond. The two new permanent galleries will showcase key objects and stories from the museum’s world-class collections of photography, film, television, animation, video-gaming and sound technologies.

The project has been awarded £3.3 million from the National Lottery Heritage Fund to develop the transformational plans. The project also has support from the DCMS/Wolfson Museums and Galleries Improvement Fund 2022-24 and City of Bradford Metropolitan District Council.

The museum is already at the forefront of STEM education and communication thanks to *Wonderlab*, its passionate team of Explainers, collaborative work with schools, family engagement, plus festivals and events that bring the collections to life. The new galleries will transform the core of the museum, updating collection displays to increase their relevance to local communities and deliver fully on the Science Museum Group’s mission to inspire futures and be open for all.

The activity plan is integral to the project, with community consultation at its heart, focusing on those living in target areas of the city and communities who historically have had lower engagement with the museum. Throughout the past year, a range of consultative programmes have been developed to ensure the new galleries resonate with younger audiences and priority groups including D/deaf and visually impaired visitors.

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Below Local crowds cheer as Bradford is announced UK City of Culture 2025

Right A *Sound and Vision* community consultation

The Youth Forum and Access Panel are now well established and directly affecting the development of the new galleries. These connections will enable the masterplan, collections and interpretation teams to place audiences at the centre of the displays. Priority groups are being consulted about the design of the spaces and their accessibility, and have been given the chance to share their own stories. A monthly radio programme in partnership with BCB, Bradford’s community radio station, is giving local audiences insights into the development of the project as well as providing valuable skills development for community volunteers.

A successful pilot work experience programme will be further developed during the delivery phase of the project, alongside a Young Producers programme, fostering the development of digital skills for local people aged between 18 and 24.

The museum will close temporarily from June 2023 to summer 2024 to allow building work to take place, but the Pictureville Cinema and Bar will stay open throughout.

A range of outreach activities with community groups and schools – in person and online – will allow audiences to stay in touch and follow the project’s progress, and our Widescreen Weekend and Yorkshire Games Festival will also take place across the city. The activity plan will continue during this period, with the museum working with local communities in Bradford, embedding the project further into the city.

Funders The National Lottery Heritage Fund, DCMS/Wolfson Museums and Galleries Improvement Fund, City of Bradford Metropolitan District Council

‘The hugely impressive Science Museum Group Collection, in its new cutting-edge facility at the Park, enhances the importance of Swindon as a cultural centre for the UK’

David Renard, Swindon Council

Above The unpacking team celebrate the movement of the 100,000th object into Building ONE

PLANTING INNOVATION

Our enormous Science and Innovation Park in Wiltshire combines management of our world-class collection with innovative R&D projects

We have bold ambitions for our vast site in Wiltshire to become a shining example of collection care and low-carbon research and development. To support these aims, we have introduced a new identity for the site: the Science and Innovation Park.

The Park is home to our vital collection-focused work (under the name of the National Collections Centre), and we continue to develop how we facilitate film production, storage for the heritage sector and support for low-carbon engineering and technology research.

Recently, we celebrated unpacking the 150,000th object in our new collection management centre. They have all been photographed, and many of those images are now online. We also have a dedicated photography studio in the National Collections Centre, which colleagues from all our museums are using, and which is grounding the Centre as the hub for managing the Group’s collection.

Over the past year the Park hosted R&D projects from the University of Bath, Jaguar Williams Formula E team and Fusion Processing. Our runways were used to test-build Ed Sheeran’s stage, our hangars provided the backdrop for photoshoots, and we even helped a teenage Olympic hopeful practise their cross-country skiing.

With several innovative buildings (including the highly efficient collection management facility and novel Hemcrete store) and a solar farm, this biodiverse Park in an Area of Outstanding Natural Beauty has strong sustainability foundations.

Work is under way to build on these foundations as we establish the viability of producing enough renewable electricity at the Park to power the Group’s five museums, underpinning our ambitious net-zero decarbonisation plans.

Main image Staff plant trees during National Tree Week in partnership with the Woodland Trust. The Group has committed to planting 1,000 trees every year until 2030 to add to the 44,000 already established on our 545-acre site

Right A Nemesis Electric Supercar in the photography studio

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FAST TRACK TO SUCCESS

Work is well under way on Vision 2025, our bold reimagining of the National Railway Museum in York and Locomotion in Shildon, with the first projects set to complete in 2023

Vision 2025, the biggest programme of investment in the National Railway Museum and Locomotion since they opened, is fast becoming a reality. Progress has been swift over the past year, with construction and conservation work very much in evidence at both museums. Visitors are set to reap the first fruits of this ambitious series of projects in 2023.

At Locomotion, contractors Nationwide moved in at the start of the year to begin the construction of New Hall. The 2,000m² collections building will open at the end of the year, bringing around 50 extra rail vehicles under cover and establishing Shildon as home to the largest museum collection of such vehicles in Europe.

In 2025, New Hall will be a hub of activity for the bicentenary celebrations of the Stockton and Darlington Railway, the world's first public railway to make use of steam locomotives. Locomotion will spearhead those celebrations along with the building's lead funder, Durham County Council. Also helping to fund the building are the Foyle Foundation, Wolfson Foundation and local grant-

'The National Railway Museum plays a hugely important role in curating rail's history and heritage while articulating a vision and ambition for its future'

Mary Grant, CEO, Porterbrook

Opposite, left: The steel frame of Locomotion's New Hall **Opposite**, right: An artist's impression of *Wonderlab* in York

Above Moving rail vehicles on the turntable **Above**, right: An artist's impression of the Central Hall in York

makers, the Sir James Knott Trust, the Catherine Cookson Charitable Trust and the Platten Family Fund at the Community Foundation Tyne & Wear and Northumberland – all of whom are enhancing the heritage of the North East as the birthplace of the railways.

In July, the National Railway Museum's engineering-focused interactive gallery, *Wonderlab: The Bramall Gallery*, will open to the public. Title funders are the Yorkshire-based Liz and Terry Bramall Foundation, who have gifted £2.5 million – the largest single donation the museum has received, excluding lottery grants. The gallery has also attracted generous funding from the Garfield Weston Foundation, the Friends of the National Railway Museum, Eversholt Rail, Michael Wallace MBE, Holbeck Charitable Trust and the Royal Commission for the Exhibition of 1851.

They, along with the passionate team behind the design and build, will create a legacy of young minds inspired by engineering as a result of being able to engage with it, hands-on, in a bright, creative space. Judith McNicol, director of the National Railway Museum, describes it as: 'A ground-breaking interactive gallery for children that will celebrate the inventiveness and wonder of engineering, science and the railways. We know that children will have great fun while also developing a lifelong interest and appreciation of engineering that will enrich us all.'

The National Railway Museum is also on track to complete the other parts of the Vision 2025 jigsaw. The vast and historic Station Hall, once York's main goods station and now home to prized collection items such as the royal carriages, closed in January ahead of a £10.5 million refurbishment. It will reopen, complete with a new roof and a revitalised, reimagined space, in late 2024. The rest of the museum is staying open to visitors throughout – a logistical challenge that all who work and volunteer for the museum will play their part in meeting.

In March, the city entrance that has been in use at the National Railway Museum since the early 1990s closed its doors for the final time ahead of its eventual demolition. Visitors will use an alternate entrance until Central Hall, our beautiful new welcome building, gallery, café and shop, rises to unite the two halves of the museum with level access for the first time. Initial work has begun before the main construction commences later in the year.

In November 2022, we were delighted to announce significant support for the gallery with a £2.5 million sponsorship agreement by British rolling stock company Porterbrook. The organisation had recently demonstrated its world-leading hydrogen fuel cell technology at COP26 in Glasgow. *Railway Futures: The Porterbrook Gallery* is the current working title.

Wonderlab: The Bramall Gallery **Title funder** The Liz and Terry Bramall Foundation **Principal funder** Garfield Weston Foundation **Major funders** Michael Wallace MBE, Eversholt Rail Limited **Associate funders** Holbeck Charitable Trust , Royal Commission for the Exhibition of 1851 **Funders** Kirby Laing Foundation **Supported by** The Charles and Elsie Sykes Trust. New Hall **Lead funder** Durham County Council **Major funder** The Foyle Foundation, Wolfson Foundation **Associate funder** Sir James Knott Trust, The Catherine Cookson Charitable Trust **Funder** The Platten Family Fund at the Community Foundation Tyne & Wear and Northumberland, *Railway Futures* gallery **Title sponsor** Porterbrook

‘The work of the National Railway Museum is essential to public engagement and education about the rail industry. It provides a great platform to advancing knowledge and understanding of the railways’ positives on society and the economy’

Jo Lewington, chief environmental and sustainability officer, Network Rail

TOMORROW’S RAILWAYS

The National Railway Museum is preparing to open an innovative new gallery devoted to the future of rail travel

For nearly 50 years, the National Railway Museum in York has brought the history of our railways to life. Now, for the first time, it is looking ahead to the future and working with contemporary industry partners to inspire the next generation of engineers, innovators and thinkers.

At the centre of the plans will be a dedicated future-facing gallery, which will sit within Central Hall, a new building delivered as part of the museum’s Vision 2025 programme. The title sponsor of the gallery, Porterbrook, recently demonstrated its world-leading hydrogen fuel cell technology at COP26 in Glasgow.

As part of its content development for the gallery, in June last year the National Railway Museum launched *Innovation Platform*. This flexible, fast-changing exhibition highlights emerging technologies and ground-breaking research from the rail sector. The display has proven extremely popular, receiving 38,867 visitors in its first six months, and it is enabling the museum team to test different ways of engaging new audiences with contemporary content. Project partners have so far included: Network Rail and HS2, small and medium-sized enterprises such as Headlight AI and Furrer+Frey, and academic departments such as the Assuring Autonomy International Programme (AAIP) at the University of York.

By 2025, the National Railway Museum will show the cutting-edge innovations shaping our world alongside the story of the birth and growth of the railways. We are now seeking additional funding to complete the Vision 2025 project.

Artist’s impression of the National Railway Museum after work is completed

Title sponsor
Porterbrook

DAILY HERALD ARCHIVE

DIGITAL TREASURES

The *Daily Herald* was once the world’s top-selling newspaper, and today the Science Museum Group is fortunate to have its vast photographic archive as part of its collection. Comprising more than three million items, it provides a rich visual history of Britain and world events.

Launched in October 2022, the National Science and Media Museum collaborated with Google Arts & Culture to digitise and publish online nearly 100,000 new images from the *Daily Herald* Archive. These were published along with stories that bring the photographs to life and range from women in agriculture to the Ideal Home Exhibition.

Using the newly digitised material, the Google Arts & Culture Lab created an experimental web-based interface that enables users to explore the archive and find hidden gems of the collection. The interface is powered by artificial intelligence and optical character recognition technologies. Users can even create their own edition of the *Daily Herald* based on their interests.

In other digital developments for the Group, *Wonderlab+* is a new website for families, enabling us to reach a global audience online. It also helps build ‘science capital’ and inspire children aged 7 to 11 to engage with science, technology, engineering and maths at home. Users can watch videos, try hands-on activities, play games and do quizzes.

In its first six months after launching in September 2022, the site had more than 56,000 visits. *Wonderlab+* was recognised with a prestigious Lovie Award and a Webby award.

Launched alongside *Wonderlab+* was the *Wonderlab AR* app, which recently won a Webby award. The mobile app uses map data, locations and augmented reality to encourage users to explore the world around them and discover amazing science wherever they are.

Wonderlab+
Major funder Kindly made possible thanks to James and Anna McRoberts
Daily Herald Archive
In collaboration with Google Arts & Culture

‘Our collaboration with the National Science and Media Museum is a fantastic opportunity to explore one of its core collections in new, creative ways’

Amit Sood, Google Arts & Culture

Above A Daily Herald Archive photograph: Prince Charles and Princess Anne meet David Attenborough’s pet cockatoo in the BBC studios in 1958

Below The *Wonderlab AR* augmented reality app allows people to discover the science that lies in the everyday world around them

A CENTURY ON AIR

The Group celebrated a century of British broadcasting with a year of events and exhibitions

BBC Marconi ABTX ribbon microphone

Last year marked 100 years of the BBC and 40 years of Channel 4. To celebrate these anniversaries, the Science Museum Group looked back at the past 100 years of broadcast media and took a glimpse into what the future may hold.

At the National Science and Media Museum, a new exhibition explored the fascinating timeline from the first radio broadcast to online streaming.

Switched On, the focal point of our Broadcast 100 calendar, opened in July 2022. The exhibition's three strands explored how pioneers changed the broadcasting industry and how broadcasting has ushered in societal change.

Highlights included John Logie Baird's original television apparatus, a *Strictly Come Dancing* Glitterball Trophy, a Marconi ribbon microphone, and a PC Philips colour camera, which was used for the first colour television broadcast on BBC Two.

In the exhibition's Cultural Awakening strand, which focused on the media's ability to change attitudes, visitors could see the famous red coat, loaned by the People's History Museum, that was worn by the first transgender character in a soap opera, Hayley Cropper in *Coronation Street*.

Switched On told the stories of the pioneers behind big broadcasting moments including Ahmad Kamal Sourour Effendi, the voice of the BBC's first broadcast in Arabic; Grace Wyndham Goldie, head of BBC News and Current Affairs, who revolutionised political broadcasting in the 1950s, and Sir David Attenborough, who, as well as being a renowned nature documentary presenter, worked as the controller for BBC Two and was responsible for the first colour television broadcasts.

Broadcast 100 saw two high-profile BBC events at the National Science and Media Museum. In September, a live recording of *Start the Week* was held in Pictureville Cinema with guests Matthew Cobb, Alison Bashford and Deborah Lawlor and host Adam Rutherford. To celebrate the BBC's centenary on 18 October, Pictureville Cinema hosted a live recording of *Inside Science*. Tim Davie CBE, director-general of the BBC, was in attendance, and Lewis Pollard, curator of television and broadcast, joined host Victoria Gill on the panel.

Throughout the year, the National Science and Media Museum also hosted a series of events as part of its The Future is Northern strand. This focused on careers in the screen industries in the north of England.

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Centre Young people try out real broadcasting equipment as part of TV Takeover
Left *Switched On* exhibition activities day, featuring Henry, the *Blue Peter* dog
Below, left to right: Jack Sykes, Roger Highfield, Lopa Patel, Robert Seatter, Helen Langwick, Charlotte Howard, Heather Jakubiak and Rebecca Land
Below Full-size replica of a Dalek from the BBC's *Doctor Who*

The *Switched On* Family Day in July featured a day of activities for young people, with special guests including *Newsround* presenter Shanequa Paris and Henry the *Blue Peter* dog.

TV Takeover in November allowed young people to try using real broadcasting equipment, including the University of Bradford's Outside Broadcast Van. The Future is Northern's main event was Screen Futures, a networking event for anyone interested in a career in the screen industries. Guests from Channel 4's 4Skills, ScreenSkills, the BBC, Screen Yorkshire and Bradford College hosted conversations, panel discussions and one-to-one sessions about career opportunities in the North.

Lates returned to the National Science and Media Museum for the first time since 2020. The adults-only after-hours event took place as part of the BBC centenary celebrations on 18 October and saw the museum come to life with DJs, discussions, gallery tours and interactive activities.

A season of films to accompany the Broadcast 100 programme ran in Pictureville Cinema. The highlight was a 30th anniversary screening of *Ghostwatch*, with an introduction from director Lesley Manning and post-show discussion with horror experts Adam Z Robinson, Mike Muncer, Brontë Schiltz and Becky Darke.

'The BBC's centenary is everyone's centenary'

Robert Seatter, head of BBC History

Below 3D-printed anatomical model of tumour of Leah Bennet, made for surgeons at Alder Hey Hospital
Bottom Perspex model depicting characteristic evolutionary 'trees' of cancer cell clones

'I gained a better understanding of what I have been going through. Hope featured strongly and hope is what I need at present'

'Thank you to the Science Museum for producing this fascinating, moving exhibition'

Visitors to *Cancer Revolution*

A MESSAGE **OF HOPE**

Our free exhibition exploring our understanding of cancer and how this is transforming treatment of the disease opened in London after its success in Manchester

After a highly successful run at the Science and Industry Museum in Manchester, *Cancer Revolution: Science, Innovation and Hope* opened at the Science Museum in London in May.

Developed with more than 500 partners, including the Cancer Research UK Patient Insight panel, the exhibition examines the past, present and future of how cancer is prevented, detected and treated. It looks at what life is like during treatment and remission, giving hope that we can live longer and better with the disease.

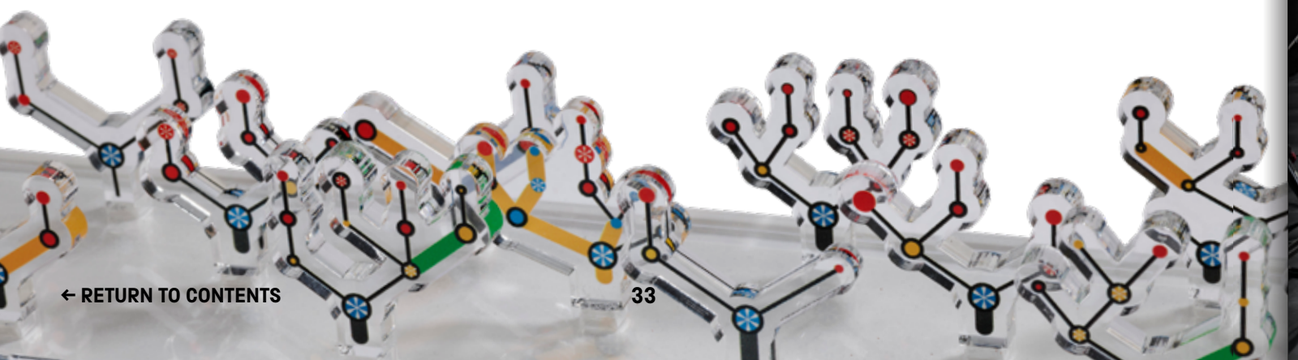
A collaborative community project collected people's stories in their own words, which were displayed alongside personal objects. 'Hearing the other people's stories was amazing, even if it did make me a bit emotional,' commented one visitor.

The exhibition explored how cancer has been treated over the centuries, from high-risk surgeries to the discovery of the first chemotherapy drugs, and the important challenges that remain to be solved.

In June 2022, we paid tribute to journalist and campaigner Dame Deborah James who had just died aged 40. James, who raised millions for cancer research, played a key role in supporting the *Cancer Revolution* exhibition. She was a member of the exhibition's advisory board and was awarded a fellowship in recognition of her tireless work.

Dame Mary Archer, chair of the Science Museum Group, said: 'We're all deeply saddened by the death of Dame Deborah James. Deborah's energy, her bravery and the frank way she discussed cancer has saved many lives.'

Science and Industry Museum
Expert partner Cancer Research UK **Principal sponsor** Pfizer **Major sponsor** QIAGEN
Supporter Redx Pharma Plc
Science Museum
Expert partner Cancer Research UK **Principal sponsor** Pfizer **Supporters** The John S Cohen Foundation, Julian Howard



INSIGHTS INTO A GENIUS

The remarkable life of the world's best-known theoretical physicist of recent years was celebrated in February with the opening of *Stephen Hawking at Work* in the National Science and Media Museum, Bradford, following its successful run at the Science Museum in London.

For the first time, audiences from outside London were able to inspect objects from his office, from his medals and awards to a party invitation for time-travellers. They were acquired for the nation by the Science Museum Group two years ago and provide insights into Hawking's remarkable life as a scientist, communicator, and as a person who lived with motor neurone disease.

The display, curated by Juan-Andres Leon, includes a copy of Hawking's PhD thesis, which worked through the implications of Albert Einstein's general theory of relativity to demonstrate that the universe must have originated in a single point of infinite density that we know as the Big Bang. The thesis also provides an early example of Hawking's clear writing style, which led to one of the bestselling science books of all time, *A Brief History of Time*.

Also on display is a photograph from the set of Hawking's guest appearance on *Star Trek: The Next Generation*, a facsimile of his most treasured office possession – a blackboard filled with academic doodles and jokes – along with his last wheelchair, and a video to explain his greatest scientific insight: that black holes were not so black.

Global audiences can also explore remarkable items from Hawking's working life as more than 700 items have now been catalogued, photographed and published on the Group's online collection. And a book about the contents, written by Roger Highfield, Group science director, will be published by Dorling Kindersley in November 2023.

The display will tour the Science and Industry Museum in Manchester in May 2023, and then moves to the National Railway Museum in York and Locomotion in Shildon, Co Durham.

With support from Acceptance in Lieu (AIL) Panel, Arts Council England

One of Stephen Hawking's wheelchairs being photographed in the National Collections Centre

SATELLITE LINK

Thousands of people came to see an extraordinary exhibit outside the Science Museum: a life-size replica of Virgin Orbit's LauncherOne

As part of a countdown to a launch from British soil, the UK Space Agency displayed a 72ft (22m) replica of Virgin Orbit's LauncherOne on Exhibition Road, in London, just outside the Science Museum, last October. The launch of the genuine rocket was attempted on 9 January 2023 from Spaceport Cornwall.

Visitors to the museum took part in a range of free space-themed activities and hands-on exhibitions, including a virtual-reality experience, which allowed them a glimpse into Mission Control, and a chance to try on an astronaut suit and handle a real meteorite.

There was also a visit by Flight Lieutenant Matthew 'Stanny' Stannard, the RAF pilot seconded to Virgin Orbit who piloted the historic launch.

Nusrat Ghani, former science minister, who officially opened the event, said: 'We are proud to be playing an important part in the first ever satellite launch from UK soil, and we want to harness this incredible opportunity to inspire more young people to consider careers in science, engineering and space.

Above A life-size 72ft replica rocket of LauncherOne on Exhibition Road, London, to mark the first satellite launch from UK soil
Left Making Mission Patches with young visitors

'By establishing the UK as the leading European base to launch small satellites, we can build on our existing strengths in space manufacturing to create new jobs, grow the economy and attract significant investment into our growing space sector.'

The activities were supported by Virgin Orbit, Spaceport Cornwall, the Royal Borough of Kensington and Chelsea, Discover South Kensington, the Science Museum, Imperial College London and the Natural History Museum.

Representatives present for the event included Ms Ghani; Julia Knights, deputy director of the Science Museum; Ian Annett, deputy CEO of the UK Space Agency; Dan Hart, CEO of Virgin Orbit; Melissa Thorpe, head of Spaceport Cornwall; Matt Archer, director of Commercial Spaceflight at UK Space Agency; Felicity Buchan, MP for Kensington; and Emma Will, councillor at the Royal Borough of Kensington and Chelsea.

BEYOND THE SCREEN

Our Bradford museum hosted a fascinating series of big-screen events as part of a festival programme, alongside talks and workshops for gaming fans

Cinephiles and gamers flocked to a dynamic festival programme over the past year at the National Science and Media Museum. Our Bradford museum was the ideal venue for such an event, as it is home to Pictureville, Yorkshire's biggest independent cinema, the most immersive IMAX in the region and the only public Cinerama screen in the world.

Bradford became UNESCO's first City of Film in 2009 and the cinema programme celebrates the city's rich film heritage as well as its contemporary output. In January Pictureville hosted a preview screening of the Bradford-made independent feature film, *Tell Me About It*, which was part of The Future is Northern, a series of special events exploring Northern film and programme-making. In November, a special homecoming premiere of the acclaimed feature documentary *A Bunch of Amateurs* celebrated Britain's oldest amateur filmmaking club, the Bradford Movie Makers, all of whom attended the screening, cheered on by an admiring local audience.

Widescreen Weekend, the annual festival of big, bold cinema experiences, took place in October and saw the return of international audiences (9.1% of attendees). In 2022 we also marked 70 years of Cinerama at the museum, which has the world's only operational screen. Off-site screenings at community venues were programmed in collaboration with audiences and a Film Heritage Walking Tour was delivered in partnership with Bradford UNESCO City of Film.

In February, the Yorkshire Games Festival had its most diverse programme yet, welcoming local and national partner organisations and including content for neurodiverse audiences. The Let's Play family weekend included the opportunity to try out unreleased games thanks to our strong links with the gaming industry. Meanwhile, the Young Developers conference, aimed at Key Stage 3 students, included autism-friendly workshops, and seven out of ten Game Talks speakers were female – challenging perceptions that it is a male-dominated business.

Above A family enjoys the Yorkshire Games Festival at the Science and Media Museum
Right Trying out the gadgets at Widescreen Weekend

Yorkshire Games Festival
Supported by City of Bradford Metropolitan District Council **With thanks to** Midland Hotel Bradford

Widescreen Weekend
With thanks to City of Bradford Metropolitan District Council, Cinerama, Midland Hotel Bradford

AMAZÔNIA IN MANCHESTER

Right A visitor admires Sebastião Salgado's extraordinary photographs at *Amazônia* in the Science and Industry Museum

Opposite Sebastião Salgado and his wife Lélia Wanick Salgado

'As a Brazilian, the Amazon with its incredible colours, rich textures and awe-inspiring vistas has always held a special place in my heart. I hope visitors to *Amazônia* will feel inspired by its beauty but also understand the urgent need for action to prevent this unique biodiversity being lost'

Sebastião Salgado

SALGADO'S AMAZON

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'An awe-inspiring celebration of life on Earth'

The Daily Telegraph

Following its successful run in London, *Amazônia*, an exhibition by the acclaimed Brazilian photographer Sebastião Salgado, drew in a remarkable 40,000 visitors in just 12 weeks when it transferred to the Science and Industry Museum in summer 2022.

The Group was proud to bring *Amazônia* to Manchester following its acclaimed showing at the Science Museum. It marked Salgado's first exhibition of this scale in the UK outside of London for more than 20 years, his first ever show in Manchester, and the finale of the UK leg of the exhibition's international tour, which included Paris, Rome and Rio de Janeiro.

With more than 200 images, captured over seven years Salgado spent travelling in the region, visitors were able to explore one of the most unusual and precious environments on the planet. *Amazônia* provided a first-hand look at some of the places and peoples most at risk from climate change and included video interviews with indigenous leaders fighting to protect their homes.

Designed and created by Lélia Wanick Salgado, the exhibition created an environment in which the visitors were transported to the forest and became immersed in the vegetation and the daily lives of its indigenous people. Surrounded by a soundtrack by Jean-Michel Jarre, visitors could hear the sounds of the forest around them, including the rustling of trees, the cries of animals, bird song and the roar of water tumbling from mountain peaks.

Amazônia was the first photography exhibition to be hosted in the Science and Industry Museum's new Special Exhibitions Gallery.

Universally positive feedback reflected the power of the experience for visitors.

Additional events included *Amazônia*: Late, an evening of music, film and talks from world-leading scientists where the audience could learn more about the world's largest rainforest and how our behaviour affects it. The museum also welcomed Brazilian indigenous leader Mauricio Ye'kuana as a speaker during the exhibition's run.

DAME DEBORAH JAMES

The Science Museum Group was immensely sad to hear of the passing of Dame Deborah James in June last year. The columnist, blogger and podcaster died aged 40, six years after being diagnosed with stage 4 bowel cancer. During her treatment she became known as 'Bowelbabe' as, with her characteristic honesty and humour, she tirelessly campaigned about the importance of early diagnosis and open, honest conversations, describing death as 'life's last taboo'. Her work helped raise millions of pounds for research into cancer.

Dame Deborah played a key advisory role in the development of *Cancer Revolution: Science, Innovation and Hope* – a major free exhibition on the treatment and understanding of cancer at the Science and Industry Museum from October 2021 to March 2022, and at the Science Museum from May 2022 to January 2023 (*see page 33*).

Her engaging spirit and dedication contributed to this frank but optimistic exhibition, which was developed with Cancer Research UK as its expert partner. It sought to challenge our assumptions about what it is like to live with cancer and included many different personal stories of patients.

In February 2022 we awarded Dame Deborah a Science Museum Group Fellowship in recognition of her work to spread awareness and positivity about cancer research, treatments and the experience of patients.

She managed to bridge the gap between cancer research, the clinic and the public, and in doing so changed the way we talk about cancer, encouraging us to have the difficult conversations that could save lives.

The Group is extremely fortunate to have collaborated with Dame Deborah and is proud to have played a part in her enduring legacy. Her rebellious hope and uplifting energy lives on.

'Prevention is key, science is wonderful, and always … have hope'

Dame Deborah James, speaking about the *Cancer Revolution* exhibition, May 2022

Above Deborah James was elected as a Fellow of the Science Museum Group

JAMES LOVELOCK

James Lovelock, the scientist and inventor, who died in July 2022, aged 103, was one of the most influential thinkers of the 20th century. The Science Museum Group will continue to celebrate and honour his legacy.

Lovelock, who remembered a childhood visit to the Science Museum in 1925, claimed his passion for science came from his boyhood love of steam engines, notably *Flying Scotsman*.

His career started at the National Institute for Medical Research in Mill Hill, where he developed treatments for burns during the Second World War. He went on to work in Houston for NASA and tested his inventive skills by creating 'exceedingly small, simple' instruments for NASA's missions. After three years, he set up his own laboratory back in the UK, working as an independent scientist.

Describing himself as 'half a scientist, half an inventor', Lovelock was suspicious of committees and consensus-led science, adding that 'the main advances in the world have not been driven by science but by invention'.

Lovelock made a vast range of contributions to science, from developing instruments to search for life on Mars and creating the electron capture detector – an extraordinarily sensitive way to detect pollutants – to his hugely influential Gaia hypothesis, which argued that the Earth acts like a living organism.

Lovelock was elected a Fellow of the Science Museum Group in 2010. In 2012, the Group acquired his archive – 84 boxes of notebooks, manuscripts, photographs and correspondence – and later celebrated his life with an exhibition, *Unlocking Lovelock*, at the Science Museum. His final collaboration with the Group was to join our Climate Talks programme in 2021 to discuss his Gaia hypothesis.

His originality of thought, scepticism of the status quo and, above all, focus on invention lie at the heart of his remarkable legacy.

'Arguably the most important independent scientist of the last century, Jim Lovelock was decades ahead of his time. His unique approach was an inspiration'

Dame Mary Archer, chair of the Group's Board of Trustees

Above James Lovelock visiting the exhibition *Unlocking Lovelock: Scientist, Inventor, Maverick*

QUEEN OF SCIENCE

Clockwise, from left: Queen Elizabeth II at the Science Museum in 2019; the Queen opens the *Information Age* gallery with her first tweet in 2014; Queen Mary and the Princesses Elizabeth and Margaret arriving at the Science Museum in 1938; the Queen and the Duke of Edinburgh visit the Science Museum with the President of Pakistan in 1966

It was with profound sadness that the Science Museum Group joined with people around the world to mourn the passing of Queen Elizabeth II in September 2022. The Group is proud to have enjoyed a special relationship with Her Majesty throughout her life and long reign.

That relationship began with the young Princess Elizabeth's visit to the Science Museum on 21 March 1938, when, aged 11, she toured the museum with her sister Princess Margaret and grandmother Queen Mary. They visited our *Children's Gallery*, which was the first of its kind in the world to explain scientific principles to children with what we now call interactive exhibits.

IN MEMORIAM: QUEEN ELIZABETH II

Over eight decades, Queen Elizabeth made at least 10 official visits to the Science Museum, and also toured the Science and Industry Museum in Manchester in 1982. She often opened new galleries and exhibitions that celebrated scientific and technological achievements. The Queen lived through many such advancements and always showed a great appreciation of the transformative power of science and technology during those visits to our museums.

One such change she lived through was the arrival of television. Sales of TV sets in the UK soared in anticipation of the live broadcast of her coronation on 2 June 1953. Around 20 million people crowded round small screens in homes, cinemas and church halls to watch the royal event, creating the first global television spectacle. This pivotal moment for Queen Elizabeth and our nation is featured in the Science Museum's *Information Age* gallery, where visitors can see the TV cameras that filmed her coronation.

In November 1966, the Queen and Prince Philip, Duke of Edinburgh, in the presence of the President of Pakistan, opened the Engineers' Day exhibition at the museum. Organised by the Ministry of Technology, the exhibition aimed to encourage more young people to become engineers. The royal couple visited again in 1969 to open the Science Museum Library (the precursor to the Dana Research Centre and Library), and in June 1988 to open the *East Hall* gallery, now known as the *Energy Hall*.

In 1977, the railway carriage the Queen officially used between 1953 and 1976 joined the National Railway Museum's collection, and is currently on display in York.

Queen Elizabeth returned to the Science Museum in 2000 to open the Wellcome Wing, now the West Hall. It focuses on contemporary science through temporary displays and exhibitions, such as *Who Am I?*, our upcoming *Energy Revolution: The Adani Green Energy Gallery*, and the IMAX cinema.

Her visit to the Science Museum in 2014 created headlines around the world when she sent her first tweet at the opening of the *Information Age* gallery.

Her Majesty's final visit to the Science Museum took place in March 2019, where she made her first Instagram post, announced a major exhibition, *Top Secret: From Ciphers to Cyber Security*, and formally opened the museum's Smith Centre, a home for debate, lectures and philanthropy.

In the Instagram post, Queen Elizabeth noted that 'it seems fitting to me that I publish this Instagram post at the Science Museum which has long championed technology, innovation and inspired the next generation of inventors'.

The post featured correspondence from the Royal Archives between Charles Babbage and Prince Albert, Elizabeth's great-great-grandfather, about the Difference Engine, now part of the Science Museum Group Collection and on display in our *Making the Modern World* gallery.

After the Queen's death on 8 September 2022, the public were able to sign books of condolence at all the Group's sites. These later joined the Science Museum Group Collection. Visitors to the Science Museum could also follow a trail to discover some of the most significant scientific, technological, engineering and medical achievements which took place during her reign.

← RETURN TO CONTENTS

LEARNING **FOR LIFE**

The Group remains committed to inspiring people of all ages and backgrounds to engage with science, technology, engineering and maths

It's been another strong year of programming for the Science Museum Group that reached schools, families and adults through events in all our museums and via our digital outlets. Alongside this, we delivered careers workshops, more relaxed learning sessions and interpreted tours for a new exhibition devoted to music. A particular focus has been on collaboration with organisations and individuals who have supported us to deliver a successful series of activities and events, including an excellent partnership with BBC Education to inspire their audiences.

Below Railway Futures event at the National Railway Museum

RAILWAY FUTURES
The National Railway Museum hosted Railway Futures, a two-day careers event, in partnership with the Trans-Pennine STEM Ambassador Hub and industry partners. The event showcased the exciting combination of innovation, engineering and technology in the railways and featured professionals from across the industry running interactive sessions, answering questions, and sharing their expertise. The first day was aimed at primary and secondary school audiences, while the second day was aimed at sixth formers and higher education groups. The events received over 2,000 young people across schools, colleges and universities.

'My daughter has Down's syndrome and sensory processing disorder. The exhibition had quieter, restful places for her. Along with the sound, it was really visually stimulating'

Visitor to *Turn It Up*

700,000
The Summer Reading Challenge reached more than 700,000 children and families, and over 300,000 completed the challenge

Left Postcards to Space launch event with Gwen Griffin from Blue Origin's non-profit Club for the Future, presenter Fran Scott, and runner-up Noor, from Ashburnham Community School

NATIONAL APPRENTICESHIP WEEK
To mark National Apprenticeship Week, the Science Museum worked with BBC Bitesize to create a live careers show aimed at 11 to 16-year-olds, filmed in *Technicians: The David Sainsbury Gallery*. The show featured apprentice technicians who shared their experiences, including an apprentice substation engineer and a technical theatre apprentice, and a careers expert who gave advice on doing an apprenticeship. The live show was hosted by Rhys Stephenson of *Strictly Come Dancing* and comedian Fatiha El-Ghorri.

ACCESSIBLE PROGRAMMING
The Science and Industry Museum developed an accessible programme for its *Turn It Up: The Power of Music* exhibition, running informative sessions and British Sign Language interpreted tours for adults and children. Working in collaboration with the Macclesfield and Manchester Deaf Centre's Wellbeing Group, experiences were created to bring sound to life through hands-on demonstrations. Audiences used vibration packs (a wearable vest that amplifies bass and beat so it can be felt through the body) at key moments throughout the exhibition.

Above Rhys Stephenson and Maddie Moate during the recording of a BBC Teach Live Lesson for British Science Week

More low-key experiences were developed for visitors who required a quieter environment to enjoy this exhibition. Visitor numbers were reduced for these and additional sensory resources and activities were available, including a Sensory Map – which highlighted noisier, brighter areas of the exhibition.

SUMMER READING CHALLENGE
The Science Museum Group partnered with The Reading Agency to launch a science and innovation-inspired challenge to encourage reading and science exploration during the holidays. The theme was Gadgeteers, celebrating the key role of imagination in both reading and science. A programme of experiments, activities and workshops were held across all five museums, in conjunction with The Reading Agency's work with libraries across the UK. The National Science and Media Museum delivered workshops for almost 400 children in local libraries, including Incredible Inventors, a tinkering-based activity inspired by local scientists, and Comic Book Creators – a drawing/creative writing workshop based on famous scientists' innovations.

BRITISH SCIENCE WEEK
British Science Week is a 10-day celebration of science, engineering, technology and mathematics (STEM), and the Science Museum Group hosted plenty of events to mark the occasion.

The National Science and Media Museum held a Family Fun Day which featured a new interactive installation, *Giant Leaps*, where visitors were transported through the galaxy and saw the influence of their movements on the journeys of stars and space dust. Locomotion organised a jam-packed week of free workshops and activities, all exploring the theme of connections. The Science and Industry Museum hosted a STEM Careers Q&A series, where KS2 to KS4 students could book a session with a STEM professional at the museum to ask questions about their career journey and experiences.

Another highlight was the announcement of the Postcards to Space project, a partnership between the Science Museum Group and Blue Origin's Club for the Future. To mark the launch in the UK, we invited local schools to enter a competition to design the perfect interplanetary postbox. The winning entry was designed by 'Team Rocket Science' from St Mary's Primary School and is on display at the Science Museum.

WE ARE THE PLACE TO BE

1 Alex Brooker, Francis Bourgeois, and Andi Oliver filming Channel 4's *Hobby Man* at the National Railway Museum

2 BBC Director General Tim Davie (centre) visiting *Switched On* at the National Science and Media Museum

3 Actor Nina Wadia at the opening of *Science Fiction*

4 Actors Lorraine Ashbourne and Andy Serkis at the opening of *Science Fiction*

5 Sally MacDonald with key funders and stakeholders at the launch of the Manchester Science Festival at the Science and Industry Museum

6 Black Women in STEM event with the BBC's Maggie Aderin-Pocock

7 BBC *Newsround* presenter Shanequa Paris with her image that features in the *Switched On* exhibition at the National Science and Media Museum

8 Children's author Michael Morpurgo at the *Flying Scotsman* centenary

9 Osaka delegation at the Science and Industry Museum

10 Actors Brian Cox and Maureen Lipman at the Arts and Media Lunch in the Science Museum

10 Physicist Brian Cox, film director Danny Boyle and space scientist Maggie Aderin-Pocock at the Science Fiction Film Festival

11 Broadcaster Natasha Kaplinksy with cosplayers at the launch of *Science Fiction* at the Science Museum

12 Group trustee Ajit Lalvani with his wife and Julia Knights, Science Museum deputy director, at the launch of *Science Fiction*

13 Helen Arney speaks with Alex Winter and Ed Solomon at a post-show talk for *Bill & Ted's Excellent Adventure* at the Science Fiction Film Festival

14 Sir Ian Blatchford, with exhibition contributors Larry Achiampong and Tilly Lockey, at the launch of *Science Fiction*

15 Saul Nassé, ex-controller of BBC Learning and editor of *Tomorrow's World* with Carmen Pryce, ex BBC presenter

16 Guests attending the Arts and Media Lunch in the Science Museum, hosted by Chris Hastings, arts correspondent for the *Mail on Sunday*

GLOBAL CONNECTIONS

Emerging from the pandemic lockdown enabled the Group to build on its network of contacts and partnerships across the world

Throughout the COVID-19 pandemic, when travel was next-to impossible, we managed to sustain and grow our international collaborations. While Teams and Zoom are far from perfect, we have all got used to them and their undoubted benefits, and online co-operation is here to stay.

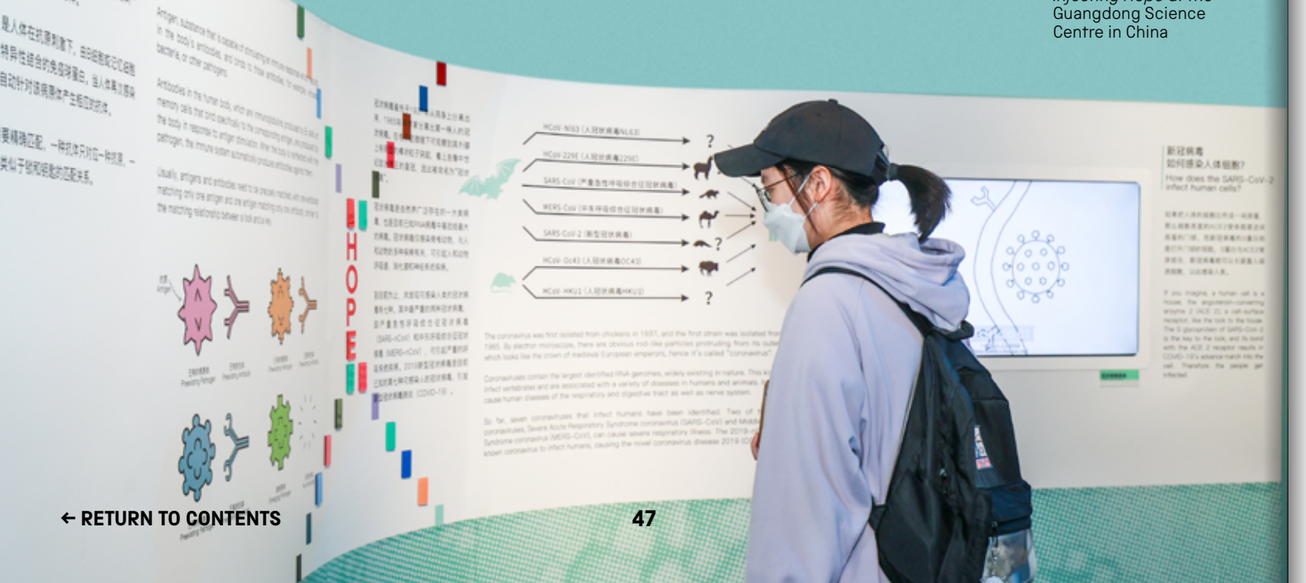
For example, the *Injecting Hope* project (*see page 21*) was delivered through digital communications with our Indian and Chinese partners, and a great deal of our professional development training went online, as did participation in festivals and events.

However, as the world reopened, we observed a huge appetite for real-life contacts and a resurgence of visits by overseas delegations and individuals from governments, peer organisations, study groups and more. We aim to say yes to as many as we can because every visitor is a potential advocate for the Group. This year, the Global Engagement team alone organised professional visits from at least 16 countries in Africa, Asia, Australia, Europe, the Gulf and South America.

We got back on the road ourselves, too, and the warm welcomes we received reinforced the value of personal contacts in building fruitful relationships. We aim for maximum value from international travel, so while trips to India led by our director, Sir Ian Blatchford, in April and November were prompted by an invitation to speak at the prestigious Raisina Dialogue and the launch of *Injecting Hope*, we also packed in many meetings with government departments, research organisations, cultural venues, business people, partners and supporters.

When we went to the Gulf for Abu Dhabi Sustainability Week in January, we managed to visit three Emirates and three Saudi Arabian cities in nine days.

Back in the UK, two international-themed Science Museum Lates showcased the rich cultures of India (August 2022) and China (January 2023) to our audiences and demonstrated respect and reciprocity to stakeholders from those countries – values that underpin all our partnerships.



Injecting Hope at the Guangdong Science Centre in China

‘Every minute of my 25-plus years of volunteering at the NRM has been a great pleasure. I look forward with enthusiasm to the next 25 years’

Volunteer, National Railway Museum

Above left Bradford Community Broadcasting meet with the *Sound and Vision* project team to discuss gallery designs

Above Science and Industry Museum volunteer Brenda delivers a regular Spotlight Talk

PARTNERSHIPS FOR CHANGE

Our dynamic volunteering programmes build the skills and confidence that enable young people to find permanent work in the future

Our volunteering strategy aims to deliver programmes that transform our communities and serve the needs of our museums – but we know we cannot do this alone. To achieve our ambitions, we must work collaboratively with local, national and international partners. And this year, more than any other, we have forged some powerful and innovative links with businesses, universities and charities.

At Locomotion, partnerships with The Forge arts project, Durham Enable employment support and Bridge Creative, which organises training and placements, enabled us to engage new audiences and provide skills development for those who need them. In Bradford, work with Bradford Community Broadcasting has helped to develop local connections and give young volunteers valuable experience in radio production.

Meanwhile, partnerships with Manchester College and the Prince’s Trust at the Science and Industry Museum have provided opportunities for Historic Working Machinery and *Power Up* volunteers to develop skills and build confidence.

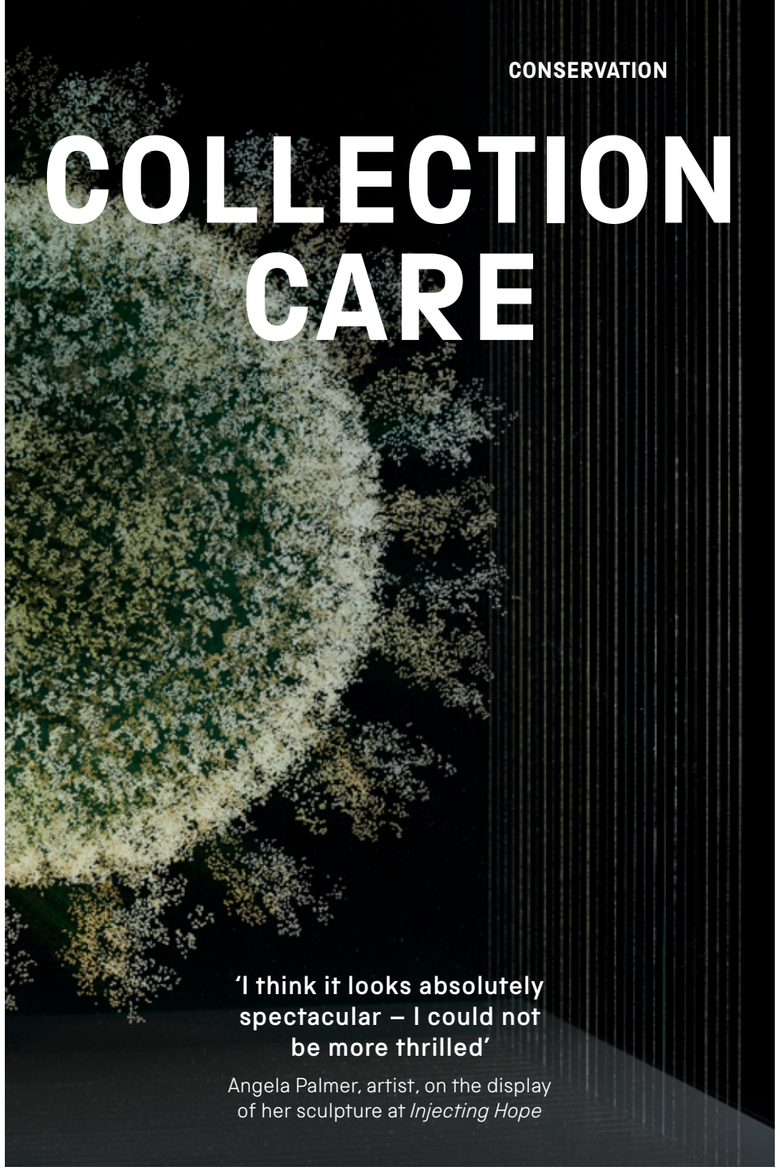
Across the Group these opportunities have made a significant difference to the lives of volunteers, with a number going on to find employment. Nowhere is this better exemplified than at the National Collections Centre, where 17% of volunteers have found work after volunteering with us.

This year volunteering has also helped us act on climate change. At the Science Museum, Environment Agency volunteers delivered environment-related activities to 10,000 visitors. At Locomotion we worked with Groundwork, a sustainability organisation supporting people into employment. Participants helped transform our outdoor estate, refreshing raised beds and leading gardening sessions for existing volunteers.

Extending our national and international reach, the National Railway Museum in York worked with Macquarie University, Sydney, on research exploring Commonwealth histories in Australia. And in a project with the University of Portsmouth, volunteers at Railway Work, Life and Death transcribed 16,000 railway accident records.

This year also saw us extend our influence across the sector. Through our leadership of the Heritage Volunteer Group we worked with organisations from the Department for Culture, Media and Sport to Arts Council England, while providing specialist advice to ground-breaking projects such as Heritage Access 2022 and York’s volunteering strategy.

COLLECTION CARE



‘I think it looks absolutely spectacular – I could not be more thrilled’

Angela Palmer, artist, on the display of her sculpture at *Injecting Hope*

The enormous range of objects in our collection poses particular challenges to our conservation teams, who often have to work with sensitive materials and very large objects.

One of the more unusual ongoing projects that began in July 2022 involves two crash-test dummies on display in the Science Museum. The dummies, made of plastic in the 1970s, are deteriorating badly with age. A sticky red liquid (a plasticiser) is leaching from the surface, making the dummies look as though they are bleeding. While the team can’t stop the deterioration, regular cleaning removes the plasticiser and helps protect the objects from further deterioration.

Conservators also began working on the Cambridge University Racing Eight, a 19.2m-long rowing boat which won the men’s boat race in 1934. In September 2022, they began preparing it for travel from Blythe House in west London to the National Collections Centre in Wiltshire. After a thorough check of its condition, small cracks in the wood were stabilised before the boat was wrapped and padded for protection. The boat is so long it had to be carried out of the building by hand before this unusual load could be transported on a trombone trailer to its new home.

Left Close-up of the glass sculpture, *2020 the Sphere that Changed the World*, by Angela Palmer

Above Conservators work on the crash-test dummies in *Making the Modern World*

Another difficult task involved a fragile glass sculpture. Before the *Injecting Hope* exhibition could open at the Science Museum, conservators and other colleagues faced a challenge: how to examine, move and install 28 large, delicate panes of glass that form a unique artwork. The striking glass sculpture by Angela Palmer, entitled *2020: The Sphere That Changed the World*, represents the SARS-CoV-2 virus.

Ahead of installing the artwork, conservators needed to check and clean each pane of glass, recording any defects and removing dust, dirt and residue, and then devise a failsafe method for moving and installing the sculpture. It took a team of six conservators six hours to carefully position each glass pane in the display case, ready for the exhibition to open.

The same attention to detail applies to our railway collection. With Vision 2025 preparations well under way at the National Railway Museum, some rail vehicles need to be moved temporarily outside to prepare for building work and re-displays of the collection. To make sure these vehicles are suitably shielded from the weather, conservators have carefully ‘shrink wrapped’ the vehicles with a protective material until they can be brought back inside.

‘By combining poetry, music and science, we created a very strong programme that resonated beautifully in the wonderful setting of the *Mathematics* gallery’

Renata Clark, deputy director, the Czech Centre

OPENING DOORS

The Group’s research team continues to establish collaborations across the scientific and cultural sectors alongside its vital work in education

Research at the Science Museum Group is not just a backroom function. It connects the Group’s exhibitions and displays with the work of contemporary scientists and enables us to explore and understand our historic collections, and develop new approaches and ideas to inspire our audiences. It is foundational to what we do.

As Renata Clark, deputy director of the Czech Centre, said of Homage to Miroslav Holub, the Czech immunologist and poet, that was hosted at the Science Museum: ‘By combining poetry, music and science, we created a very strong, even “potent”, programme that resonated beautifully in the wonderful setting of the *Mathematics* gallery.’

Over the course of the year the Research team has also hosted globally renowned intellectuals such as Prasannan Parthasarathi, Adrian Forty and Sunetra Gupta. Through public events, conferences and a lively programme of seminars and book launches, we have embedded the museum’s activities in deeper social and educational contexts.

Through visiting fellowships, our master’s teaching programme, and through our collaborative PhDs, our Research team builds the human infrastructure and the teaching materials of tomorrow. This work ensures that our influence is not felt just through exhibitions, but through a much longer tail of compelling educational courses, events and publications.

During the past 12 months we have also won large international research grants to examine the changing ethics of industrial patronage, explore the spaces of scientific research and network with medical museums across Asia.

This activity has built on the previous multimillion-pound success of The Congruence Engine, a project led by the Research team and funded by the Arts and Humanities Research Council, that will pilot new digital techniques for linking together the UK’s collections of industrial heritage.

The Research team continues to engage in a rich, diverse range of work that can encompass fellowships and international collaborations to hosting performances of traditional Lancashire weaving songs and Vladimir Merta, ‘the Czech Bob Dylan’.

WHAT WE ACQUIRED

In 2022-23 we added 2,370 objects to the Science Museum Group Collection. Here are 10 highlights

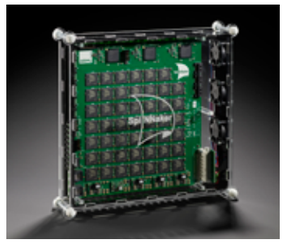
Elizabeth Bisland globe
This 6in globe shows the route taken by US journalist Elizabeth Bisland, of *Cosmopolitan*, in 1890 as she raced fellow journalist Nellie Bly around the world in under 80 days. In celebrating the journey of a female traveller, it is very rare. The globe also shows steamer routes and the location of submarine telegraph cables.

Lab in a Box
This Lab in a Box was dispatched to Imperial College's chemistry undergraduate students across the globe in November 2020 to enable them to complete 'Introduction to Synthesis' and 'Chemistry Kitchen' experiments from home. This is one of more than 800 items collected by the Group to represent the impact of COVID-19 on our lives.

Magic lantern slide set 'Jessica's Prayer'
This set of magic lantern life model slides was made by York & Son, a prolific manufacturer of this type, between 1880 and the 1910s. The slides feature costumed models posed in scenes illustrating temperance tales of alcoholism and other social vices, popular songs, recitations, comic subjects or religious services.

***Tiswas* television script**
This is a script from *Tiswas* (*Today is Saturday: Watch and Smile*), a much loved children's television programme that ran from 1974 to 1982. It was presented by Chris Tarrant, Sally James and Lenny Henry, who would go on to be TV stars. The script complements other objects and archives from British children's television.

Metrovicks turbojet
This early British turbojet was made in Trafford Park, Manchester, by Metropolitan Vickers, one of the first companies to turn the principles of turbojet propulsion into reality. After being loaned to the Science and Industry Museum for several years, the engine was donated by the Fleet Air Arm Museum this year.



48-node SpiNNaker
Designed in 2013 at the University of Manchester, this 48-node SpiNNaker (Spiking Neural Network Architecture) circuit board represents part of a prototype supercomputer. Inspired by the human brain, this 'neuromorphic' supercomputer has been under development since 2005 and has modelled various brain regions.

Graphene-enhanced concrete samples
Producing cement for concrete is a major source of carbon dioxide emissions. Adding graphene to concrete strengthens it by around 30%, so less is needed, reducing both emissions and costs. These samples of graphene-enhanced concrete were created to support the development of Concretene.

Rail Alphabet 2 signage
This prototype station sign, signed by designers Margaret Calvert and Henrik Kubel, uses Rail Alphabet 2, a revived British Rail typeface originally designed by Calvert and Jock Kinneir in 1964. Calvert's influential work has shaped the visual identity of transport in the UK and this signage demonstrates the enduring impact of transport design.

Railtrack presentation tea service
This rare tea service was commissioned to commemorate the floating of Railtrack on the London Stock Exchange in May 1996. Railtrack is under-represented in the collection, with little material relating to this launch of a major business created by the privatisation of British Rail.

North Eastern Railway register of prosthetic limbs
Compiled between 1918 and 1925, this register recorded the shocking scale of life-changing injuries sustained by railway workers during their work, and in the First World War. It forms the basis for continuing research by the Railway, Work, Life and Death project.

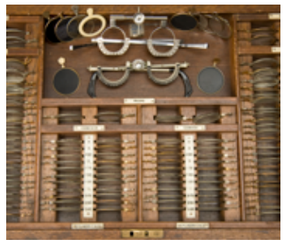
WHAT WE LOANED

In the past year, the Group loaned 1,772 objects to 148 different venues in the UK and 205 objects to another 15 venues overseas. Here are 10 highlights

The Perkin Medal, Fattorini & Sons, Bradford, 1907
To: Gunnersbury Park Museum, London
The first Perkin Medal, an annual award by the US Society of Chemical Industry, was given to founding member Sir William Perkin, creator of the first synthetic dye. On long-term loan.

Binocular Microscope, Andrew Ross, London, 1857-1869
To: National Maritime Museum Cornwall, Falmouth
On long-term loan, the microscope is fitted with a stand by Smith, Beck & Beck. It was used on the pioneering *Challenger* expedition of 1872-1876, which laid the foundations of oceanography.

Solar Suitcase, We Care Solar, USA, 2017
To: CosmoCaixa, Barcelona, Spain
This device provides portable power for healthcare uses in places with limited access to electricity and after natural disasters. Loaned as part of the touring exhibition *The Sun: Living With Our Star*.



Sight testing apparatus, England, 1930-1950
To: Wellcome Collection, London
Loaned to the exhibition *In Plain Sight*. This set of trial lenses and test frames was used by optometrists to determine the strength of spectacle lenses required by patients.

Daguerreotype view: Street scene, boy in a donkey cart, c1842-1855
To: Museum Reina Sofia, Madrid, Spain
The daguerreotype was the first commercial photographic process. This view, in its protective Wharton case, is attributed to Thomas Thurlow. Loaned to the exhibition *Documentary Genealogies: Photography 1848-1917*.

Guard's clock, John Walker, London, c1838
To: Leeds City Museum, Leeds
Dating from around the opening of the London and Birmingham Railway, and inscribed on the rear of the case 'Euston Station No.1'. Loaned to the exhibition *Living with Machines*.

Magazine Box Plate camera, unknown maker
To: Leeds University Library Galleries, Leeds
Loaned to the exhibition *Cottingley Fairies*. Similar to the 'Midg' camera used by Frances Griffiths and Elsie Wright in 1917 to produce their first and second forged photographs of 'fairies'.

Artificial left arm, P & K Artificial Limb Company, Belfast
To: Ulster Museum, Belfast
On long-term loan for display in the museum's *Modern History* gallery. The design by T Kirk and Alexander Pringle enabled grip with the fingers, operated by the wearer's other hand.

Television set, Ferranti Ltd, 1952
To: National Football Museum, Manchester
This model 14T3 black and white television is one of the many models of televisions, radios and electric clocks produced by Ferranti in Moston, north Manchester. On long-term loan.

Diesel-electric locomotive, British Railways, Type 3, Class 37, No. 6700, 1960
To: Heavy Tractor Group, Loughborough
This long-term loan will see the locomotive, built by the English Electric Company in Newton-le-Willows, operating at the Great Central Railway after maintenance work.

THE WORLD'S GREATEST ALLIANCE OF SCIENCE

Top left The Science and Industry Museum in Manchester
Top right The *Technicians* gallery in the Science Museum in London
Right Artist's impression of *Wonderlab: The Bramall Gallery* at the National Railway Museum in York

Left *Animation* gallery at the National Science and Media Museum, Bradford

Below Artist's impression of New Hall at Locomotion, in Shildon

Above The National Collections Centre in the Science and Innovation Park in Wroughton

NATIONAL RAILWAY MUSEUM
The National Railway Museum in York is home to the world's greatest collection of railway objects. Set in former railway buildings, the museum attracts visitors from around the world and tells inspiring stories of the past, present and future of innovation on our railways. Its unrivalled collection of world-famous locomotives includes *Mallard*, *Flying Scotsman* and royal carriages. It also hosts a programme of exhibitions and events. Vision 2025 is a transformation of the museum that will reimagine the story of the railways, showcasing the latest technology and providing interactive experiences and a world-class welcome to our visitors.

LOCOMOTION
Locomotion displays highlights of the national collection of rail vehicles in Shildon, the world's first railway town, in Co Durham. The museum celebrates early pioneers of the Stockton and Darlington Railway and their impact on the global railway story. It is home to historic vehicles such as *Locomotion* No. 1, the first steam-powered locomotive to run on a public railway and, for a temporary period, Stephenson's *Rocket*. The on-site workshop allows visitors to watch the engineering skills of staff and volunteers in action, who restore a wide variety of vehicles, including a Class 306 which transformed post-war commuter travel.

SCIENCE AND INNOVATION PARK
The Science and Innovation Park has been part of the Science Museum Group for more than 40 years. Located on the former RAF Wroughton airfield near Swindon, this 545-acre site has large open grasslands, native woodlands and runways. It plays a vital role in the Group's sustainability and biodiversity activities, with established habitats for wildlife and one of the UK's largest solar farms. The Park houses the National Collections Centre, where work to care for, research and conserve the internationally significant Science Museum Group Collection takes place. Regular public tours and school and research visits to the National Collections Centre will begin from 2024.

SCIENCE MUSEUM
For over a century the Science Museum in London has inspired visitors with engaging galleries and pioneering exhibitions. The past year saw the opening of our most ambitious exhibition to date, *Science Fiction: Voyage to the Edge of Imagination*, as well as a new interactive gallery, *Technicians: The David Sainsbury Gallery*, and two topical contemporary medical science exhibitions: *Cancer Revolution: Science, Innovation and Hope* and *Injecting Hope: The Race for a COVID-19 Vaccine*. The iconic IMAX: The Ronson Theatre screened unforgettable cinema, including the museum's first Science Fiction Film Festival, contributing to the extensive offer for visitors who, in December 2022, returned in their largest numbers since the pandemic.

SCIENCE AND INDUSTRY MUSEUM
The Science and Industry Museum in Manchester explores how ideas can change the world, from the Industrial Revolution to today and beyond. The site of the original terminus of the world's first inter-city railway, in the heart of the world's first industrial city, the museum reveals the people, places and skills behind 250 years of discoveries and innovations that began in Manchester and shaped the modern world. Our exhibitions, experiences and events, including Manchester Science Festival, bring science to life for people of all ages. A multimillion-pound project is under way to conserve this globally significant site and open up new spaces for all to enjoy, learn, play and be inspired in.

NATIONAL SCIENCE AND MEDIA MUSEUM
The National Science and Media Museum in Bradford explores the science and culture of image and sound technologies, and their impact on our lives. We hold world-famous collections in photography, film and television, from the first experiments to the digital revolution, while our three-screen cinema, Pictureville, including Europe's first permanent IMAX theatre, allows us to showcase films and formats from around the world. The *Sound and Vision* project, due to open at the end of 2024 in readiness for Bradford City of Culture 2025, will bring together star objects from our collection to explore the unfolding history of sound and vision technologies.

OUR GENEROUS SUPPORTERS

The financial support of visitors and partners provides critical funding for the Science Museum Group's core priorities and future plans. We are hugely grateful to all the individuals and organisations named here, and our many anonymous supporters, who have enabled us to continue our vital work in 2022-23, and would like to say a huge thank you

SCIENCE MUSEUM

Individual philanthropists, trusts, foundations and government
The 29th May 1961 Charitable Trust
A.G. Leventis Foundation
AKO Foundation
Art Fund
Avra Foundation and Andonis and Filippos Lemos
Peter Bennett
Bill and Melinda Gates Foundation
Blavatnik Family Foundation
Iain and Jane Bratchie
British Council India
Cancer Research UK
Dana and Albert R Broccoli Foundation
DCMS/Wolfson Museums and Galleries Improvement Fund
Department for Science, Innovation and Technology
Douglas Bomford Trust
Gatsby Charitable Foundation
The Gerald and Gail Ronson Foundation
The Helen Hamlyn Trust
The Hintze Family Charitable Foundation
Julian Howard
The Huo Family Foundation
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John S Cohen Foundation
The Leverhulme Trust
Dr Sara Levine
The Linbury Trust
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The Sumner Wilson Charitable Trust
Keith Thrower
UK Research and Innovation
The Vitabiotics Foundation and the Lalvani Family
Wellcome
Wolfson Foundation

Corporate Partners
Adani Green Energy Ltd
bp
Equinor
MathWorks
Pfizer
Shell
Urenco

STEM Circle corporate members
AIG
Bird and Bird
Bloomberg
Equinor
GSK
ISG
MathWorks
Northern Trust
Santander

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VISION 2025, NATIONAL RAILWAY MUSEUM AND LOCOMOTION

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'The thing I loved about the Science Festival was talking to the public about their ideas and seeing how learning and exploring ideas was really exciting to so many people'

Volunteer, Manchester Science Festival

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The Science Museum Foundation is a registered charity committed to providing resources and advocacy to support the vision and mission of the Science Museum Group.

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We gratefully acknowledge the support of the Department for Science, Innovation and Technology, whose funding on behalf of the UK public makes our work possible.

The Science Museum Group would also like to thank the many visitors and online donors that have supported the museums this year.

SUPPORT THE SCIENCE MUSEUM GROUP

Do you want to help build a society that celebrates science, technology, engineering and maths (STEM) and their impact on our lives, now and in the future?

By supporting the Science Museum Group, you will help to transform the way that people think and feel about STEM. You will join a valued community united by a fascination with science, technology and innovation and a passion for passing that sense of discovery on to wider audiences and inspiring future generations.

For further information please contact:
Deborah Myers
Director of Development
Science Museum Group
deborah.myers@sciencemuseum.ac.uk

Astro Pi computer, flown by European Space Agency

FINANCIAL SUMMARY 2022–23

FINANCIAL OVERVIEW

The year 2022-23 saw a continued recovery from the pandemic against an increasingly challenging economic background. Visitor numbers returned to 74% of their pre-pandemic three-year average, compared with 45% in 2021-22. We delivered exceptionally strong commercial results, with income from on-site offers and corporate events surpassing pre-pandemic levels. We are grateful to the government for its continued support, which included the final year of a COVID recovery grant, and to all our funders for their contributions to our activities; together, these have helped us to return quickly to a more normal level of operations.

Grant in Aid from DCMS, which included support for our One Collection and Vision 2025 programmes and for investment in our estates infrastructure, represented 60% of our total income. Trading income increased by 67% to over £20m. We also received significant grant funding for capital and non-capital activities, including the repairs to the Power Hall, the Vision 2025 programme and new galleries at the Science Museum. We thank all our funders for their support through the year.

Overall expenditure returned to 95% of 2019-20's levels, as we returned to seven-day opening at most of our sites and expanded our public programme accordingly. Within this figure, however, non-capital expenditure was 14% higher than in 2019-20, with increases in our staff and estates costs contributing to this rise, and with energy and utilities costs alone 70% higher than pre-pandemic. This increased cost of day-to-day operation will present significant challenges to the Group's financial position over the coming financial years. Capital expenditure remained strong, accounting for 24% of our total spending in the year, and is forecast to increase nearly three-fold in 2023-24, as we continue work on capital programmes at all our sites. Full statutory results will be available in our Annual Report and Accounts, which are laid before Parliament each autumn.

SCIENCE MUSEUM GROUP VISIT NUMBERS 2022–23

Total number of visits to the museums	London	Manchester	York	Locomotion	Bradford	Group
2021–22	1,395,000	262,000	462,000	70,000	139,000	2,327,000
2022–23	**2,594,000**	**380,000**	**564,000**	**87,000**	**187,000**	**3,812,000**

Any anomalies in totals and % differences arise from roundings

PHYSICAL VISITS
Overall, we achieved 72% of pre-COVID average visit numbers for the year with a return to seven-day-a-week opening either full-time from July 2022 or during holiday periods. The Science Museum saw the best recovery at 80%, with strong numbers from UK audiences based outside of London. International visits are still to fully recover. At the National Railway Museum we achieved 75% of pre-COVID averages with the strong performance of York as a key destination for the UK-based tourist market. At the Science and Industry Museum significant parts of the site were closed due to building work. Despite this, seven-day-a-week opening and a strong cultural programme meant we achieved 60% of pre-COVID averages. Locomotion and the National Science and Media Museum remain below 50% of pre-COVID averages. Locomotion will see the return of its major events days in 2023-24. At the National Science and Media Museum the opening of our *Sound and Vision* galleries in 2024 will see a major boost to visit numbers. Across the Group we anticipate achieving pre-pandemic visitor levels by 2025-26, as we complete major redevelopment projects at our four museums in the north of England and international tourism returns.

OFF-SITE VISITS
There were more than 145,000 instances of people taking part in Science Museum Group activities organised outside of our museums (including virtual delivery). The largest of these was the Manchester Science Festival, with activities taking place in the museum, Manchester Arndale, Central Library and Castlefield Viaduct. We have also continued our digital delivery with our Climate Talks and Open for All talks series, STEM Ambassador Hub programme and SMG Academy training. In addition, over 1.3 million visits have been reported to our international touring exhibitions programme 2022-23.

OUR DIGITAL AUDIENCE
The success of our digital strategy continued with a record-breaking 13.6 million visits to our online content – doubling performance since 2018-19. This was aided by strong growth in visits to our YouTube channels – more than double the previous year at 4.4 million. There have also been 1.8 million visits to the online collection (up 35% on last year) aided by improved search optimisation. Visits to collection stories saw growth of over 24% to 1.7 million.

WHO'S WHO IN OUR GREAT SCIENCE ALLIANCE

THE SCIENCE MUSEUM GROUP COMPRISES
Science Museum, London
National Railway Museum, York
Science and Industry Museum, Manchester
National Science and Media Museum, Bradford
Locomotion, Shildon
Science and Innovation Park, Wroughton
SCMG Enterprises Ltd

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 responsible to the Prime Minister through the Department for Culture, Media and Sport (DCMS). The director of the Science Museum Group, as chief executive officer, is responsible to the Board of Trustees; and, as accounting officer, is accountable to DCMS. Within the framework of their statutory duties as stated under the National Heritage Act 1983, the role of the trustees is to establish Group policy, review performance and endorse appointments to key management positions.

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NEW FELLOWS OF THE SCIENCE MUSEUM
Awarded in recognition of the scientists and individuals who have changed our world through academic research, design, technology and philanthropy.

Dame Kate Bingham in recognition of her experience of chairing the UK Vaccine Task Force and steering procurement of vaccines, as well as the strategy for their deployment during the COVID-19 pandemic.

Dr Richard Henderson in recognition of his development of cryo-electron microscopy, which has transformed the ability to determine the molecular structure of biological molecules and won him the Copley Medal and a Nobel Prize.

Professor Sir Adrian Smith in recognition of his seminal contributions to Bayesian statistics and leadership of both the Royal Society and Alan Turing Institute.

The **Rt Hon Sir Alok Sharma** in recognition of his exceptional leadership as the president of COP26 in drawing attention to the urgent need to transition to a net-zero world.

‘This stimulating and timely event provided a precious opportunity to consider the climate and biodiversity crises together’

Richard Deverell, director,
Royal Botanic Gardens Kew

EARTH MATTERS

Humanity is facing an emergency. As the planet heats, a sixth mass extinction is under way with one million species at risk. In response, the Science Museum Group announced our Decade of Climate Action during the visit of Sir David Attenborough in February 2020. Sir David launched our pledge to plant 1,000 native, locally sourced trees in partnership with the Woodland Trust on our 545-acre collections site in Wiltshire.

Two years on, in September 2022, the Science Museum partnered with the Natural History Museum to bring together 50 leaders in climate science, policy, green finance and business for a briefing event, nicknamed ‘COP26.5’. The aim was to look ahead to the UN conferences on climate change (COP27) and biodiversity (COP15), take stock of the UK’s presidency of COP26 and highlight priorities for policymakers towards meeting the Paris Agreement.

The event began with a video address from Alok Sharma MP, who said: ‘We need more countries to come forward with updated emission reduction targets, particularly the major emitters.’ Zac Goldsmith, minister for Overseas Territories, Commonwealth, Energy, Climate and the Environment, highlighted the plight of global ecosystems; while Prince Hussain Aga Khan of the Aga Khan Agency for Habitat revealed the biodiversity of the oceans under threat via his exhibition of photographs, *The Living Sea: Fragile Beauty*.

A summary for policymakers involved in COP27, COP15 and beyond resulted from the event, aimed at informing UK policymakers of our findings – including that climate change and biodiversity loss are interconnected crises that should be understood and addressed together. It was also agreed that biodiversity needs an internationally recognised metric such as the Natural History Museum’s Biodiversity Intactness Index. Finally, a green transition requires financing models that make clear business sense. Julia Knights, Science Museum Group lead for sustainability and net zero, said: ‘Climate change is severely impacting biodiversity loss, with every one degree of warming bringing a 10% increase in extinction risk.’

After the event, a tour of *Our Future Planet: Can Carbon Capture Help Us Fight Climate Change?* was hosted by Roger Highfield, science director of the Science Museum Group, and Julia Knights.

Above left to right: David Shukman, journalist and former science editor of BBC News; Julia Knights, deputy director of the Science Museum; Dame Mary Archer, Group chair; Roger Highfield, Group science director; Prince Hussain Aga Khan; Dr Doug Gurr, director, Natural History Museum and Sir Ian Blatchford, Group director

‘Rather than talking about dystopia or apocalypse, it ends up being quite hopeful about the environment and the capacity of science fiction to help us with the environmental catastrophes we’re facing’

BBC *Front Row*, reviewing
Science Fiction

‘Loved visiting the National Railway Museum. In fact, I think I like just about everything here’

Ricky Gervais, comedian, actor
and writer

OUR FIVE WORLD-BEATING MUSEUMS

Science Museum, London
National Railway Museum, York
Science and Industry Museum, Manchester
National Science and Media Museum, Bradford
Locomotion, Shildon

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ANNUAL REVIEW ONLINE

sciencemuseumgroup.org.uk/about-us/annual-review

SCIENCE MUSEUM GROUP
ANNUAL REVIEW 2022–23

Edited by Kate Quill
with generous input from staff across the Group
and its many bloggers

Designed by Steve Lancefield

Project manager: Thomas Bain

Main photography from Group resources:
Science and Industry Museum
National Science and Media Museum
National Railway Museum/Pictorial Collection
Science & Society Picture Library
Science Museum Library and Archives
Science Museum Photographic Studio
Daily Herald Archive/National Science and Media Museum

With thanks for additional photographs by:
AOC Architecture, Kasim Asim, Elanor Bentall, Isidora Bojovic, Marco Borsato, J&L Gibbons, Drew Forsyth, Chris Foster, Feilden Fowles, Mary Freeman, Jody Hartley, Jennie Hills, Jason Hynes, Jody Kingzett, Jason Lock, Steve Morgan, Jamie Torrance, Andrew Tunnard, Lucy Williams, Karol Wyszynski

Above Rolls-Royce ‘Spirit of Innovation’ electric single-seater aircraft

‘Broadcast 100 put the BBC centenary story at the heart of the nation’s scientific transformation and engaged the public afresh as it did so’

Robert Seatter, head of BBC History

‘Let’s hope that in the cities of the future, they remember to make room for museums – especially ones with such lovingly curated exhibitions as this’

Jake Kerridge, *The Daily Telegraph*, reviewing the *Science Fiction* exhibition

‘The Science and Innovation Park provides essential space for science and technology in the UK to grow and thrive’

Paddy Bradley, chief executive officer, Swindon and Wiltshire LEP

‘It was a true pleasure to be asked by the National Railway Museum to be part of the centenary year of *Flying Scotsman*, the world’s most famous steam locomotive ’

Michael Morpurgo, author

‘The plan to transform Locomotion is exciting and inspiring and reflects the ambition for culture to continue to play a central role in making Durham a great place to live, work and visit’

Tony Harrington, director, The Forge arts project

‘The relationship between the University of Salford and Manchester Science Festival goes to the heart of our mission – to collaborate with partners to inspire the next generation of scientists, engineers and innovators’

Helen Marshall, vice-chancellor, University of Salford

A dancer from the Corey Baker Dance company, part of Giant Leaps at the Manchester Science Festival

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