Large-print book

Please do not remove from the gallery

Science City 1550–1800

The Linbury Gallery

Contents

Gallery introduction

This gallery explores how science shaped London, and London shaped science, between 1550 and 1800.

Over this period London transformed from modest commercial centre to powerful world city. People came to London from all over Britain, Europe and the wider world to exchange money and goods. But they also exchanged knowledge, skills and ideas.

Science, called 'natural philosophy' by people at the time, transformed too, driven by a growing desire to observe, measure and understand the natural world. London provided a unique environment for scientific activity, a place where curiosity combined with practical concerns.

Accessible features

Features for blind and partially sighted visitors:

Five touchable objects are located in the zone named ‘Public science in London’ in the gallery. They are accompanied by large print and Braille labels and audio descriptions provided through headphones located near each object.

Features for D/deaf and hard of hearing visitors:

The gallery does not feature any sounds, other than those supplied via headphones that feature induction loops.

Accessible Events:

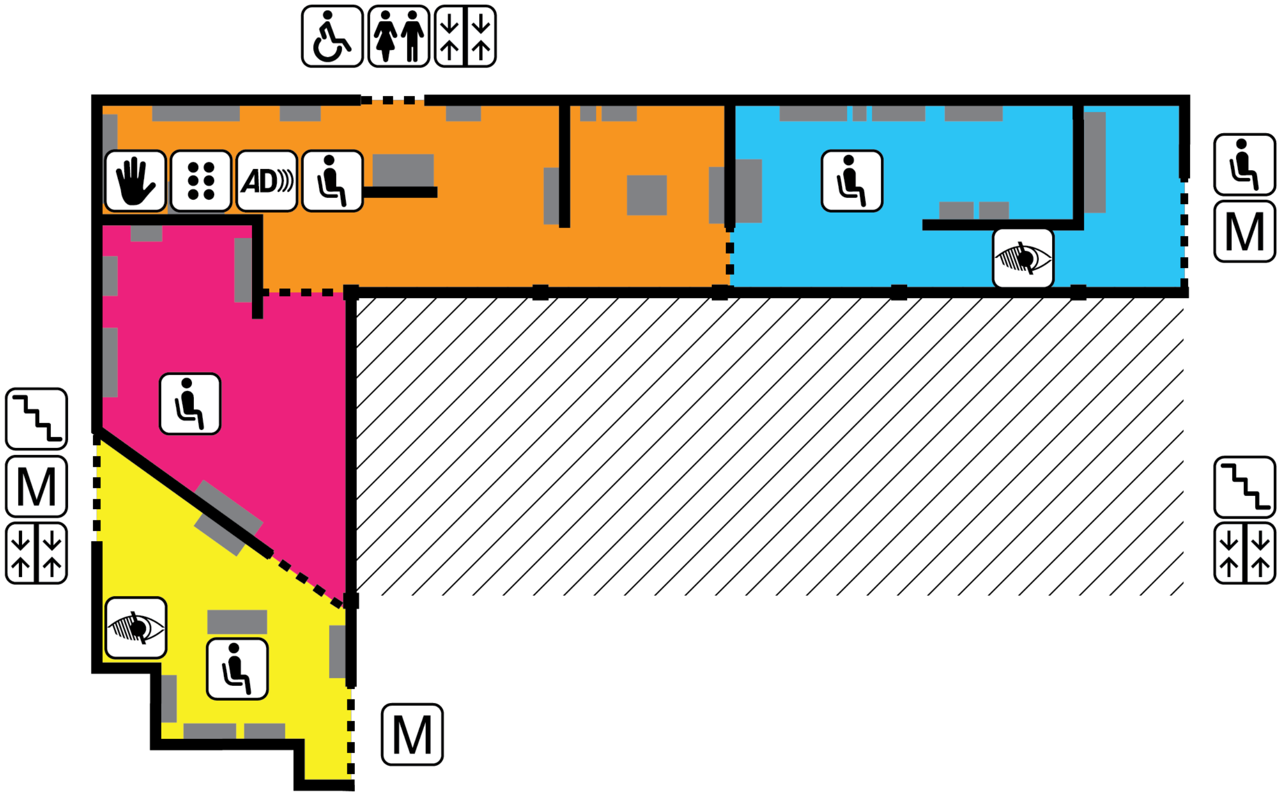
A programme of accessible events will be delivered within the gallery, including audio described tours. Please refer to the Science Museum website for schedule and additional details, or ask at the museum information desk. These accessible events are part of a wider Science City events programme for adults and children.

Gallery layout

The gallery is located on one floor. It is an L-shaped space that is formed around a balcony that overlooks the floor below. The gallery is a double-heighted space and approximately nine metres wide and 75 metres in length. There is an entrance/exit at the east of the gallery, one at the west end and also one midway. All entrances have lifts and stairs that provide access to the rest of the Science Museum.

The gallery is divided into four zones. Each zone is connected to the next by a walkway to one side of the gallery. Close to the entrance to each zone is a display case featuring a theatrical scene on a theme related to the zone. Each zone features a series of display cases with important objects featuring brass labels.

Gallery map



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A new trade

During Queen Elizabeth I's reign (1558–1603), London was a centre for trade and the country's chief port. Yet the city could not compete with the financial, trading and manufacturing successes of major European cities and ports.

New mathematical knowledge and techniques were flourishing on the continent, transforming practical activities such as navigation and architecture. England's leaders saw a strategic advantage in encouraging practical mathematics at home.

Elias Allen's instrument-making workshop
1607–1653

[Note: objects are set in a theatrical scene]

A visit to this busy workshop is in order when specialist calculating and measurement instruments are needed. Sundials, sectors and compendiums are meticulously manufactured under the supervision of Elias Allen, the first instrument-maker in London to earn a living solely from this craft. Leading mathematicians lecturing at nearby Gresham College stop by to pick up commissioned instruments, and to keep an eye out for new designs and developments.

Object: Compendium featuring a sundial, compass and calendars
1630–1653

Compendiums were multifunctional devices. This one provided the user with a sundial, compass and calendar. They were expensive items that demonstrated the depth of the owner’s knowledge and therefore their educated status.

Made by Elias Allen, near St Clément’s church, London
Science Museum Group. Object no. 1883-135

Object: Sun and Moon dial
1607–1653

This dial enabled its user to tell the time on cloudless days and nights when there was enough light from the Sun or the Moon to cast a shadow. Though still a special instrument, it was more common than the compendium. It was probably bought by a wealthy merchant or mathematical practitioner.

Made by Elias Allen, in Fleet Street or near St Clément's church, London
Science Museum Group. Object no. 1921-613

Object: Sector for mathematical calculations
1623

Elias Allen collaborated with leading mathematicians of the time such as Edmund Gunter, for whom he created this sector. Gunter designed the arrangement of the trigonometric scales to enable this type of instrument to be used for complex calculations. Allen's reputation as a maker who could convert ideas into a physical instrument ensured he was always in high demand.

Made by Elias Allen, near St Clément's church, London
Science Museum Group. Object no. 1976-638

Object: Portrait of Elias Allen

1666

This print is based on the earliest known portrait of a British instrument-maker in London. Having moved to London from Kent to take up an apprenticeship, probably at the age of 14, Allen became a prolific and sought-after maker. He managed all aspects of his workshop, supervising staff, selling instruments to customers and collaborating with other specialist makers.

Engraved by Wenceslaus Hollar after Hendrik
van der Borcht the Younger, published in London
Science Museum Group. Object no. 1928-935

Object: Drawing instruments and case
About 1600

This set, consisting of dividers, pricker and sector, complete with a handy case, was probably made by Charles Whitwell in about 1600. Sets like this were used by surveyors, architects and others for copying technical drawings or scaling up and down. Elias Allen was apprenticed to Whitwell, and a similar set of instruments can be seen in Allen’s portrait.

Probably made by Charles Whitwell, near St Clément’s church, London
Science Museum Group. Object no. 1914-263

Object: Hand tools for working metal
1800s

Tools similar to these were used to create instruments with different effects. They were used in conjunction with a lathe, which rotated the unfinished instrument so that a uniform effect was achieved. Tools were usually home-made and recycled from other implements such as files. They rarely survive, but those in Elias Allen’s workshop would not have been very different to these tools from the 1800s.

Made in London and Sheffield, England
Science Museum Group. Object nos.
2016-486 – 2016-498

Object: Sundial-making tool
About 1700

This workshop tool was used in the construction of sundials. It measured the incline of the external wall on which the finished instrument was to be placed. The markings on a sundial must be carefully calculated depending on whether it is placed vertically on a wall or horizontally on a pedestal. External walls are rarely exactly vertical, so their incline must be taken into account.

Made in Baume-les-Dames, France
Science Museum Group. Object no. 2017-106

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Skills from Europe

Queen Elizabeth’s advisers recognised that to rival European powers in navigation and surveying, and to ensure national security, they had to encourage the growth of mathematical expertise at home. They enabled European instrument-makers to settle in London and train British craftsmen. Books on practical mathematics became more accessible, in English as well as in Latin, so that people without a university education could use them.

Object: Table clock

1598–1603

Nicholas Vallin moved to London from Flanders, now a region in Belgium, during the 1580s. He became a leading maker of high-quality timepieces such as this table clock, training English apprentices in the skills he had acquired abroad. Vallin had a promising future, but this was tragically cut short when he and his entire household, family and apprentices died of the plague in 1603.

Made by Nicholas Vallin, London
Science Museum Group. Object no. 1938-429

Object: Sundial
1551

Thomas Gemini, thought to be the maker of this sundial, learned his skill in Flanders. After emigrating to London, he settled in Blackfriars, where he made mathematical instruments and engraved maps, portraits and book illustrations. His original surname was Lambritt, but he adopted ‘Gemini’ as a pseudonym and often used the zodiac symbol in his signature.

Probably made by Thomas Gemini, Blackfriars, London
Science Museum Group. Object no. 1985-1389

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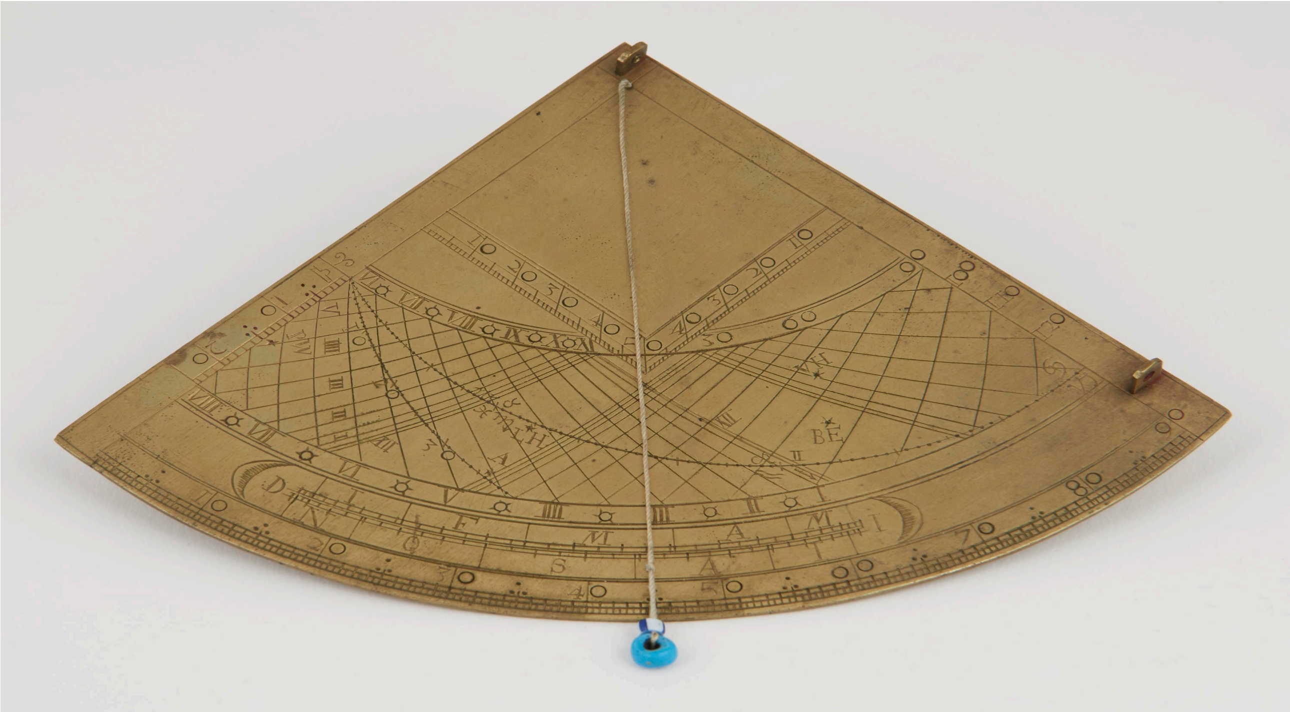
Demand for mathematical instruments

Mathematical instruments such as quadrants, sectors and slide rules were used by a wide variety of people. Mapmakers, surveyors and architects needed to measure angles and distances, and to calculate heights, areas and proportions quickly. In a bustling and rapidly growing city such as London, there was an increasing demand for tools that made the work faster and more efficient.

Objects: Time-telling and surveying

1552–1725



Hand-held quadrants were long-established and familiar mathematical tools, a common sight in London's instrument-making workshops. There were different types for different uses. Horary quadrants were used for time-telling, altitude quadrants for simple surveying tasks and Gunter quadrants for basic astronomical calculation including time-telling. They were available in assorted materials and sizes and provided an affordable alternative to buying a set of expensive instruments.

13 Gunter quadrant, 1650–1725
Made in England
Science Museum Group. Object no. 1938-386

16 Horary quadrant, 1658
Made by Henry Sutton, Threadneedle Street, London
Science Museum Group. Object no. 1937-117

Experiment and the city

A learned club, known as the Royal Society, was established in London in 1660. Its founders had wide-ranging political and personal interests but were united in their enthusiasm for natural philosophy – the systematic study of the natural world and the precursor of modern science. They believed that experiment, rather than theoretical discussion, would yield new knowledge.

London was a practical rather than a scholarly place and had no university. It was the city's commerce and trade that drove much of the Society's enquiries, collaborations and innovations. In this environment, Society members were compelled to demonstrate the practical benefits of their research.

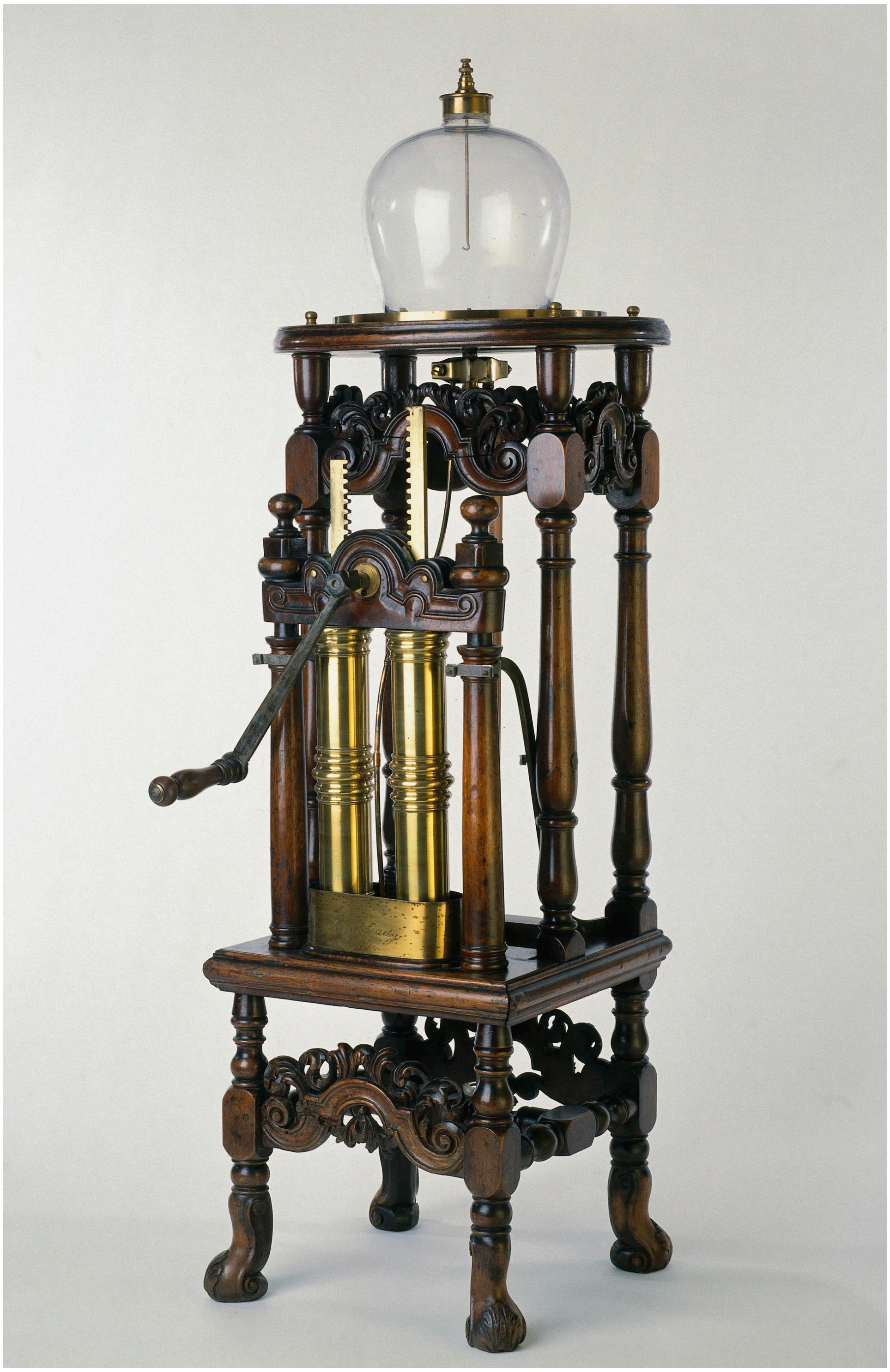
A Royal Society meeting
1660–1709

[Note: objects are set in a theatrical scene]

Gathered here are Fellows, or members, of London’s Royal Society. At their regular meetings they observe and discuss experiments, such as this one with an air pump. Animals, substances and mechanical devices are placed in the glass chamber and the air is removed to see what will happen. Observations and changes in time and weight are carefully measured, noted and later published by the Society.

Object: Air pump

1708–1709



Francis Hauksbee the Elder made this equipment for Royal Society demonstrations of experiments on the effects of changing air pressure. The glass chamber at the top would hold a specimen in a controlled environment. Turning the handle would remove the air, creating a vacuum in the chamber. Observers would then watch the effects this had on the specimen.

Made by Francis Hauksbee the Elder, Fleet Street, London
Lent by the Royal Society. Object no. L2018-510

Object: Pocket watch
1675–1700

The ability to time experiments to the nearest minute was welcomed by Fellows of the Royal Society. They made a note of the time taken for various effects to occur and used this information in their debates.

Made by Thomas Tompion, Fleet Street, London
Science Museum Group. Object no. 1975-334

Object: Balance
1675–1700

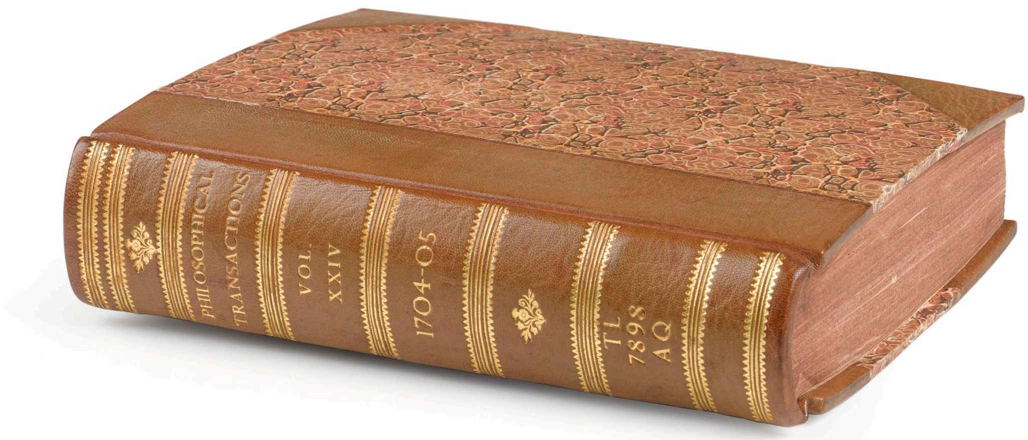
Balances such as these were used to measure changes in the weight of specimens and substances before, during and after experiments. Changes were recorded and used as the basis for further discussion.

‘I heated a piece of iron, of nearly one pound weight, to a white heat, or what the smiths call a welding heat, and found, by the most accurate experiment, which I could make, and which I again and again repeated, that the iron, when left several hours in the balance to cool weighed nearly one grain less when cold than when hot.’

Extract of a letter from Dr Roebuck to Dr Brocklesby, ‘Philosophical Transactions’, vol 66, 1 January 1776

Made in London
Science Museum Group. Object no. 1932-612

Object: ‘Philosophical Transactions’, vol 24
1706



Still published today, the ‘Philosophical Transactions’ of the Royal Society was the first ever journal dedicated purely to science, featuring letters and reports of experiments conducted within and outside the Society. These written accounts ensured ideas and findings were shared and, crucially, provided a platform to verify them. Readers had all the information they needed to repeat the experiments independently.

Published in London
Science Museum Group

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Collaboration and rivalry

From its foundation, the Royal Society operated as a hub for inspiring and sharing ideas. Fellows did not always get along, but even rivals realised that the Society was an important forum in which they could get their ideas recognised.

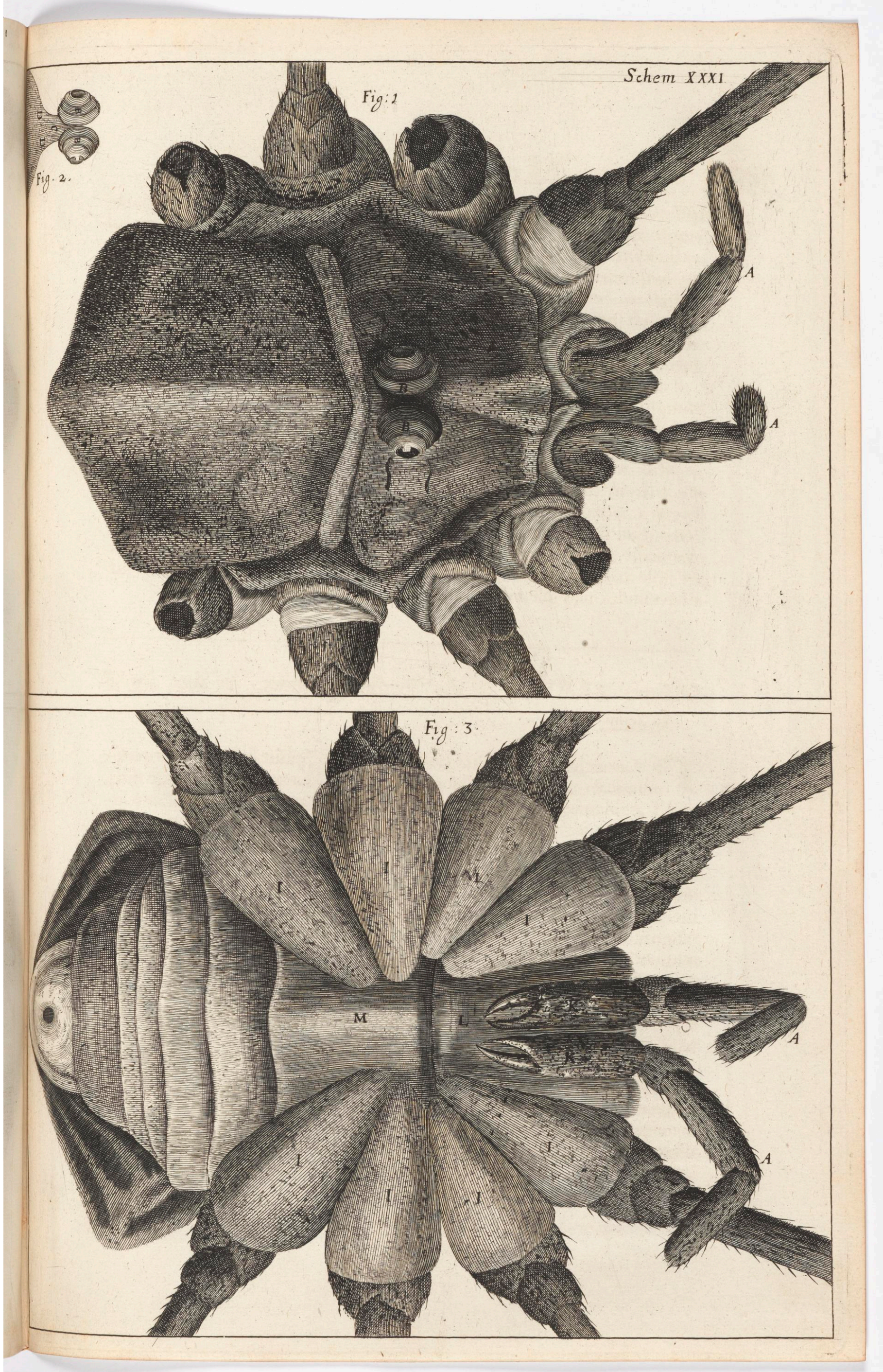
The spirit of collaboration between Fellows and London's instrument-makers, most of whom were not members of the Society, mirrored earlier partnerships between mathematicians and London's craftsmen.

Object: Compound microscope and accessory for manipulating specimens
1671–1700

Robert Hooke collaborated with a wide range of craftsmen in London to make new instruments. He designed and probably owned this microscope, made by long-time associate Christopher Cock. It was similar to the one he used for his book 'Micrographia' published in 1665.

Made by Christopher Cock, Long Acre, London
Science Museum Group. Object no. 1928-786

Object: Robert Hooke's 'Micrographia'
1665



New ideas and evidence, such as these magnified illustrations of tiny life forms, provoked both amazement and suspicion. While the diarist Samuel Pepys described ‘Micrographia’ as ‘the most ingenious book that ever I read in my life’, writer Margaret Cavendish criticised its entire foundation: ‘an exterior inspection through an Optick glass, is so deceiving, that it cannot be relied upon.’

Written by Robert Hooke, published in London
Science Museum Group

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Science shapes the city

Many Fellows of the Royal Society had commercial and political interests of their own and were keen to demonstrate the practical benefits of natural philosophy and experiment. They offered new ideas for improving shipping, navigation, coinage and even the layout of the city of London.

Their experimental approach was praised by many contemporaries but ridiculed by others. London provided a lively environment for rigorous debate of scientific research.

Object: Fire-damaged stones from St Paul's cathedral
1666

The Great Fire of September 1666 destroyed a third of the city and damaged St Paul's cathedral beyond repair. A witness described: 'clambring over mountaines of yet smoking rubbish, & frequently mistaking where I was, the ground under my feete so hott, as made me not onely Sweate, but even burnt the soles of my shoes'. The devastation brought opportunities for rebuilding using new ideas and technologies.

Science Museum Group. Object no. 1966-376

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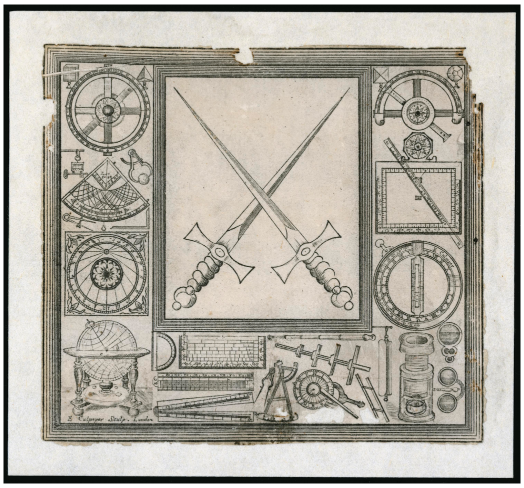
Adapting and innovating

Natural philosophers, curious about the world around them, needed new instruments for measurement and calculation to conduct new experiments.

Rather than Oxford or Cambridge, the Royal Society was located in London, a city without a university. One of the many reasons for this was the presence of skilled makers who could meet the demand for instruments. Resourceful makers diversified their product ranges and developed sophisticated marketing strategies to increase their sales.

Object: Edmund Culpeper at the Old Mathematical Shop
1700–1737



Culpeper’s customers could purchase both optical and mathematical instruments at his shop, despite its name. Responding to increased demand for instruments, Culpeper produced his own design of microscope in a trademark pyramid-shaped case. He acquired the shop from Walter Hayes, the mathematical instrument-maker to whom he was apprenticed. Known by the sign of the crossed daggers, it soon gained international renown.

Edmund Culpeper’s trade card, 1720
Facsimile. Original engraved by Edmund Culpeper, Moorfields, London
Science Museum Group. Object no. 1934-115

Sector for mathematical calculations, 1700–1737
Made by Edmund Culpeper, Moorfields, London
Science Museum Group. Object no. 1938-746

Microscope, case and accessories, 1720–1730
Made by Edmund Culpeper, Moorfields, London
Science Museum Group. Object no. 1928-782

Public science in London

During the 1700s the public appetite for science intensified in London. Thanks to the efforts of enterprising authors, artisans and teachers, studying the wonders of the natural world became a fashionable pastime at home or at well-attended public demonstrations. It was no longer the preserve of privileged audiences and exclusive societies.

Beyond the popular spectacle of scientific experiments, the practical benefits of this ‘natural philosophy’ to Britain’s industry and commerce were particularly visible in its capital city.

A natural philosophy lecture
1755–1758

[Note: objects are set in a theatrical scene]

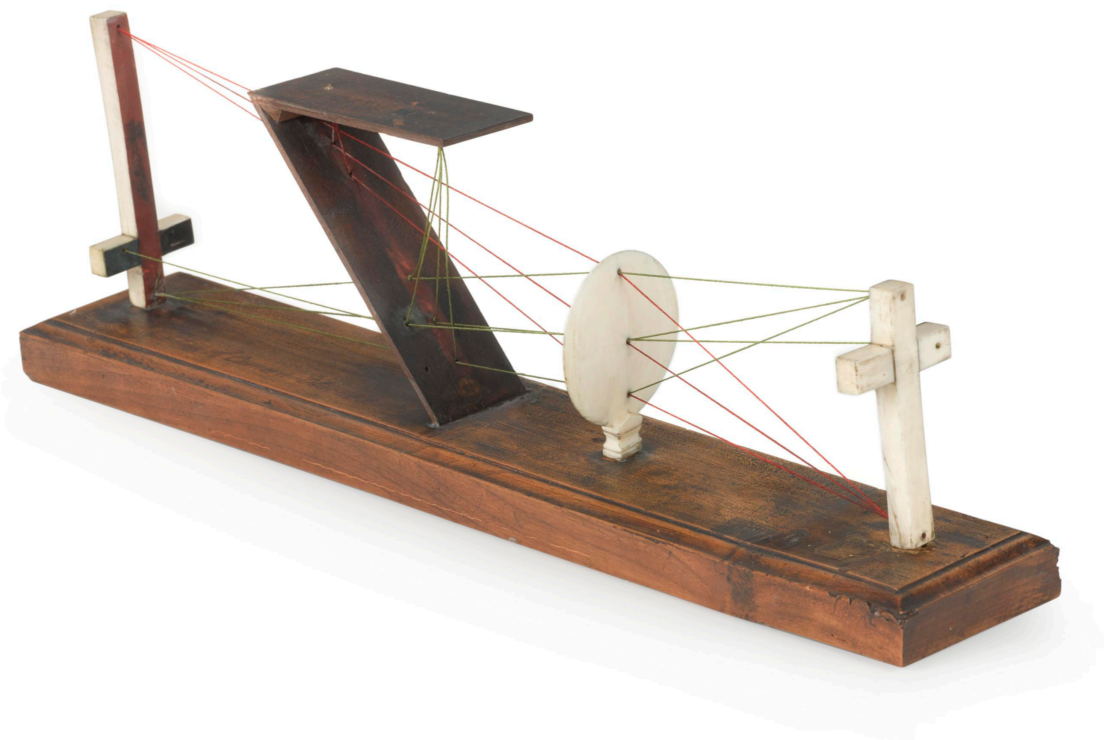
On Panton Street, near Piccadilly, the accomplished lecturer Stephen Demainbray is performing for an audience of ladies and gentlemen. For a small fee he demonstrates a range of topics – including mechanics, optics, electricity, pneumatics and astronomy – using his extensive collection of instruments and models. In the 1750s this has become a popular pastime for people seeking education and entertainment.

Object: Camera obscura
1748–1753

Camera obscuras were popular sketching aids. When pointed at a scene or object, the instrument's angled mirror produced an image on the glass screen at the top, which the user could trace. Neither this instrument's original mirror nor the glass screen have survived. Demainbray explained how it worked in his lectures, showing why the image was reversed but the correct way up.

Lent by King's College London. Object no. 1927-1139

Object: Model showing the principle of the camera obscura
1752



Demainbray used this model to explain how a camera obscura worked. The white cross represents the object being viewed. The silk threads show the light's path, passing through a lens and reflecting from a mirror to form a focused image on the glass screen at the top. The red cross represents the virtual image the viewer would see.

Lent by King's College London. Object no. 1927-1141

Object: Scioptic ball

1748–1770

This device is a wooden ball containing two lenses. Stephen Demainbray attached it to a window shutter, and images of objects from outside were projected onto the wall. It could be rotated in its square frame ‘in every direction, just like the eye’, as one of his audience members observed. Scioptic balls could also direct and focus light and were useful accessories for microscopes.

Lent by King’s College London. Object no. 1927-1167

Object: Convex mirror
1748–1753

Demainbray performed experiments to show the distorting effects of curved mirrors. This convex mirror made objects appear smaller. Mirrors were very expensive and large ones like this would have astonished and delighted his audiences.

Lent by King’s College London. Object no. 1929-120

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Newton’s legacy

Since his death in 1727, Sir Isaac Newton has been hailed as a hero of English science. However, contemporary audiences often struggled to grasp the complexities of his scientific work, which was little known outside scholarly circles. Newton was dismissive of ‘little Smatterers in Mathematicks’, and ‘Principia’, his major work on motion and gravity, was deliberately technical and obscure. His legacy relied on admirers who clarified his ideas, making them accessible and engaging.

Object: Isaac Newton’s death mask
1727

Isaac Newton was well respected during his lifetime for his public roles, including President of the Royal Society and Master of the Mint. However, it was not until after his death that he acquired an almost legendary status. Within hours of his passing in 1727, plaster was moulded to his face to preserve his profile. This copy was owned by the sculptor Louis-François Roubiliac, who used it to create busts and statues.

Made in England
Lent by the Royal Society. Object no. L2018-504

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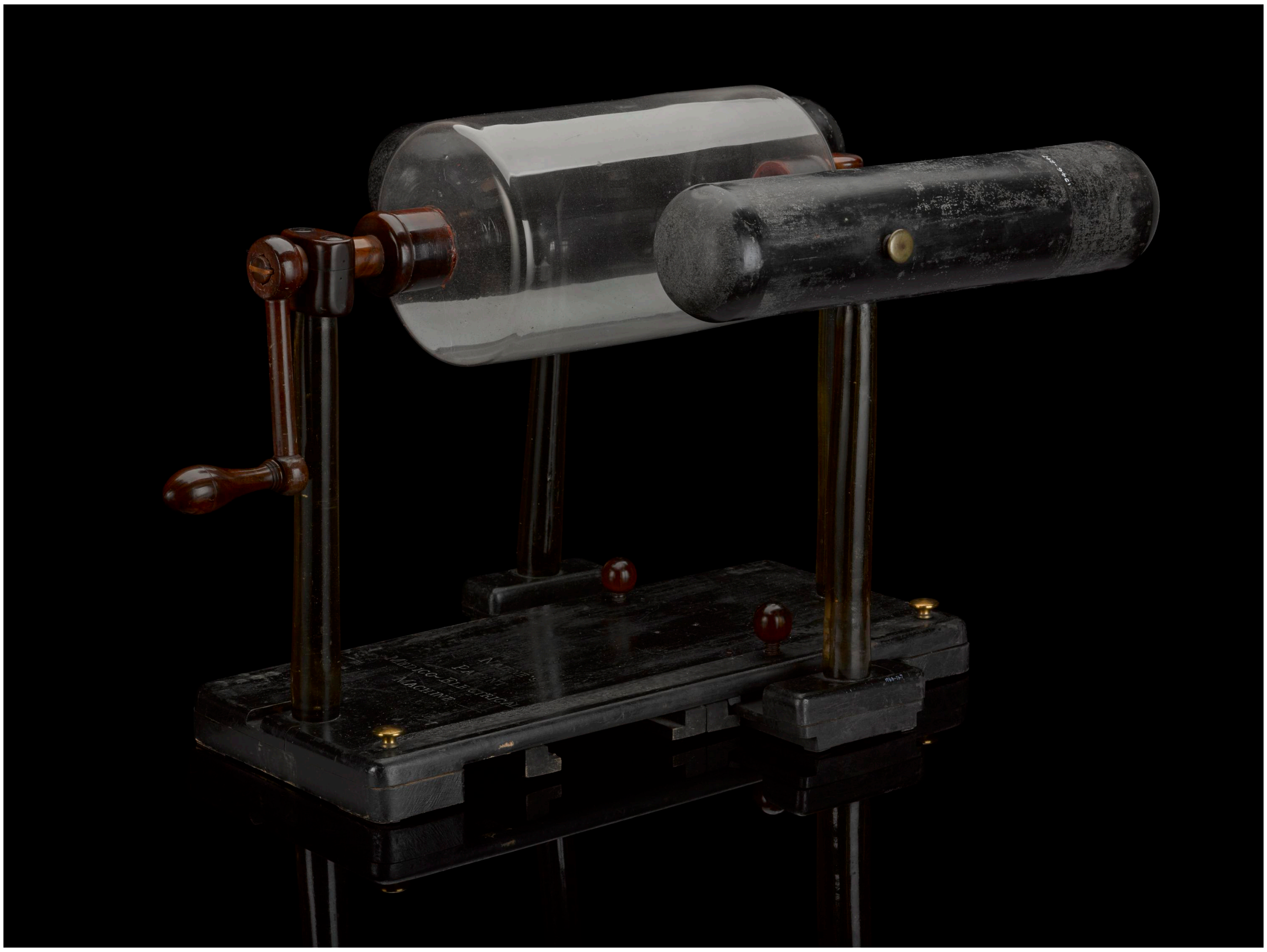
Spectacle and utility

In London during the 1700s spectacular displays of science often emphasised its potential use in the real world. Although experimenters and audiences alike were fascinated by these demonstrations of science, they were also intrigued by its practical and economic benefits.

Lecturers turned functional construction machinery into engaging demonstrations that revealed the relevance of mechanical principles to everyday life. Electrical shocks and sparks thrilled London’s public, at the same time as natural philosophers hoped their new theories about electricity could help protect the city’s skyline from the destructive effects of lightning strikes. And while balloon flight was a popular craze in the late 1700s, enthusiasts imagined the new technology transforming transport and military conflict.

Object: Electrical machine for medical use and demonstration
1782–1793



Medical therapy was a popular, though contentious, application of electricity in the 1700s. This machine's maker claimed 'any person may try its Effect in all the various Methods by the most eminent Medical Electricians'. This instrument was also used for dramatic public demonstrations at the Royal Institution, the fashionable London lecture venue founded in Mayfair in 1799.

Made by Nairne and Blunt, Cornhill, London
Science Museum Group. Object no. 1946-247

Object: Model of the engine used in the construction of Westminster Bridge
1748–1753

The towering mechanical machine used for driving the piles of Westminster Bridge into the bed of the River Thames considerably sped up its construction. The machine was celebrated as a major technological achievement and its designer, watchmaker James Vauloué, was awarded the Royal Society’s prestigious Copley Medal. Lecturers regularly used models of the engine to illustrate how natural philosophical principles underpinned practical machines.

Lent by King’s College London. Object no. 1927-1197

Object: ‘Grand Aerostatic Balloon’

1784

The French Montgolfier brothers caught the public imagination in France and Britain with their demonstrations of hot-air ballooning. Enthusiasts in the scientific world raced to make accounts of their own flights. John Sheldon, a Fellow of the Royal Society, ascended with French aeronaut Jean-Pierre Blanchard from Chelsea in London in 1784. Unfortunately, the Frenchman discarded the terrified Sheldon's equipment as the balloon struggled to lift.

Published by Robert Wilkinson, London
Science Museum Group. Object no. 1937-874

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Opportunities for instrument-makers

As science became fashionable, well-to-do individuals collected instruments and books for their drawing rooms and libraries. People with more limited means also aspired to learn the principles of natural philosophy.

Several hundred instrument-makers were now at work in London. The trade was well established and confident. Enterprising makers enjoyed the opportunities offered by these new markets for their products, expanding and diversifying their stock to suit all interests and pockets.

Object: An earl’s orrery

About 1712

This decorative mechanical planetarium was made for the Fourth Earl of Orrery by John Rowley. Probably playing on the word ‘horary’ (relating to hours), Rowley named the instrument after his wealthy client. The name is still used for similar instruments today. Orreries were demonstration instruments, used to teach and study the motions of planets, the phases of the Moon, and solar and lunar eclipses.

Made by John Rowley, Fleet Street, London
Science Museum Group. Object no. 1952-73

Objects: Orreries for ladies and gentlemen
1720–1777

Only the wealthiest customers could afford ornate instruments, but makers recognised the wider appeal of simpler devices. Thomas Wright, John Rowley’s successor, made small orreries for ‘Ladies and Gentlemen rather than noblemen or Princes’. Maker Benjamin Martin simplified them further. ‘Pity it is’, he wrote, ‘that the costliness and magnificence of so curious and useful an instrument should be a bar to its common use.’

1 Orrery owned by Stephen Demainbray, 1720–1748
Made by Thomas Wright, Fleet Street, London
Lent by King’s College London. Object no. 1927-1414

2 Small orrery, 1738–1777
Made by Benjamin Martin, possibly in Fleet Street, London
Science Museum Group. Object no. 1912-222

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Science for the King

King George III (1738–1820) supported and practised science from an early age. On becoming king, he commissioned a magnificent suite of instruments from maker George Adams for the entertainment and education of the royal family. Originally stored at Buckingham House, now part of Buckingham Palace, the collection was moved to the King’s observatory at Richmond, near London, around 1769.

Objects: King George III's philosophical table

1761–1762

The philosophical table, with its assorted attachments for experiments on forces and motion, illustrated all the common principles of mechanics on a grand scale. It is the centrepiece of a suite of mechanical demonstration apparatus made by George Adams. The King's mentor, John Stuart, Third Earl of Bute, believed scientific knowledge would guide the young monarch towards practical, informed decision-making.

Made by George Adams the Elder, Fleet Street, London
Lent by King's College London. Object no. 1927-1101

Science in a world city

By 1800, London was Europe’s largest city and the administrative hub of Britain’s growing global empire. It was also a world-leading centre of science – or ‘natural philosophy’, as the systematic study of nature was then known. The nation’s imperial ambitions fuelled exploration and enquiry.

During the 1800s, cities such as Birmingham, Manchester, Liverpool, Sheffield, Leeds and Glasgow would rival London’s dominance in trade and industry. Scientific societies would spring up across the country and European centres would soon compete with London’s instrument-making trade. Science itself would transform dramatically, becoming the modern and professional discipline we know today.

Mapping the nation
1791–1792

[Note: objects are set in a theatrical scene]

On Hounslow Heath, near London, painstaking measurements are in progress that will be the basis of the first accurate map of Britain. Surveyors are marking a 5-mile baseline from which subsequent distances will be calculated using a process known as triangulation. They will then transport their specialist equipment across the country, recording their observations and precise calculations as they go. This project will later become known as the Ordnance Survey.

Object: Three-foot geodetic theodolite

1791

This large instrument was used for the Principal Triangulation of Great Britain and Ireland. Carried out between 1791 and 1858, it was the first step in the creation of an accurate map of the nation. The instrument was used to measure angles: surveyors sighted distant landmarks through its telescope and took measurements with the circular brass scale. Trigonometry enabled them to use their measurements to calculate distances.

Made by Jesse Ramsden, Piccadilly, London
Science Museum Group. Object no. 1876-1203

Object: Telescope and case used by William Roy

1784

This telescope was used in the early stages of the 1784 baseline measurement at Hounslow Heath under the direction of William Roy. Known to surveyors as a ‘boning telescope’ and designed for taking sights over short distances, it was used to ensure the baseline was perfectly level before measurements began.

Lent by the Royal Society. Object no. 1900-157

Object: 100-link steel chain
1784

Surveying chains were a commonplace surveying tool, used for directly measuring distance over the ground. Although they were often of simple construction, this one was designed to maximise precision, its links constructed ‘on the principles of that of a watch’. Great care was taken by the surveyors to account for expansion and contraction of the metal if the temperature changed while they worked.

Made by Jesse Ramsden, Piccadilly, London
Lent by the Royal Society. Object no. 1900-156

Object: 42-inch standard scale with case
1742

This scale was an important piece of equipment in the 1784 baseline measurement. On its length was marked a standard yard of 36 inches, which could confirm the lengths of the wooden rods used to verify the baseline measurement obtained with the chain. Accuracy was crucial because even tiny errors would be multiplied as the surveyors extended their measurements across the country.

Made by Jonathan Sisson, Strand, London
Science Museum Group. Object no. 1931-988

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Exploring the world

A mixture of scientific curiosity, commercial concerns and, increasingly, a desire to expand Britain's empire motivated voyages of exploration in the 1700s.

As the nation's maritime strength grew, more ships sailed to remote lands unfamiliar to British people. London was home to government departments, and also to the Royal Society, a forum for scientific activity and debate. This made the city the administrative centre for voyages and other ambitious national projects.

Object: Model of HM Bark 'Endeavour'
1974

The voyage of HM Bark ‘Endeavour’ combined scientific and imperial objectives. Commanded by James Cook, the ship set sail in 1768 for Tahiti, an island in the Pacific Ocean only recently encountered by Europeans. Cook’s publicised aims were to observe a rare astronomical event, the transit of Venus, and to explore the region’s natural habitat. He was also secretly tasked to search for the uncharted but famed ‘southern continent’, so Britain could claim its discovery.

Science Museum Group. Object no. 1977-468

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Trade and empire

London was Britain’s busiest port and leading commercial centre, the hub of national and international trade. The quest for new trade routes and demand for foreign goods drove maritime exploration. It was largely through the influence and forceful interventions of London’s trading companies that Britain’s colonial territories increased.

Global expansion boosted Britain’s wealth and fed scientific curiosity. However, these encounters with remote places and new cultures often instigated turbulent, complex and long-lasting consequences.

Object: Quadrant used for surveys in Lower Canada
1780–1820

To expand and defend new territories across the empire, Britain needed accurate maps of their coastlines, boundaries and landscapes. Maps also satisfied scientific curiosity about unknown regions. This London-made quadrant was supplied by the British Admiralty for surveys in Lower Canada, present-day Quebec. Territory in North America became increasingly disputed after the American War of Independence (1775–83) and as conflict escalated between Britain and France.

Made by Peter and John Dollond, St Paul’s Churchyard, London
Science Museum Group. Object no. 1911-214

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Skills in demand

By 1800, London led the world in the manufacture of precision instruments for measuring and observing the land, seas and skies. Ever more ambitious scientific projects required bespoke equipment. Britain’s growing maritime trade drove demand for smaller, portable instruments.

The reputations of highly skilled and innovative London makers made them the preferred choice for customers not only in Britain but across Europe and America.

Object: Dividing engine for making scales on instruments

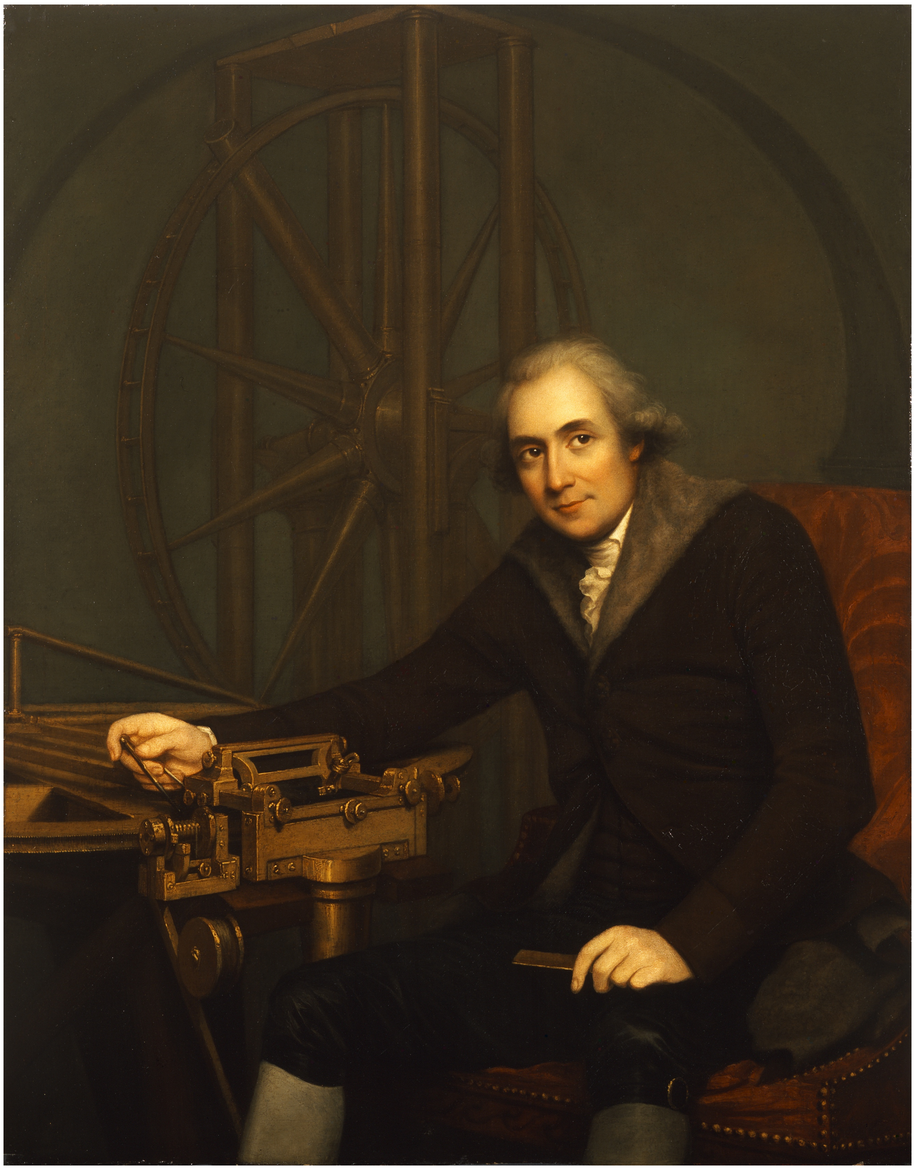
1815–1825

Dividing engines partially mechanised the process of dividing scales for small instruments, helping to meet growing demand from navigators. A sextant or octant was fixed to the top of the engine, and angular divisions were marked on it using the engine’s precision screw and a ratchet. Jesse Ramsden constructed the first such engine in London, reluctantly sharing its design with other makers at the request of the government’s Board of Longitude.

Made in England
Science Museum Group. Object no. 1925-478

Object: Portrait of Jesse Ramsden

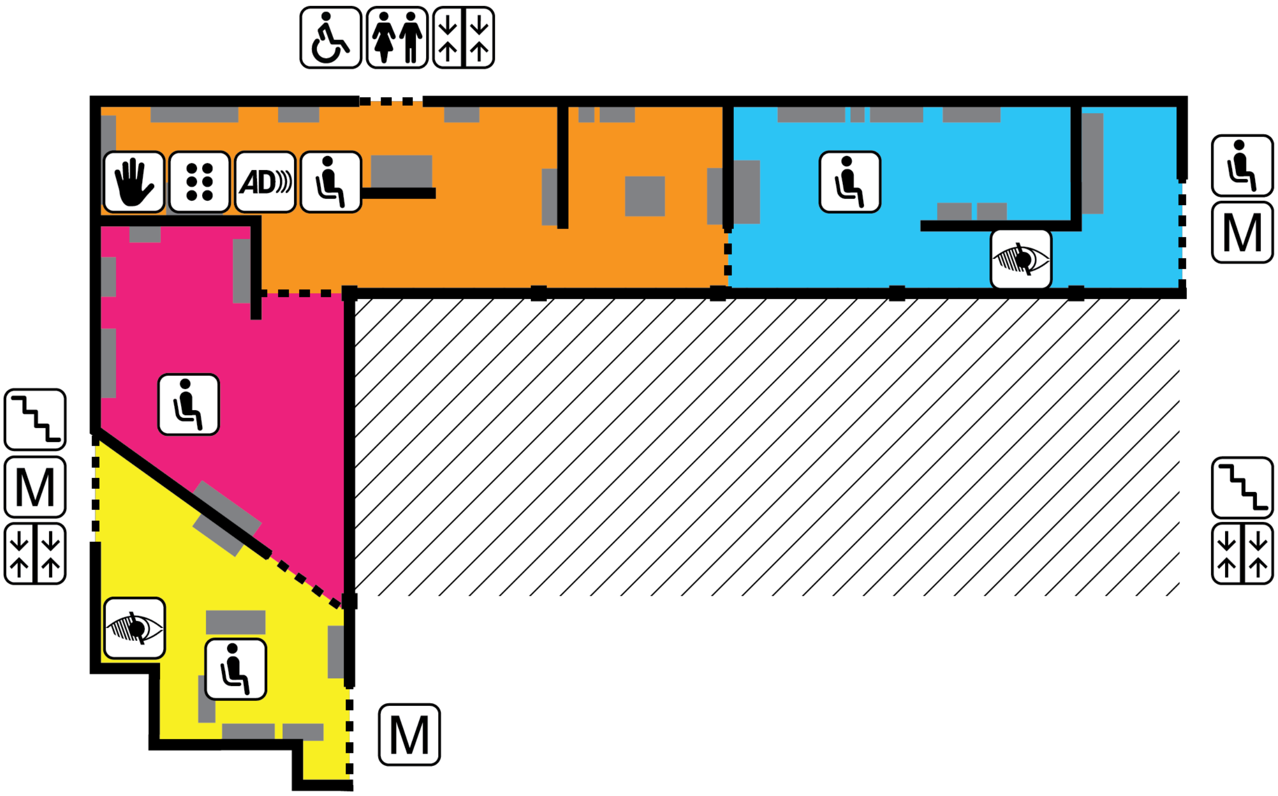
About 1790



This portrait of Jesse Ramsden portrays an instrument-maker at the height of his talent and popularity. Towering in the background is a large astronomical circle made for Palermo Observatory, one of Ramsden's many commissions for European customers. By his side is a dividing engine, his invention that enabled the fast and accurate division of scales on small instruments for navigation and surveying.

Painted by Robert Home, probably in London
Lent by the Royal Society. Object no. L2018-50

Gallery map



- A new trade
- Experiment and the city
- Public science in London
- Science in a world city

- Wall
- Show case
- Atrium
- Main museum

- Stairs
- Lift
- Seating
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