MANCHESTER
1824
The University of Manchester

KNOWLEDGE
WISDOM
HUMANITY

PORTRAITS FROM OUR PAST

Bicentenary celebrations and addressing our past

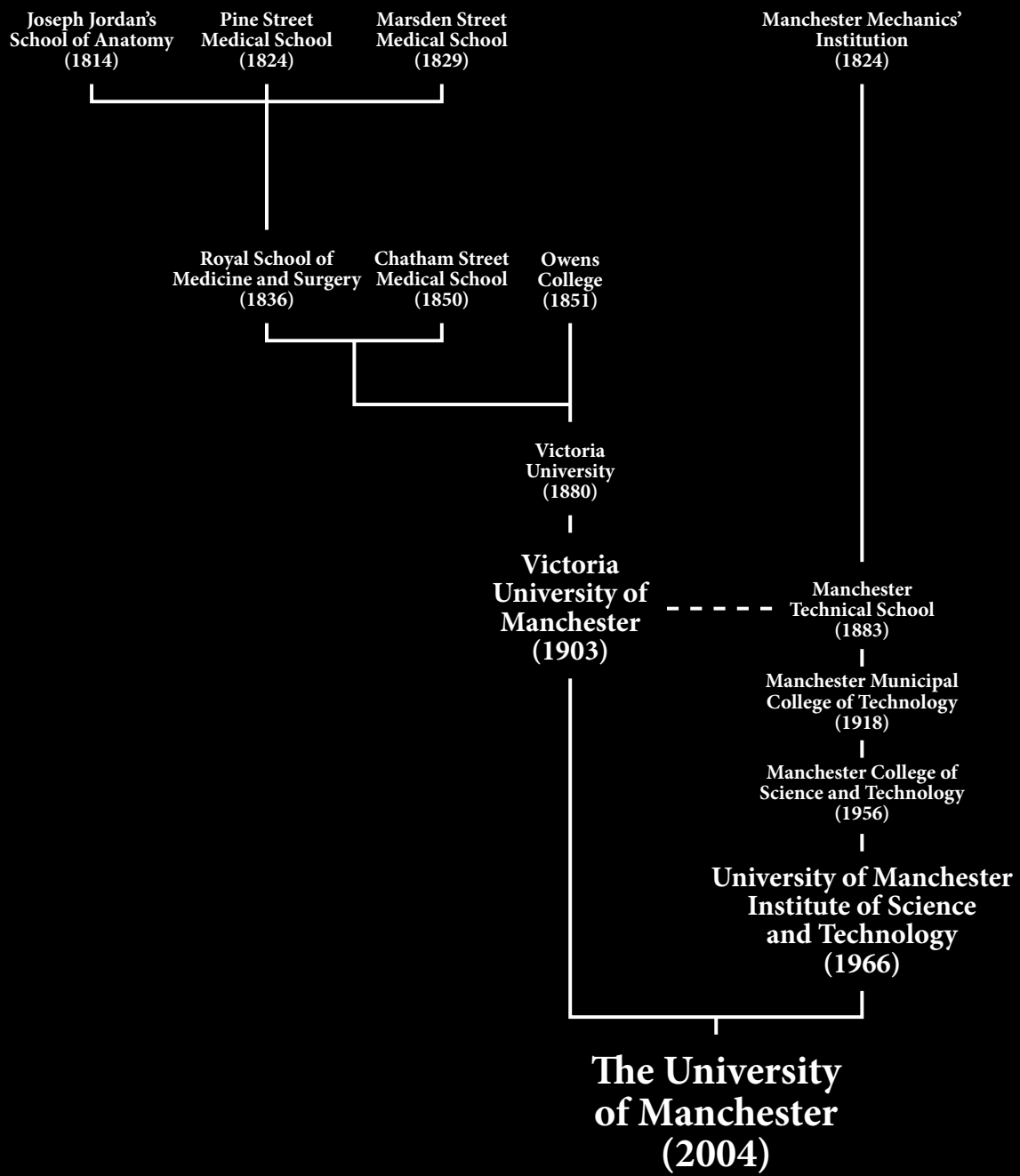
2024 marks The University of Manchester's bicentenary. We're celebrating 200 years of learning, innovation and research. 200 years of our people and community. 200 years of global influence.

The milestone year also represents an opportunity to consider the present, look to the future and reflect on the past. We're committed to understanding our history – working to repair inequalities and setting a new tone for our story to come.

This includes acknowledging and exploring connections between our early benefactors (many of whom feature in this publication) and the global slave trade. We're on a journey to address our connections with the legacy of slavery and to give our community an opportunity to reflect and get involved.

If you'd like to find out more about this work, please visit manchester.ac.uk/historic-links

Medics, Mechanics and Manchester
Charting the history of the University



Contents

The city of Manchester helped shape the modern world. For over two centuries, industry, business and science have been central to its development. The University of Manchester, from its origins in workers' education, medical schools and Owens College, has been a major part of that history.

Original plans for the Christie Library included a bridge linking it to the John Owens Building.

The University was the first and most eminent of the civic universities, furthering the frontiers of knowledge but also contributing to the well-being of its region. The many Nobel Prize winners in the sciences and economics who have worked or studied here are complemented by outstanding achievements in the arts, social sciences, medicine, engineering, computing and radio astronomy.

Our founders forged liberal and progressive values that have allowed us to do things differently: to think freely, challenge social and intellectual boundaries, and make a real difference across the world. The University has long provided a meeting point for ideas from across disciplines. Many of the world's most influential thinkers have been part of our intellectual community, creating an ethos that has resonated through time and across the globe.

The people, places and events detailed on these pages are just a few portraits from our past. Each has helped define our history and set a course for our future.

Roots of the University

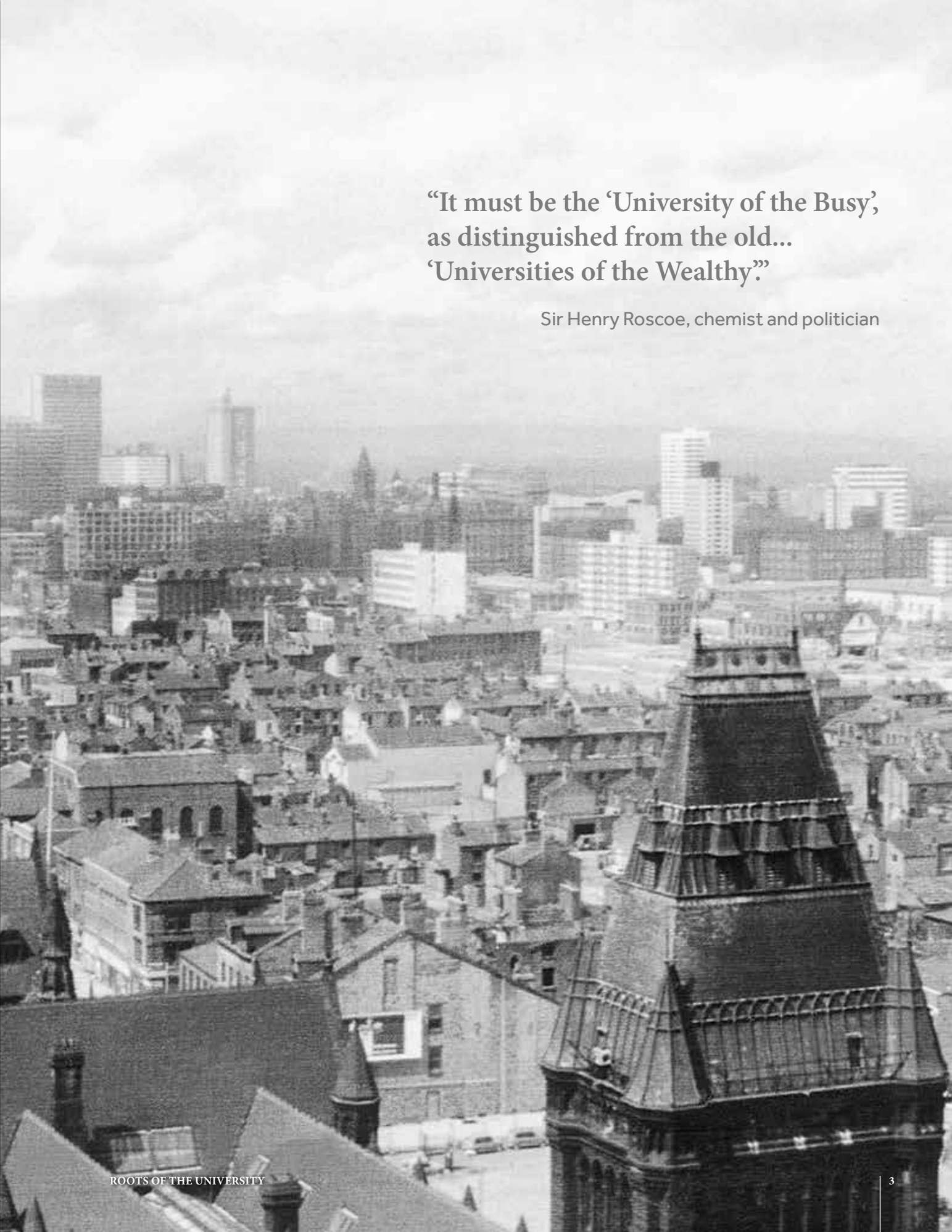
The University of Manchester has its origins in the University of Manchester Institute of Science and Technology (UMIST) and the Victoria University of Manchester.

Both institutions have long and proud histories emanating from the Industrial Revolution, when Manchester, as the first industrial city, led the world into a new age. Together they made Manchester synonymous with research and education.

On 22 October 2004, after almost 100 years of working closely together, both institutions combined to form The University of Manchester, the largest single-site university in the UK.

"It must be the 'University of the Busy', as distinguished from the old... 'Universities of the Wealthy'."

Sir Henry Roscoe, chemist and politician



"To enable mechanics and artisans, of whatsoever trade they be, to become acquainted with such branches of science as are of practical application in the exercise of that trade."

The objective of the Mechanics' Institution, agreed in 1824

University of Manchester Institute of Science and Technology (UMIST)

UMIST can trace its roots back to the Manchester Mechanics' Institution, founded in 1824 as part of a national movement for the education of working men. It was formed by industrialists who believed that Manchester's rapidly growing working population should learn basic sciences through evening classes.

The Manchester Technical School on Princess Street.

The first Mechanics' Institution building was on Cooper Street, near St Peter's Square. At times the Institution struggled because students had little basic education; primary schooling would not be made compulsory in England until 1870. Artisans worked long hours and many saw little advantage in science studies. The Institution's more general classes often proved more useful to young office workers and shopkeepers seeking to improve their literacy and numeracy. It was funded by wealthy individuals and student fees, giving access to its well-stocked library, facilities and lectures on technical and scientific subjects, as well as more general instruction.

Growth was sufficient to need a new building, opened in 1853 on Princess Street. But it was in the later decades of the century that pressure for technical education increased, fuelled by fears that Britain might lose its leading position as an industrial nation. In Manchester a self-taught ex-shoemaker, John Henry Reynolds, took these national and local concerns and used them as the basis for a successful programme of classes. He focused on subjects that served the industrial needs of the Manchester region and in 1883 he converted the Mechanics' Institution into the Manchester Technical School.

From 1892 the Technical School was funded by the Manchester Corporation, partly from national taxes, and it came to be known as the Manchester Municipal Technical School. Modelled on German technical high schools, a new building, now known as the Sackville Street Building, was opened in 1902 and significantly expanded in 1957 to a plan from 1927.

The increasingly high standards of education and the beginnings of research at the Technical School raised questions about its relationship with the newly independent Victoria University of Manchester, a mile to the south, which had its own department of engineering.

An agreement was reached in 1905 for the professors at the Manchester Municipal Technical School to constitute the Faculty of Technology of the Victoria University, forging a lasting relationship between the two institutions. Students at 'the tech' could take Victoria University degrees. After World War I the Technical School was renamed the Manchester Municipal College of Technology to reflect its increasingly advanced level of teaching and research.

However, until after World War II the majority of College of Technology courses were professional and technical, rather than academic, and most of the teaching was through evening classes for students who were at work during the day.

In 1956 the College gained independent status as the Manchester College of Science and Technology after the non-degree work was moved to some of the municipal colleges (which later became Manchester Polytechnic and then Manchester Metropolitan University). In 1966, during a period of rapid expansion, the College was renamed the University of Manchester Institute of Science and Technology (UMIST), but remained mainly independent of the Victoria University. Changes to legislation meant that in 1994 UMIST became a completely autonomous university with its own degree-awarding powers. Ten years later it merged with the Victoria University.

(top)
The entrance hall of the Sackville Street Building.

(bottom)
Looms in the Sackville Street Building.

> **"Owens College has worthily developed into the Victoria University … she will be a sun, a centre of intelligence, warming and illuminating the regions around her."**
>
> Lyon Playfair, chemist and educational reformer, addressing the British Association in 1885

The Victoria University of Manchester

The Victoria University of Manchester developed out of Owens College, which was founded in 1851, and from 1872 incorporated the Royal School of Medicine and Surgery, which had been formed through an amalgamation of the city's medical schools and given its royal title in 1836.

As Manchester's economy rapidly grew, a new merchant class developed and by the 1840s there was demand for University-style education in the city.

Owens College was created by a legacy of £96,942, left in 1846 by the wealthy Manchester merchant and industrialist John Owens, to provide "to youths of the age of 14 and upwards instruction in the branches of education taught at English universities, free from religious tests." Owens died in 1846 having never married; he had lived in the house of his father, a jovial Welsh merchant who died in 1844.

The idea of a university college in Manchester was not new and had been promoted by some of Owens's friends, particularly George Faulkner. The trustees of Owens's estate made it happen.

In 1851 Owens College opened in a house on Quay Street in central Manchester. The College was breaking new ground in England's industrial north – the only English precedent for a modern university college was in London. Its first few years were difficult; as a non-sectarian institution, Owens did not prepare men to be Christian ministers, and it did not include medical students, who were thought to be rather vulgar. Most Manchester families who could afford to send their sons to college preferred for them to join the family business as soon as possible.

From the 1860s the College found a new vision. Its leading professors looked to the model of German universities that stressed the creation of knowledge, not simply its transmission. Many early professors were educated in Germany and Manchester itself had a large German population, which the German Chapel on campus once served. For the professors, research was the key ingredient of a university; it advanced knowledge and was a potential source of material benefits. It also gave students the experience of facing the unknown and of finding out for themselves. This would become true for the humanities as well as for the sciences, and a college education came to be valued as the normal preparation for the professions.

The College's success and the cramped conditions at Quay Street meant that by the mid-1860s it required a larger, purpose-built home. Agreement had also been reached for the Royal School of Medicine and Surgery, which had formed through an amalgamation of smaller schools, to be incorporated and become the

College's medical school, which would require a new building. Building at the current Oxford Road site was underway by 1870.

The site's first building, which would become the present John Owens Building, was completed in 1873. The set of buildings that make up the Old Quadrangle were finished in 1902. They were designed by Alfred Waterhouse, the architect of Manchester Town Hall, and included the first galleries of the Manchester Museum, whose natural history collection had been amassed by a local society. By 1874 there was a large chemistry laboratory on Burlington Street and the medical school on Coupland Street. Clinical teaching was provided at the Manchester Royal Infirmary, which remained in Piccadilly until 1908, when it moved to Oxford Road, just south of the University.

In 1880 Owens College became the first constituent part of the federal Victoria University, England's first civic university, which later included colleges in Liverpool and Leeds. After Birmingham gained its own charter as a University in 1900 the colleges of the Victoria University separated. In 1903 Owens College was reconstituted as the Victoria University of Manchester, though it was often known as 'the University of Manchester' or simply as 'Owens'.

Between 1890 and 1914 the University expanded considerably, with new laboratories appearing on Coupland Street. Between 1918 and 1939 new arts buildings to the south of Burlington Street were added. After 1945 the science, engineering and medical departments were rehoused to the east of Oxford Road.

The Whitworth Art Gallery joined the University in 1958. It was founded in 1889 commemorating Sir Joseph Whitworth, the great Manchester engineer whose legacy funded many of Manchester's educational investments around the beginning of the 20th century. The John Rylands Library on Deansgate became part of the University in 1972. Established in 1899 by the widow of a Manchester merchant, the institution had started out as one of the world's finest charity libraries.

(left)
Lithograph of Owens College, from *The Building News*, June 1874.

(right)
Burlington Street, 1953.

Meeting of the Senate chaired by Professor John Stopford, 1944.

The Old Students' Union building on Burlington Street.

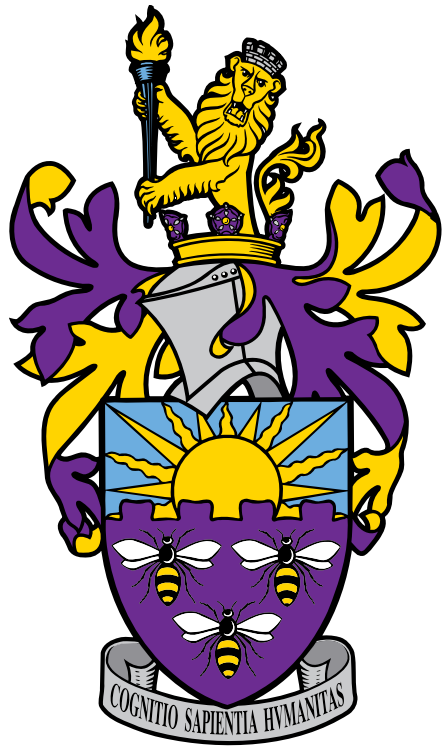
The University of Manchester coat of arms

The arms were granted in 2004, when the Victoria University of Manchester and UMIST were both dissolved and a new institution, The University of Manchester, was created in their place.

The new coat of arms includes elements from the two legacy universities. As in the UMIST crest, a demi-lion, wearing a mural crown, emerges from a circlet set of roses and holds a torch. A sun, appearing on blue, is taken from the Victoria University shield and symbolises growing enlightenment.

The bees on the new shield mark the University's connection with the city of Manchester. The present University's colours of Manchester purple and Manchester yellow are used throughout.

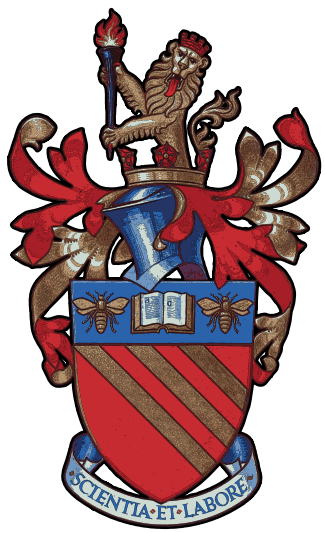
The Latin inscription which appears at the base of the crest, *Cognitio Sapientia Humanitas*, means 'Knowledge, Wisdom and Humanity'.



Coat of arms for The University of Manchester

Cognitio Sapientia Humanitas

Knowledge, Wisdom and Humanity



Coat of arms for UMIST

Scientia et Labore

By Knowledge and Work

Coat of arms for the Victoria University

Arduus ad Solem

Striving towards the Sun

Historic buildings of the University

The University of Manchester's rich history is evident in our architecture and built environment. The first buildings for the Mechanics' Institution and Owens College were in the city centre on Cooper Street and Quay Street respectively. Construction of the buildings on the Oxford Road site commenced in the 1870s and the Old Quad, as it is now known, was completed in 1902.

Many of the buildings carry the names of influential figures in history. Throughout our estate it is possible to read the intellectual, social and cultural history of the University and city.

Sackville Street Building

The first building for the Mechanics' Institution was a modest, though important, building on Cooper Street – it was the first purpose-built mechanics' institution in England when it opened in 1827. The land and building costs were paid for by 11 major shareholders who advanced the Institution £7,000. The building had impressive facilities, including classrooms, a library and a reading room. It also had a 1,000-capacity lecture theatre heated by hot-water radiators.

Such was the Institution's success that by 1853 a campaign began to raise funds for new and more spacious premises. By 1855 £20,000 had been raised and a site purchased on the corner of Major Street and Princess Street. The building was opened in 1857 and its inaugural exhibition of international arts and industry attracted 270,000 visitors.

The Institution later became the Manchester Technical School and the city council took over the funding of the School from 1892. After this, progress started on erecting another new building near the site of Sir Joseph Whitworth's former engineering works between Sackville Street, Whitworth Street and Granby Row. The land was granted to the School by Whitworth's legatees. The first part of that building, now known as the Sackville Street Building, was constructed between 1895 and 1902. The council of the School had devoted great effort to the new building plans and visited technical institutes across Europe before basing the design on the Building Trades School in Stuttgart. It was designed by Spalding and Cross and boasted the finest Edwardian brickwork and terracotta in the region.

A vast extension to the building was completed in 1957, but to a 1927 plan by Bradshaw Gass and Hope.

Extension work to the Sackville Street Building in the 1950s.

The Quay Street Building, 1908.

The College on Quay Street

Owens College opened in 1851 in a house on Quay Street in central Manchester. It was originally the home of Richard Cobden, the MP for Stockport and a prominent figure in repealing the Corn Laws. The building was presented to the College by George Faulkner, the chairman of the Owens endowment trustees.

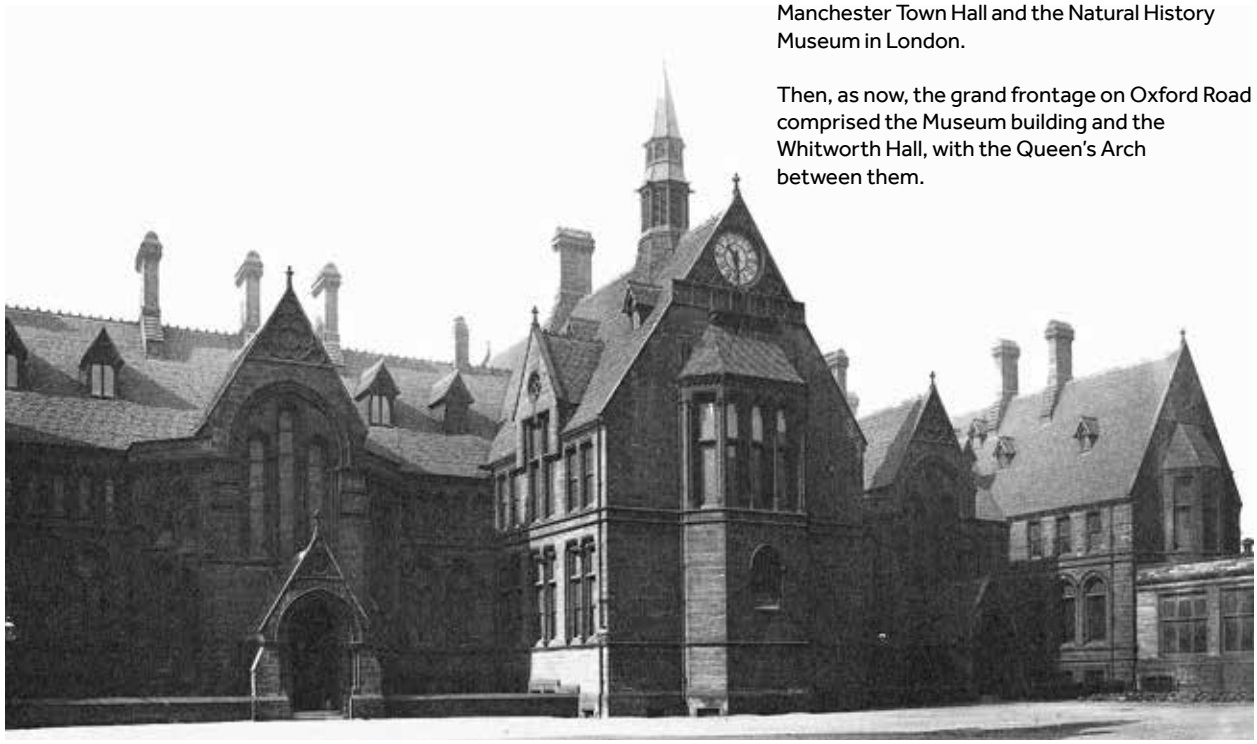
Conditions at Quay Street were less than ideal. At the time the area was one of the most disreputable quarters of the city and the classrooms were crowded and cold. In 1865 a decision was made to move the College to a new location and £106,000 was raised to purchase the site and build the first new building on Oxford Road.

The Old Quad

When it became apparent that larger and more appropriate accommodation was required, Owens College purchased the land on which the Old Quad now sits, completing the buildings around the Quad between 1873 and 1902.

The Old Quad is encircled by the John Owens Building (1873), the Beyer Building and Manchester Museum (1888), the Christie Building (1898) and the Whitworth Hall (1902). All the buildings were designed by the architect Alfred Waterhouse, except the Whitworth Hall which was completed by his son Paul. Waterhouse also designed Manchester Town Hall and the Natural History Museum in London.

Then, as now, the grand frontage on Oxford Road comprised the Museum building and the Whitworth Hall, with the Queen's Arch between them.



The John Owens Building

The John Owens Building is named after the founder of Owens College. It was the first building constructed for the University on the Oxford Road site.

All the disciplines taught at Owens College were accommodated in this main building, with two exceptions – Henry Roscoe's large chemistry laboratory on Burlington Street and the medical school on Coupland Street.

Most arts subjects remained in the John Owens Building until 1919.

The John Owens Building, 1908.

Graduands outside the Whitworth Hall in the 1950s.

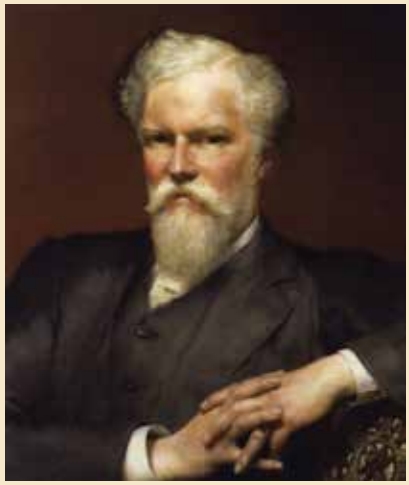
The boulder glares imposingly into the Quad (the facial features were a mischievous addition to the original photograph).

The glacial 'giant'

The large boulder in the Old Quad weighs over 20 tonnes. It was found, 28 feet below ground, just south of the University at the site that is now the junction of Oxford Road with Devas Street. The excavation was probably a result of tramway or sewer installation around 1900.

This glacial erratic is composed of andesite from Borrowdale in the Lake District. It was carried to Manchester by the last glacial period to affect this region, about 20,000 years ago.

The excavation of the boulder.



Alfred Waterhouse

1830–1905

Alfred Waterhouse grew up in Liverpool as a Quaker, and was apprenticed to a Quaker architect in Manchester. He became famous for winning the 1849 competition to design the huge Manchester assize courts (demolished in 1957 after bomb damage in World War II).

In 1868 he won the competition to design a new town hall for Manchester in the newly created Albert Square. This is commonly regarded as his greatest work and is one of Britain's best Victorian gothic buildings.

Soon afterwards he was appointed to create the new buildings for Owens College. He eventually designed the whole quadrangle, each building grander than the last. The Museum building included a covered entrance way, off which a splendid stairway led to the council chamber under the high tower.

Waterhouse was a very skilled designer who worked diplomatically with a wide variety of institutions and individuals. He was enormously successful across the country and his legacy has lasted well. His major building in London was the Natural History Museum in South Kensington (1870–80), faced in self-cleaning terracotta.

The Manchester Museum

The origins of The Manchester Museum lie in the collection of the Manchester manufacturer and collector John Leigh Philips (1761–1814). After his death, a small group of wealthy men banded together to buy his collection and in 1821 they set up the Manchester Natural History Society.

The museum was the major focus of the Society, and it was housed from 1835 in grand premises on Peter Street.

(top)
The extension and bridge, completed in 1912.

(middle-left)
The Museum, viewed from a cobbled Oxford Road, before its 1927 extension.

(middle-right)
The taxidermist Harry Brazenor sits upon the whale skeleton he installed in 1898.

The museum, pictured here in 1940 prior to the Christmas blitz, provided an air raid shelter during World War II.

The collections continued to grow as members and others donated objects from around the world. In 1850 the museum absorbed the collections of the Manchester Geological Society.

By the 1860s the Natural History Society had little money and the building was full. The museum was transferred in 1868 to Owens College and became known as The Manchester Museum. The first of the Museum's buildings opened on to the public in 1890. Thomas Henry Huxley had advised on the layout, while Alfred Waterhouse had designed the fittings and the building. The Museum served the Manchester public but it was also connected with the Beyer Building for geology, zoology and botany – subjects for which the Museum's specimens featured in teaching and research.

Many more objects were donated and the Museum was extended in 1912–13 and again in 1927. These new buildings, designed by Waterhouse's son and grandson, displayed new ethnographic and Egyptology collections. They were funded largely by Jesse Haworth, a local textile merchant and keen Egyptologist.

The Beyer Building

The building is named after the engineer Charles Beyer (1813–76). It was completed in 1888 for geology, zoology and botany, and was linked to the Museum for access to the collections. Many academics of note taught here.

William Crawford Williamson (1816–95), a naturalist and doctor, taught natural history and botany at Owens College from its foundation until his retirement in 1892. His specialism was fossil plants, for which he acquired a world reputation.

The Beyer Building following cleaning, 1972.

Beyer Building in the Old Quad, 1920s.

Williamson's successor, Frederick Ernest Weiss, greatly expanded the botany department and later became vice-chancellor of the Victoria University of Manchester.

William Boyd Dawkins (1837–1929), the fossil hunter and economic geologist, came to Manchester as the curator of the Manchester Museum and became Professor of Geology in 1874. He was largely responsible for the layout of the Manchester Museum when it opened. Dawkins is widely known for studies on ancient hyenas, rhinoceroses and early man. He also worked as surveyor on a project to construct a Channel tunnel from 1882, which was later abandoned due to lack of funds, and helped discover the Kent coalfield.

Arthur Milnes Marshall (1852–93) came to Manchester from Cambridge, where he had worked in the biological sciences, especially embryology. He became Professor of Zoology at Owens in 1879 and his work examined the development of the brain. A brilliant teacher and evening lecturer, he was also a keen mountaineer. Like a number of Victorian scientists, he died young in a climbing accident.

Charles Beyer

1813–1876

Charles Beyer was an accomplished engineer known worldwide for Beyer-Peacock locomotives. He came to Manchester aged 21 and, like other German engineers and industrialists in the city, he appreciated and supported scientific education in colleges – rather than simply relying on training by apprenticeship, which remained the usual British route. He was also a founding member of the Institution of Mechanical Engineers.

Beyer was widely involved with the city's educational institutions and became a governor of Owens College in the 1860s. He was one of the first to promote the idea of a great extension to the College; he took a lead in the successful public fundraising campaign to expand its scope of work and make the move from the city centre to this site. His enormous contribution in leadership and philanthropy is recognised in the naming of the Beyer Building.

A firm believer in the merits of technical and scientific education, he made gifts to the chemistry, zoology and mathematics departments, as well as the first contribution to the College's inaugural Chair of Civil and Mechanical Engineering in 1868. The largest single gift was in his legacy: the Beyer Chair in Applied Mathematics, held today by Professor David Abrahams, over 130 years after its endowment.

Beyer is still the most generous personal benefactor in the history of the University and its predecessor institutions. His philanthropic donations, including his lifetime giving and legacy, total almost £10 million by today's value and have had a transformative impact upon the educational landscape of the city.

The Library as viewed from the Quad.

The Christie Library

When Owens College opened on the Oxford Road site in 1873 its library was in the main building, now the John Owens Building. The Christie Library was built between 1895 and 1898 to house the College's main book collections and is named after Richard Copley Christie, who paid for the building and donated a collection of 75,000 books, most of which are in connection with his studies of the Renaissance. This gift of books, now housed at the University's John Rylands Library, is especially notable for the early printed books on which Christie was a world authority.

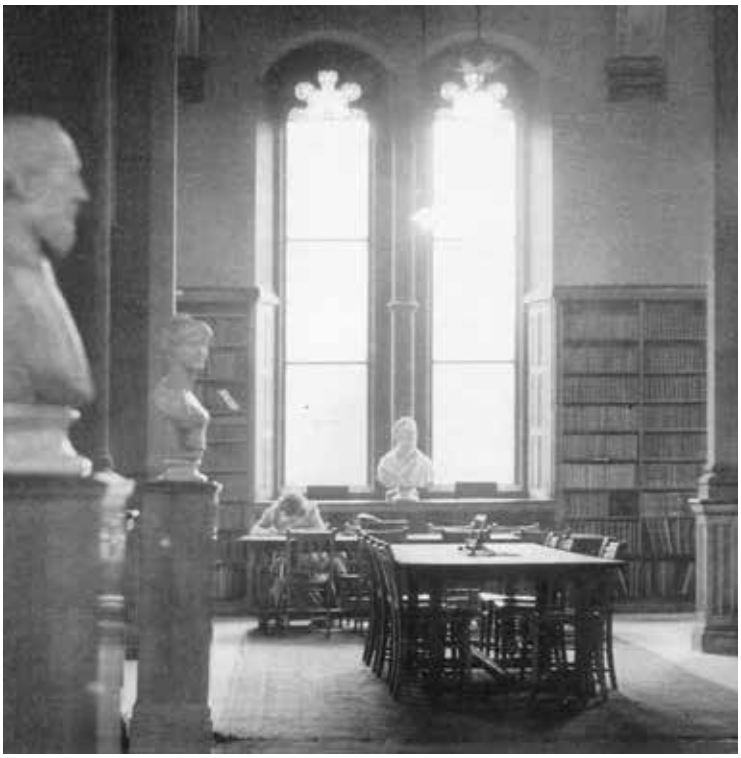
The Library's gothic architecture, designed by Alfred Waterhouse, is more relaxed than the buildings which front on to Oxford Road. The Library connects with the slightly later Whitworth Hall, and there was once to have been a bridge linking it with the main building.

On the main staircase of the Library is a memorial window for Christie that shows him surrounded by Owens College and Manchester Cathedral, which he also served. As he was a historian of the Renaissance, he is flanked by Erasmus, the great Dutch humanist, and by Aldus, the Venetian scholar and printer whose pioneering small-format printed books Christie collected.

Extension to the science library in the 1950s.

Christie's memorial window on the main staircase.

Inside the Library, 1939.



After a new arts library was opened in 1937 the Christie Library served the sciences (though the Medical School had its own library until 1974). From 1982 the sciences joined arts and medicine in the extended main library.

Richard Copley Christie

1830–1901

Christie was the son of a Manchester mill owner from Edale in the Peak District. He was educated at Lincoln College, Oxford, where he learned to be a literary scholar and to see scholarship as a vocation central to universities – not a common view at the time, except in Germany.

In 1853, aged 23, he returned to become Professor of Ancient and Modern History at the new Owens College. The next year he added the chair of Political Economy and Commercial Science and, having originally intended to study law, trained as a barrister at Lincoln's Inn. In 1855 he added law to his teaching, and in 1857 began to practise in Manchester.

He was a keen supporter of education for working men as well as higher education, but the growth of his legal practice caused him to withdraw from his teaching work by 1869.

He was a close associate of the engineer Sir Joseph Whitworth. When Whitworth died in 1887, Christie became one of three trustees of Whitworth's fortune, from which Christie paid for the building of the Whitworth Hall. From his own resources he paid for the building of the Christie Library.

Christie's wife helped persuade him to give funds for the Cancer Pavilion, opened in 1892, which grew into the Christie cancer hospital in Withington.

The Whitworth Hall

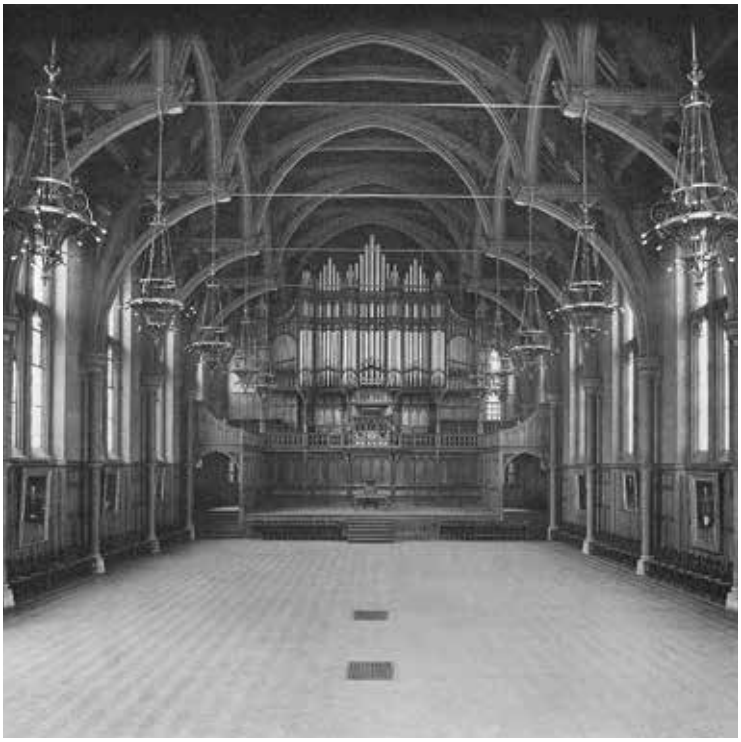
The magnificent Whitworth Hall commemorates Sir Joseph Whitworth, the Manchester engineer known the world over for precision engineering, standardisation of screws, and innovative guns. He is also remembered in Manchester for his support of higher education, especially for the projects funded by his executors.

When Whitworth died in 1887, Richard Copley Christie, a professor at the University, was appointed as one of his three executors. From the fortune Whitworth left the executors, Christie paid for the building of the Whitworth Hall.

The hall, like the rest of the quad, was designed by Alfred Waterhouse, but completed by the architect's son Paul. Building work started in 1898 and completed in 1902.

The height and rhythm of the hall echo the similar gothic style of the Museum building, to which it is connected by an archway. Features of note include the towers and large perpendicular-style window at the south end, the full-scale organ, and the wonderful hammer-beam timber roof.

The Whitworth Hall seen from Oxford Road, 1944.



The great window includes coats of arms of the 'textile towns', celebrating the University as a 'centre of intelligence' for an industrial region that then dominated the world trade in cotton. Panels inside the hall commemorate the many local citizens who have supported the University from its origins.

The organ, shown here in 1908, was largely rebuilt in 1962.

Examinations in the Hall, 1939.

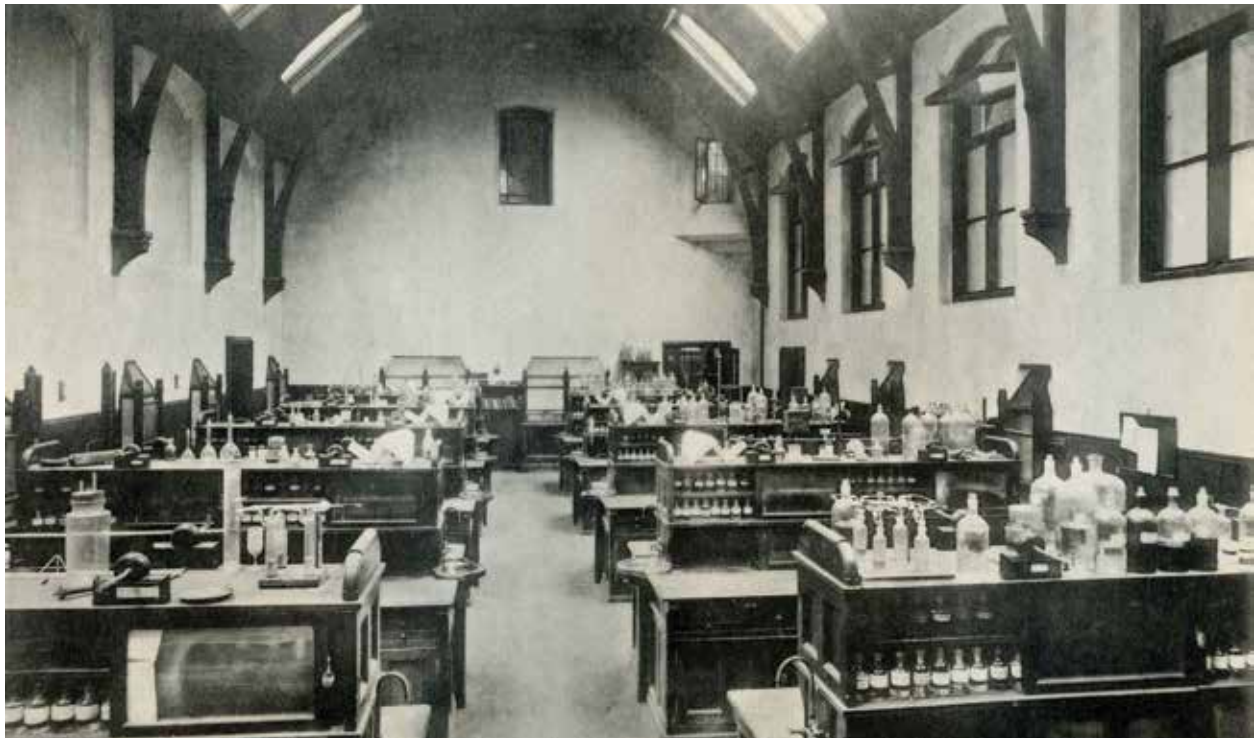
Sir Joseph Whitworth

1803–1887

Joseph Whitworth had a difficult childhood: his mother died when he was 11 and his father placed his three children with foster parents in order to train for religious ministry. He became a mechanic in Manchester and later moved to the engineering works of Henry Maudslay in London, a 'nursery' of engineering talent. There he devised a method for making metal planes very accurately – such planes were a prerequisite for high-precision engineering. After working for other leading London engineers he returned to Manchester and established a business making machine tools such as lathes. He became known for measuring devices accurate to ten nanometres, and especially for his system of standardised screw threads. In 1857 he was elected to the Royal Society and in 1869 was made a baronet.

From 1854, at the request of the British government during the Crimean War, Whitworth experimented with new rifle designs which he demonstrated in the grounds of his Manchester home, now Chancellors, the University's hotel in Fallowfield. His innovative designs proved highly profitable.

Whitworth left most of his wealth (£900,000, or £55 million in today's money) to three trustees to give to causes important to him. The trustees funded a national system of engineering scholarships and secured land for the building of teaching hospitals on Oxford Road and the Manchester Technical School on Sackville Street. They also created the Whitworth Art Gallery and Whitworth Park, and their several donations to Owens College included the magnificent Whitworth Hall.



Henry Roscoe's chemistry laboratories

The first buildings on the Oxford Road site included Henry Roscoe's chemistry laboratories, with fittings designed by Alfred Waterhouse. The laboratories rivalled the best in Germany and were later much extended. Through the mid-20th century Manchester remained Britain's outstanding chemistry department, especially for organic chemistry.

The quantitative laboratory of the chemistry department, now the University's Student Services Centre.

The Medical School building

The Medical School opened in 1874 to incorporate Manchester's hitherto private Royal School of Medicine and Surgery (formed from an amalgamation of the city's medical schools and given its royal title in 1836). The building was extended twice; the huge second extension opened in 1894. In 1908 the main teaching hospital moved from Piccadilly in the city centre to the present site on Oxford Road, just south of the University.

The Medical School premises, now the Coupland III Building.

The physical labs in 1908.

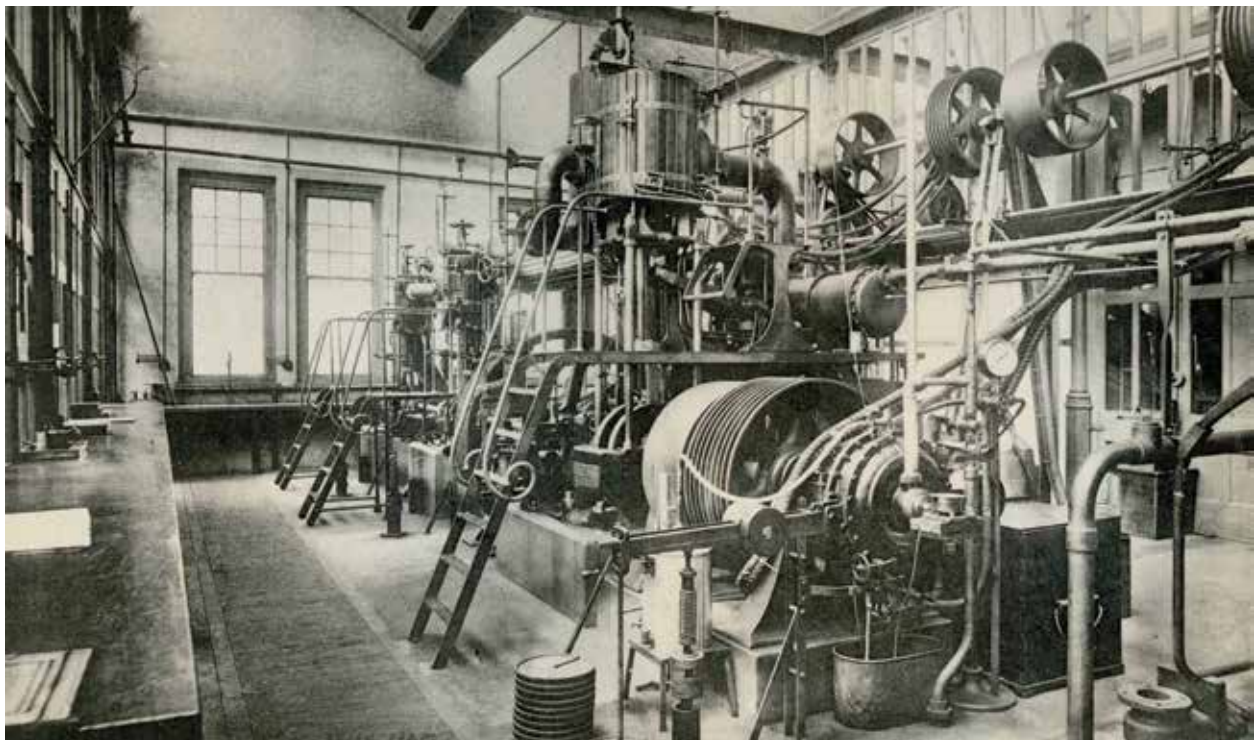
The Rutherford Building

The Rutherford Building was designed by James William Beaumont and completed in 1901. Its design was a true collaboration between the then Professor of Physics, Arthur Schuster, and the architect to design a world-leading laboratory. It was here that Ernest Rutherford conducted his groundbreaking research on atomic physics and first split the atom in 1917.

The engineering laboratory

Engineering had its own laboratory from 1887, which was replaced with a new one in 1909; both were named after Whitworth. Physics was taught in the basement of the main building until the opening of Schuster's laboratory on Coupland Street in 1901.

Experimental engines in the engineering laboratories.



Watercolour of the Arts Building, exhibited at the Royal Academy in 1913.

The Samuel Alexander Building

The Samuel Alexander Building was constructed between 1911 and 1919 to a design by Percy Scott Worthington and originally known as the Faculty of Arts Building. It was one of the first buildings designed and constructed for the University after the Old Quad was completed.

The building was named after the Professor of Philosophy, Samuel Alexander, who had grown up in Melbourne, Australia. He studied philosophy at Oxford and visited Germany to learn about psychology, then a new discipline.

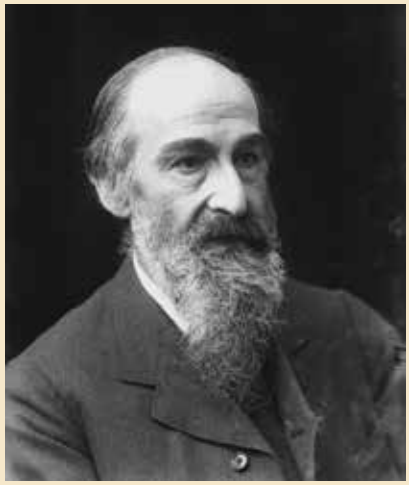
Alexander supported education for women and he encouraged female academics. He argued for the inclusion of technical education and for the regional role of universities. He saw the University as a place for training of men and women for professional vocations, but with an independence of thought and action developed through critical study.

The bust of Samuel Alexander greets visitors as they enter the building.

A student works in the building's Philip Haworth Library.

He was wonderfully intellectually convivial; on Wednesday evenings his home was open house for colleagues young and old. Everyone knew the big man with the long beard and untidy clothes who cycled in from Withington. In 1930 his distinction was recognised nationally by the Order of Merit.

'Sammy's bust' (by Jacob Epstein, 1925), pictured left, welcomes visitors into the foyer of the Samuel Alexander Building and is a campus landmark.



Samuel Alexander

1859–1938

Samuel Alexander was an Australian who became the first Jewish fellow of an Oxbridge college. He was Professor of Philosophy at Manchester from 1893 to 1925 and remained active at the University to his death. With Thomas Tout and the physicist Arthur Schuster, he helped create a university that treated men and women equally, provided intellectual grounding for the professions, and served the Manchester region, as well as the world of scholarship.

In his writings he strove to connect classical and German philosophy with the biological and physical sciences of his time, especially evolutionary theories. Charles Darwin's work and the space-time revolution in physics had persuaded him that the whole of nature was fundamentally historical. His great work *Space, Time and Deity* was published in 1920; his last article was 'The Historicity of Things' (1936).

Manchester pioneers

Some of the world's most influential thinkers have been associated with the University. Since John Owens stipulated that the college founded in his name should have no religious tests for entry – and the Mechanics' Institution pushed to extend education to the working classes – the University has sought to welcome students and scholars to our community based on their merits. For over 190 years we have been breaking down the barriers that limited access to education and pushing the boundaries of human knowledge.

Commemorative plaques on campus

We commemorate many of the individuals who have made history at Manchester with plaques around our campus. Turn to the history and heritage map on pages 36–37 for the location of these plaques and our historical buildings.

Anthony Burgess
1917–1993 1

Writer and composer

John Anthony Burgess Wilson was born and raised in Manchester. He studied English at the University before serving in the army during World War II. He became a notable composer of many kinds of music, as well as a prolific novelist, literary critic and translator. *A Clockwork Orange* is his best-known novel.

Catherine Chisholm
1878–1952

Feminist and paediatrician

In 1904 Catherine Chisholm became the first woman to graduate in medicine from Manchester Medical School. After being refused a hospital post, she helped set up the Manchester Hospital for Babies and became an expert on child health.

Alison Uttley
1884–1976 9

Children's author

In 1906 Alison Uttley became the second woman to graduate with honours from the University. A physicist by training, she began writing in 1930 to support herself and her young son after the death of her husband. Her early books were tales about animal characters such as Little Grey Rabbit, Little Red Fox and Sam Pig, but she also wrote for older children and adults. In 1970 the University awarded her the honorary degree of Litt. D.

Peter Mark Roget
1779–1869 4

Physician and *Thesaurus* compiler

Peter Mark Roget was a physician at the Manchester Infirmary who lectured to medical students and Manchester societies around 1806. He later practised medicine in London, becoming well known as a writer on scientific topics, including moving images. In retirement he compiled his *Thesaurus of English Words and Phrases*, which has remained in print continuously since 1852.

Bernard Lovell
1913–2012

Radio astronomer and physicist

Bernard Lovell was a professor of physics and is best known for the steerable radio telescope that bears his name – the Lovell Telescope at Jodrell Bank in Cheshire. On completion in 1957 it was the world's largest steerable radio telescope. At the height of the Cold War it became famous for tracking the USSR's Sputnik rockets. The telescope is still used to observe cosmic rays today, while Jodrell Bank controls an array of radio telescopes distributed around the UK. The site is also the headquarters of the global Square Kilometre Array project to build the world's largest radio telescope.

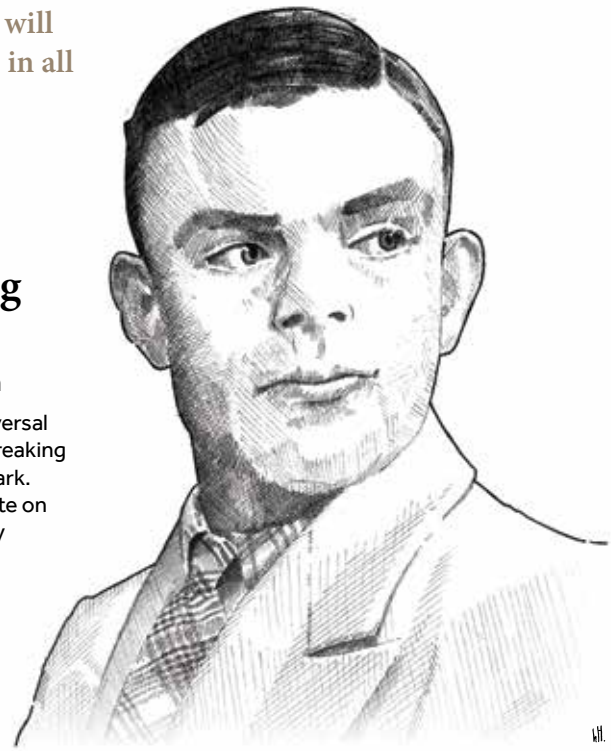
Osborne Reynolds
1842–1912

Engineer

The son of a minister and teacher, Osborne Reynolds worked with an engineer in Stony Stratford before studying mathematics in Cambridge. At the age of 26 he was appointed to the new Professorship in Engineering at Owens College, paid for by local industrialists. He taught here for 37 years and helped create the first Whitworth Engineering Laboratory (1887) behind the main building. His many distinguished pupils included the physicist JJ Thomson. Reynolds's investigations of lubrication, turbines, pumps, estuaries and water waves were always remarkably original and often directly useful. He is now best known for the Reynolds number, which helps predict the velocity at which the smooth flow of a liquid in a tube becomes turbulent.

"We may hope that machines will eventually compete with men in all purely intellectual fields."

Alan Turing



Alan Mathison Turing
1912–1954 8

Code-breaker and mathematician

Alan Turing introduced the idea of a universal computer in 1937. He helped lead the breaking of German military codes at Bletchley Park. Then, in Manchester, from 1948, he wrote on machine intelligence and used the newly created electronic computer to develop a highly original model of pattern formation in animals and plants. In 1954 he committed suicide, a year after he was prosecuted, and then 'treated', for his homosexuality.

Tom Kilburn
1921–2001 3

Electrical engineer

While on secondment in Manchester from the Telecommunications Research Establishment, Tom Kilburn led the design and build of the Baby, while promulgating the breakthrough ideas presented in Williams's cathode-ray tube storage. The computer ran its first program in 1948 – a world first. On completion of his secondment he stayed at the University as a lecturer, before forming the computer science department – one of the first in the UK – and becoming its first professor.

Freddie Williams
1911–1977 3

Electrical engineer

In 1948 Freddie Williams, working with Tom Kilburn in the Electrical Engineering department, witnessed their experimental machine, known as 'the Baby', successfully execute a program. It was the world's first digital stored-program computer. The Baby was succeeded by the Manchester Mark I and then the Ferranti Mark I, which became the world's first general-purpose commercial computer. Aside from this world-changing work, Williams created the first operational amplifier and automatic transmission for motor vehicle engines.

Ellen Wilkinson
1891–1947 10

Labour politician and first female minister of education

Born to a working-class family in Manchester in 1891, Ellen Wilkinson won scholarships for every stage of her education and began a degree in history at the University in 1910. A fervent socialist, she was elected to Manchester City Council in 1923 and as an MP for Middlesbrough East in 1924, then again for Jarrow in 1935. In 1945 Clement Atlee appointed her as the first female minister for education.

Frank Worrell
1924–1967 11

International cricketer

A hugely talented all-round cricketer, Frank Worrell graduated from the BA Admin course in 1959. A year later he was captain of the West Indies, the first black man to captain the side for an entire series. Worrell led the team to world dominance in the early 1960s and, after his retirement from cricket, became a Jamaican senator. The winners of West Indies v Australia test matches are awarded the Frank Worrell Trophy in his honour.

George Gissing
1857–1903

Novelist

George Gissing, the son of a Yorkshire pharmacist, showed huge promise as a student at Owens College. However, in 1875 he fell in love with a street girl, stole from fellow students to support her, and spent a month in jail with hard labour. In spite of this disgrace and subsequent tragic relationships, he managed to maintain a literary career. His fearless and original novels of conscience, including *New Grub Street*, came to be well recognised. He knew Thomas Hardy and was a friend of HG Wells. He wrote about young men who were "well educated, fairly bred but without money".

William Stanley Jevons
1835–1882

Political economist and logician

William Stanley Jevons trained in chemistry, like his cousin Henry Roscoe. Aged 19, he was appointed to head the first overseas branch of the British Royal Mint – in Sydney, Australia. His wide interests came to include social sciences, and he returned to London to retrain. From 1863 to 1876 he taught political economy and philosophy in Manchester, writing foundational studies on formal logic and on the philosophy of science, as well as political economy. His well-known book *The Coal Question* was the first to raise now topical questions about our use of natural resources. His mathematical approach to economic transactions focused on the demand for goods and services rather than their production; it helped bring about the 'neo-classical' revolution, the basis of much modern economics.

Marie Stopes
1880–1958 7

Palaeobotanist and pioneer of family planning

Marie Stopes taught fossil botany at the University from 1904 to 1907. She was the first female lecturer in the Faculty of Science and, in 1905, Britain's youngest doctor of science. She went on to campaign for women's suffrage, family planning and better understanding of sexuality. Her 1918 book, *Married Love*, was a best seller. In 1921, in London, she founded the pioneering Mothers' Clinic for Birth Control.

John Henry Reynolds
1842–1927

Principal of the Manchester Municipal School of Technology

Appointed as secretary of the Mechanics' Institution in 1879, John Henry Reynolds generated the support from local merchants that allowed the creation of the Manchester Technical School. His time as principal also saw the building of new premises, inspired by technical institutes from overseas, which remains today as the Sackville Street Building. A self-taught son of a shoemaker, Reynolds would eventually combine his role at the School with the post of Director of Higher Education for the City.

Roy Chadwick
1893–1947

Aircraft engineer

Roy Chadwick was born at Farnworth in Lancashire and educated at the Manchester College of Technology. Fascinated with flying machines from an early age, he worked with Alliott Verdon-Roe, aviation pioneer and founder of Avro.

Chadwick's genius for aircraft design was recognised after World War I and his Avro Avian became famous for the record-breaking flights from England to Australia. His greatest triumph was the Lancaster, capable of carrying a ten-ton bomb and used extensively during World War II. Later, he designed the first pressurised civil aeroplane in the world – the Tudor – which proved its worth on the Berlin airlift.

During his life he designed 40 successful aircraft. He was appointed CBE and the University awarded him an honorary MSc in 1944.

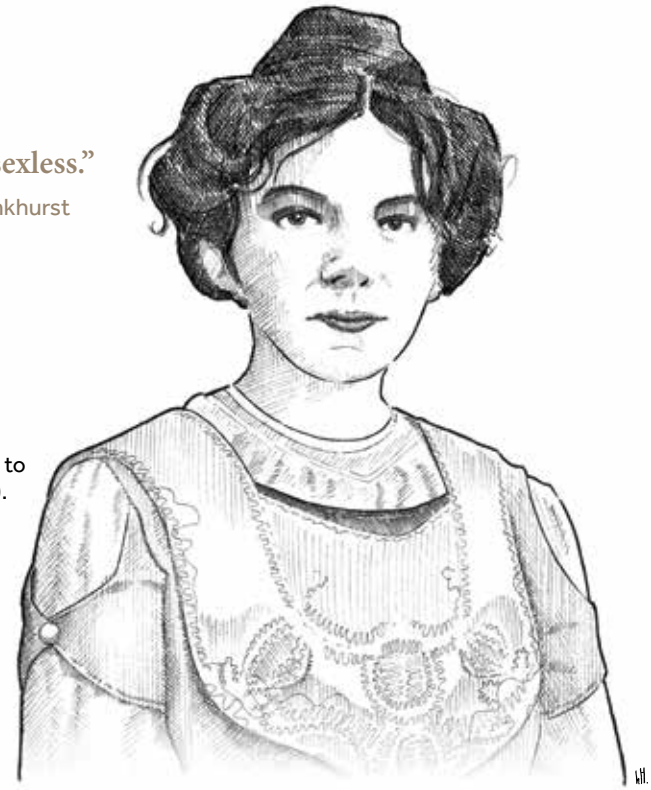
Horace Lamb
1849–1934

Mathematician

Horace Lamb grew up in Stockport and studied mathematics in Owens College and Cambridge. He taught in Australia before returning to Manchester in 1895 as Professor of Mathematics. Until his retirement in 1920 he was a lucid and inspiring teacher. His textbook on hydrodynamics ranks as an all-time great. He created mathematical models of earthquakes and did important aeronautical research during and after World War I. He was also an accomplished linguist, a great traveller and an effective administrator. In the judgement of his colleague Ernest Rutherford, Lamb was the very model of a modern university professor.

"Ability is sexless."

Christabel Pankhurst



Christabel Pankhurst
1880–1958

Suffragette

Christabel Pankhurst was the first woman to graduate from the University in law (1906). Refused permission to train as a barrister, she campaigned for votes for women, along with her mother Emmeline and her sister Sylvia.

Bertram Vivian Bowden
1910–1989

Principal of UMIST

Bertram Vivian Bowden was a driving force in the transformation of the Manchester College of Science and Technology into UMIST, committed to the creation of "industry's university" and the expansion this would require. En route to his distinguished career as principal at the institution, he undertook work on radar during wartime and even spent time in the employment of Ferranti as one of the first computer salesmen. In 1964 Bowden was appointed minister for education and science in Harold Wilson's government.

George Edward Davis
1850–1906

Chemical engineer

Credited with the establishment of chemical engineering as a discipline, George Edward Davis gave a series of 12 lectures at the Manchester School of Technology that lay the foundations for his *Handbook of Chemical Engineering* in 1901. He had also been an important figure in the formation of the Society of Chemical Industry 20 years earlier.

Nobel laureates

The University of Manchester has a rich academic history. We can lay claim to 25 Nobel laureates among our current and former staff and students, from JJ Thompson in 1906 to Andre Geim and Kostya Novoselov in 2010.

Here are some of the Manchester people whose work has won this most prestigious of prizes.

Archibald Vivian Hill

1922 Nobel Prize in Physiology or Medicine

Archibald Vivian Hill shared the 1922 Nobel Prize in Physiology or Medicine with Otto Myerhof. Hill's physical studies of heat production and muscle mechanics had correlated revealingly with Myerhof's biochemical research. From 1923 Hill worked at University College London, leading the development of biophysics. He was active in the politics of science and especially important in resettling Jewish scientists from Nazi Germany.

After training and research in physiology at Cambridge, Hill worked on ballistics during World War I. In 1920 he was appointed at Manchester as Brackenbury Professor of Physiology. He rapidly renovated the department and developed his sophisticated measurements of heat production during and after muscle contraction. One of the University's life sciences buildings was named after him in 2008.

William Lawrence Bragg

1915 Nobel Prize in Physics 12

While still a research student, William Lawrence Bragg discovered the law by which the positions of the atoms in crystals could be calculated from the way an x-ray beam is diffracted. In 1915, aged 25, he was the youngest ever winner of the Nobel Prize in Physics – which he won jointly with his father, William Henry Bragg, then a professor at Leeds.

Educated in Adelaide and Cambridge, Bragg served in World War I. He then succeeded Rutherford as Langworthy Professor of Physics at Manchester, where he remained until 1937, building an important research programme in crystallography. When Bragg was back in Cambridge from the 1940s, this subject proved crucial for the structural analysis of DNA and proteins.

"It was quite the most incredible event that has ever happened to me in my life. It was almost as incredible as if you fired a 15-inch shell at a piece of tissue paper and it came back and hit you."

Ernest Rutherford, recalling the 1909 discovery of the atomic nucleus

Ernest Rutherford 5 6

1908 Nobel Prize in Chemistry

Ernest Rutherford came from New Zealand to study with JJ Thomson in Cambridge. He then worked with the chemist Frederick Soddy at McGill University, showing that radioactive substances decay at constant rates, emitting characteristic radiations: alpha and beta particles and gamma rays. He received the Nobel Prize in Chemistry in 1908 while he was Langworthy Professor of Physics at Manchester.

In the laboratory built at the University by Arthur Schuster, Rutherford created a world centre for experiments in atomic physics. Highlights included an experiment in 1909 by Ernest Marsden (still an undergraduate) and Hans Geiger that suggested that atoms have dense nuclei; the nuclear model of atomic structure (1911); and the first artificial transmutation of an atomic nucleus (1917). He moved to work at Cambridge from 1919.

John Douglas Cockcroft

1951 Nobel Prize in Physics

John Douglas Cockcroft shared the 1951 Nobel Prize in Physics with Ernest Walton. At Cambridge they had created the first proton accelerator and used it to bombard lithium atoms. The resulting production of helium atoms was the first artificial nuclear transformation and a potential source of many new isotopes. From 1943 he helped lead Britain's atomic programme, initially in Canada and then at Harwell.

Cockcroft, the son of a mill owner in Todmorden, studied mathematics at the Victoria University of Manchester and served in World War I. He then studied electrical engineering at the Manchester Municipal College of Technology before becoming a college apprentice at the local Metropolitan-Vickers engineering company. After his work in Ernest Rutherford's laboratory at Cambridge he helped organise radar defence during World War II.

John Richard Hicks

1972 Nobel Prize in Economic Sciences

John Richard Hicks shared the 1972 Prize in Economic Sciences with Kenneth Arrow for general equilibrium theory and welfare economics. Hicks created widely used conceptual tools for the analysis of price mechanisms, technical change and demand for money. He was suspicious of theory for theory's sake, the American idealisation of free markets and reliance on econometrics for contact with reality.

Hicks taught at the London School of Economics from 1926 after trying journalism at the *Manchester Guardian*. His pioneering work on general equilibrium theory was published while he was Professor of Political Economy at Manchester (from 1938 to 1946), after which he worked at Oxford. A close friend of the Manchester economic historian Thomas Southcliffe Ashton, he published *A Theory of Economic History* in 1969.

"May every young scientist remember ... and not fail to keep his eyes open for the possibility that an irritating failure of his apparatus to give consistent results may once or twice in a lifetime conceal an important discovery."

Patrick Maynard Stuart Blackett

Patrick Maynard Stuart Blackett

1948 Nobel Prize in Physics

Patrick Maynard Stuart Blackett photographed the tracks of atomic nucleus disintegration using Charles Thomas Rees Wilson's cloud chamber, which he automated so that cosmic rays could take their own photographs. He confirmed the existence of positrons (positive electrons) and that gamma rays can transform into electrons and positrons (pair production). In 1948 he received the Nobel Prize in Physics while working at Manchester.

Blackett trained for the navy and served in World War I before studying physics with Ernest Rutherford at Cambridge. He was Langworthy Professor of Physics at the University from 1937 to 1953. His investigations into cosmic rays helped lead to Bernard Lovell's work at Jodrell Bank, and his later research on geomagnetism was important for the plate tectonic revolution in geology. He was a leading advocate of 'planned science'.

Arthur Lewis

1979 Nobel Prize in Economic Sciences

Arthur Lewis received the Nobel Prize in Economic Sciences in 1979, becoming the first black winner in a category other than Peace. He placed 'development' in historical context, stressing the transfer of labour from the traditional agricultural sector to the more productive industrial sector. In his view, development was not an exercise in applied neo-classical economics – political, social and cultural influences were vital.

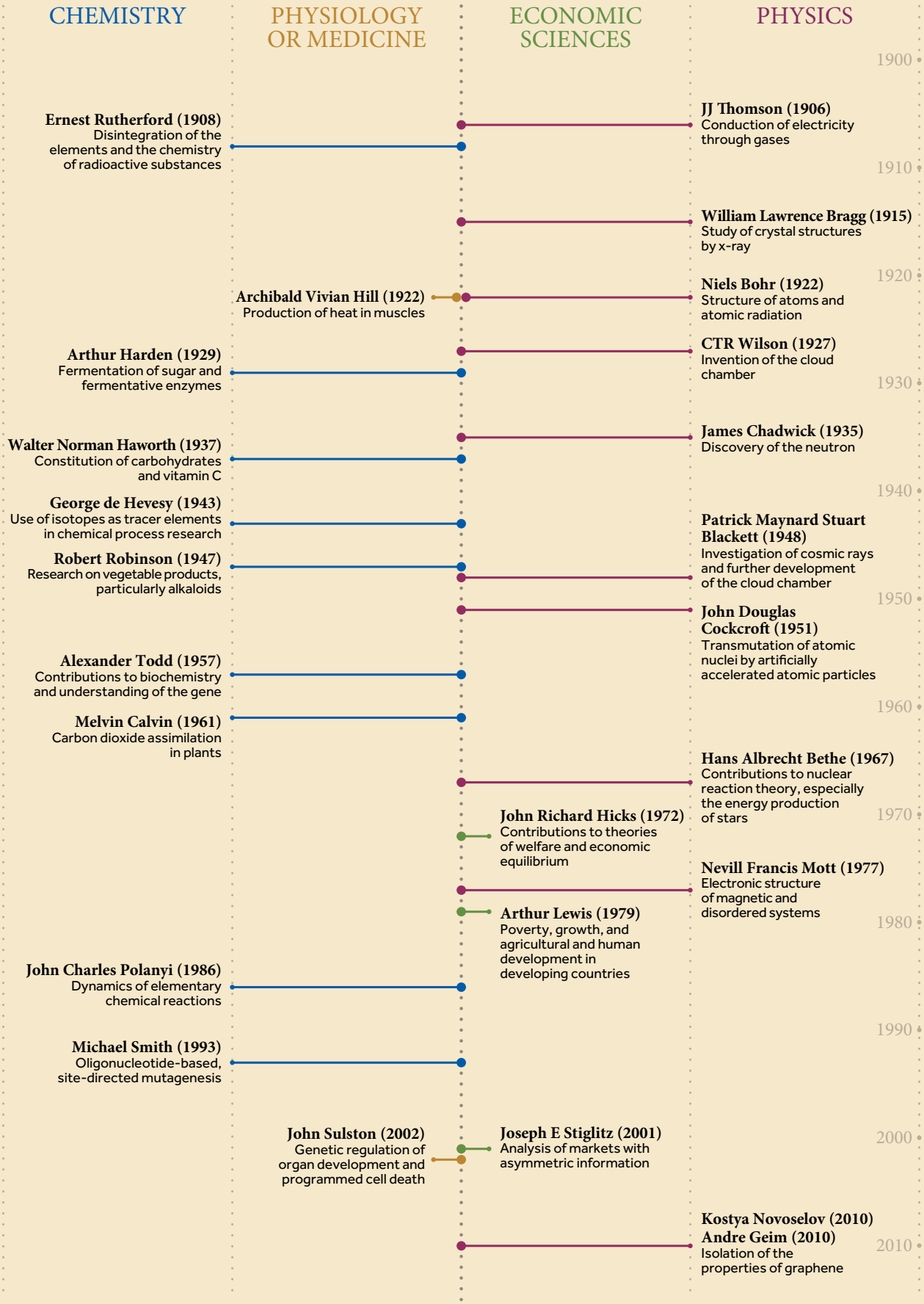
Lewis, from Saint Lucia, studied and taught at the London School of Economics. On his appointment at Manchester in 1948 he became Britain's first black professor. He made his major contributions to development economics while at Manchester, teaching many Asian and African students. He advised the Colonial Office and, briefly, the newly independent Ghana. From 1958 to 1963 he led the University College of the West Indies, and he later worked at Princeton.

Michael Smith

1993 Nobel Prize in Chemistry

Michael Smith shared the 1993 Nobel Prize in Chemistry for work on site-directed mutagenesis. In the 1970s he discovered that single strands of synthetic DNA could bind to virus DNA, even if one base was incorrect – which provided a way of engineering DNA and thus proteins. In a range of private and public research centres, he explored potential medical and commercial applications.

Smith came from Blackpool and won a scholarship to study chemistry at Manchester. After a PhD here in 1956 he took a postdoctoral fellowship at the University of British Columbia in Vancouver, to which he was attached for most of his career. In 2004 Manchester's new biological sciences building was named in his honour.


CHEMISTRY
PHYSIOLOGY OR MEDICINE
ECONOMIC SCIENCES
PHYSICS
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
Ernest Rutherford (1908)
Disintegration of the elements and the chemistry of radioactive substances
JJ Thomson (1906)
Conduction of electricity through gases
William Lawrence Bragg (1915)
Study of crystal structures by x-ray
Archibald Vivian Hill (1922)
Production of heat in muscles
Niels Bohr (1922)
Structure of atoms and atomic radiation
Arthur Harden (1929)
Fermentation of sugar and fermentative enzymes
CTR Wilson (1927)
Invention of the cloud chamber
James Chadwick (1935)
Discovery of the neutron
Walter Norman Haworth (1937)
Constitution of carbohydrates and vitamin C
George de Hevesy (1943)
Use of isotopes as tracer elements in chemical process research
Patrick Maynard Stuart Blackett (1948)
Investigation of cosmic rays and further development of the cloud chamber
Robert Robinson (1947)
Research on vegetable products, particularly alkaloids
John Douglas Cockcroft (1951)
Transmutation of atomic nuclei by artificially accelerated atomic particles
Alexander Todd (1957)
Contributions to biochemistry and understanding of the gene
Melvin Calvin (1961)
Carbon dioxide assimilation in plants
Hans Albrecht Bethe (1967)
Contributions to nuclear reaction theory, especially the energy production of stars
John Richard Hicks (1972)
Contributions to theories of welfare and economic equilibrium
Nevill Francis Mott (1977)
Electronic structure of magnetic and disordered systems
Arthur Lewis (1979)
Poverty, growth, and agricultural and human development in developing countries
John Charles Polanyi (1986)
Dynamics of elementary chemical reactions
Michael Smith (1993)
Oligonucleotide-based, site-directed mutagenesis
John Sulston (2002)
Genetic regulation of organ development and programmed cell death
Joseph E Stiglitz (2001)
Analysis of markets with asymmetric information
Kostya Novoselov (2010)
Andre Geim (2010)
Isolation of the properties of graphene

About University History and Heritage

The University of Manchester is committed to researching and conserving our rich history and heritage, and to engaging students, staff, alumni and the public with our past.

Our approach is based around three interconnected themes.

Research

Our University History Research Group is composed of research-active staff from across the institution whose interests include our history and its place in a global context. The group's research has recently focused on topics such as our historic built environment, the history of medicine in Manchester, our innovations in teaching and the impact of World War I.

Conservation

Our history is all around us and is cared for across the University. Our University Archive is the chief source of material relating to our past while individual specialised collections, such as the Museum of Medicine and Health, care for a range of artefacts and archives. Our historic buildings undergo a constant programme of maintenance and restoration, and our past is evident through plaques, memorials and artwork across our estate.

Engagement

We make our history and heritage activities available to all through a range of activities. We offer regular campus history tours, historical displays, lectures, talks and publications. These cover the full diversity of the University's history, including our origins and development, the social and cultural history of our students, staff and alumni, the history of our research and teaching, our built environment, and our place in Manchester and the world.

To find out more about University History and Heritage, our tours and how you can help, visit www.manchester.ac.uk/heritage.

(left)
The Museum of Medicine and Health.

(right)
World War I memorial in the Old Quad.

University History and Heritage tours.

Student letters from the University archive.

History and heritage map

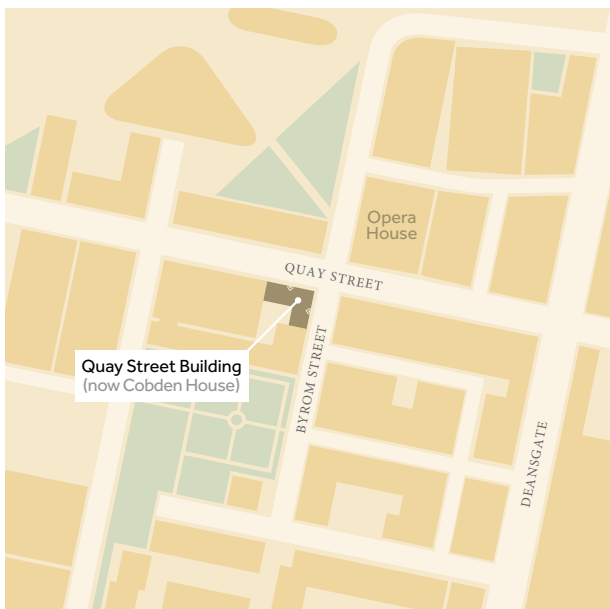
Many of our historic buildings can be seen today around campus and in the city centre. The maps on these pages show where they are located.

You can also view our commemorative plaques on campus – use the key opposite to find them on the map.

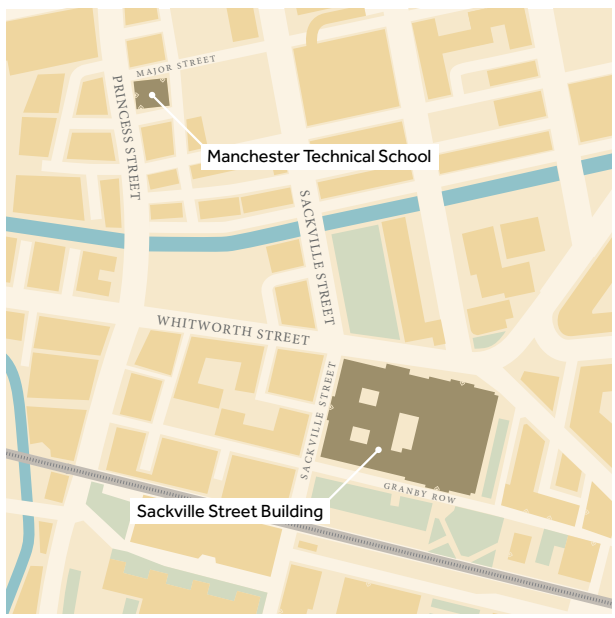
Commemorative plaques

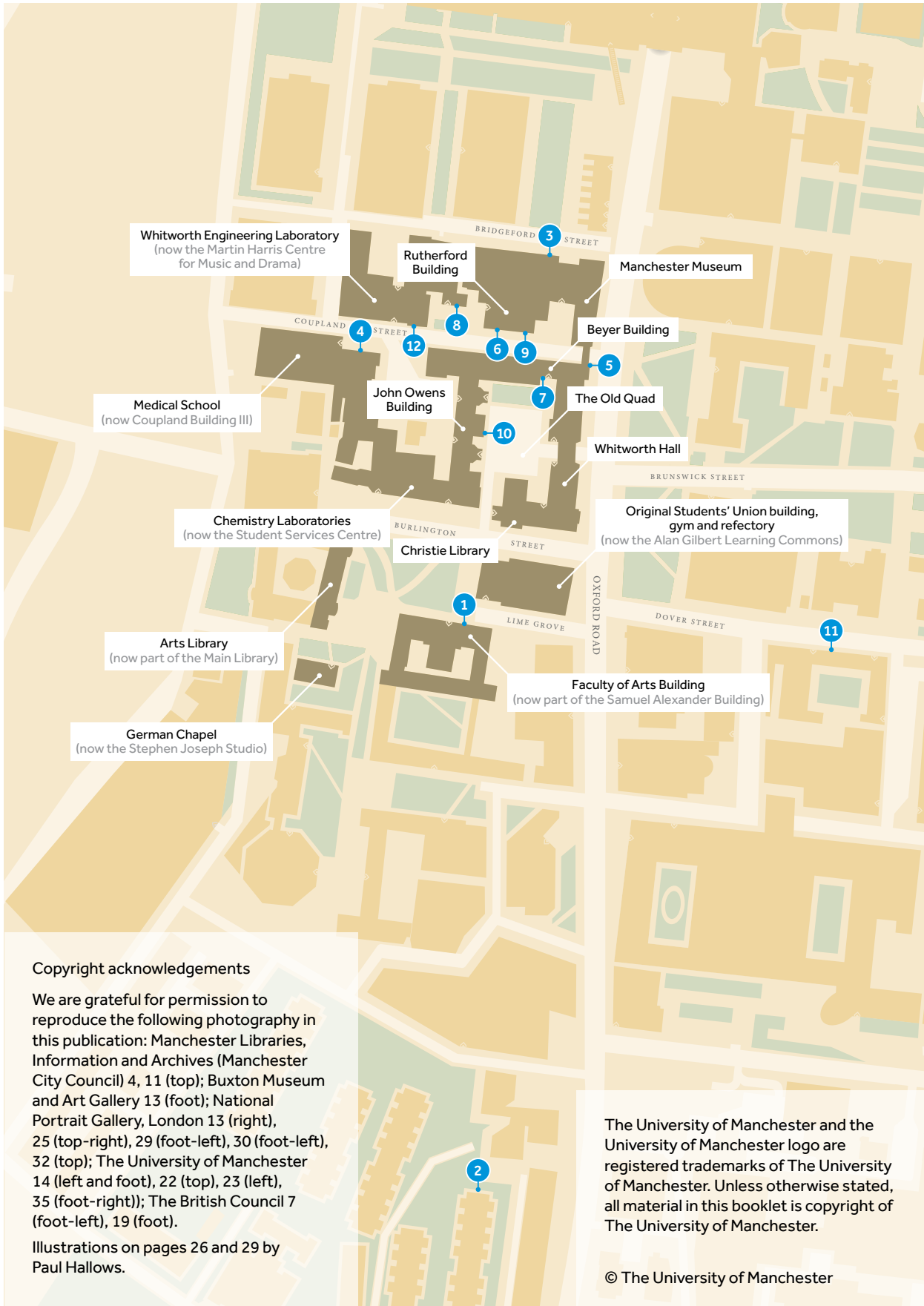
Anthony Burgess	1
Friedrich Engels	2
Tom Kilburn and Freddie Williams	3
Peter Mark Roget	4
Ernest Rutherford	5 6
Marie Stopes	7
Alan Mathison Turing	8
Alison Uttley	9
Ellen Wilkinson	10
Frank Worrell	11
William Lawrence Bragg	12

Quay Street Building location



Sackville Street Building and Manchester Technical School location





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