Overseas Immersion Programme 2018

Welcome to Newcastle University Library
The Science, Agriculture and Engineering Liaison Team
An introduction to Newcastle upon Tyne - established as Pons Aelius in around 122AD, the city has changed quite a bit through the ages
The Black Gate, built in 1247-50

Principal gateway to Castle Keep

Newcastle’s name is derived from the earlier castle on the site which was founded in 1080 by Robert Curthose, eldest son of William I (William the Conqueror)

The current ‘New Castle’ dates from 1172-77
By the early 1300s, Newcastle was a sizeable town with trades such as shipbuilding and rope-making. The commercial centre of the city was the Quayside with a well-established trade in cloth, fish, and animal hides. At the end of the 14th Century coal was the key commodity.
Coals to Newcastle,
1565-1625
The first waggonways in Tyne and Wear were built in the 1620s, leading to an estimated rise in coal shipments through the River Tyne from 35,000 tons in 1565 to 400,000 tons by 1630.
Sir Ambrose Crowley opened an iron manufactory in Sunderland in 1682. The Tyne Iron Works opened at Lemington in 1797. Iron, salt, glass were important North East industries in the late 17th Century.
Productive Steam Engine, 1712

Thomas Newcomen invented the first productive steam engine. The introduction of the Newcomen pumping engine to North East coalmines eased the mining problems caused by flooding.
Causey Arch, Tanfield, 1727

The oldest surviving single arch railway bridge in the world, and a key element of industrial heritage in Tyne and Wear.
The industrial success of Newcastle upon Tyne made the area attractive in many ways. The Assembly Rooms opened as a social venue in Newcastle upon Tyne in 1776.
The Literary and Philosophical Society (or Lit & Phil) opened in Newcastle upon Tyne in 1793

It currently houses the largest independent library outside of London, its mission to educate the people of Newcastle and the surrounding area.
1801 - Richard Trevithick drives the Cornish “puffer” steam powered locomotive down the street of Camborne, England

1811 - The Luddite Rebellion begins

1812 - Parliament passes law making it illegal by penalty of death to destroy industrial machines

1813 - 14 Luddites hanged in York after a rushed one-day trial

1813 - William Hedley designed the first of several engines used to pull wagons from Wylam Colliery to Lemington Staithes
‘Puffing Billy’ built by Hedley and Blackett for Wylam Colliery, Northumberland in 1813
Sir Humphrey Davy, a chemist and physicist, invented the safety lamp in 1815.

The risk of explosion in coal mines was reduced as it allowed North East miners to illuminate the coal face without having to use exposed flames.
Geordie George Stephenson designed, patented and built a steam engine locomotive that ran on rails. Stephenson's Rocket won a speed contest in 1829.
Newcastle upon Tyne-based company Hawthorn Leslie built this locomotive for the Singapore Railway (ordered 1910)
The first passenger railways in the 1830s brought visitors to Newcastle upon Tyne and allowed the continued expansion of the town’s industrial, social and commercial appeal.
Every great town needs a great university...

1834 - School of Medicine and Surgery
1852 – Newcastle upon Tyne College of Medicine, in connection with the University of Durham
1870 – Durham University College of Medicine
1871 - College of Physical Science
1883 - Durham College of Science
1904 - Armstrong College
1937-1963 – King's College
1963 – University of Newcastle upon Tyne

The latin mottoes are *Mens Agitat Molem* (Mind Moves Matter), *Fundamenta EJus Super Montibus Sanctis* (Her Foundations Are Upon The Holy Hills from Psalm 86, verse 1), and *Scire Usum Medendi* (To Know The Art Of Healing)
At the beginning of the 19th Century there were around 1,000 shipwrights on the Tyne, and 500 on the Wear.
The view for many visitors to Newcastle Central Station, confirmed as the largest railway crossing in the World, 1930
Bainbridge opens in 1838 (now John Lewis and located in Eldon Square)
Iron Ships

Shipbuilding techniques changed little while the construction of wooden ships continued until the second half of the 19th Century.

The first iron vessel was built in 1839 in South Shields with commercially successful builds continuing from 1852 onwards.
Institute of Mining and Mechanical Engineers

Policy surrounding the working conditions of the mining industry, its treatment or women and children and the frequency of fatal accidents led to governmental enquiries and the establishment of the Mining Institute, based in Westgate Road, Newcastle (1852)
This period of rapid growth and the transformation of the North East into one of Britain’s industrial centres was fuelled by the dramatic increase in North East coal production, from 4.5 million tons in 1800, to 10.5 million tons in 1850 and 45 million tons by 1900
Heavy industry was just a part of normal North East life...

World Unicorn, built by the Tyne shipbuilders Swan Hunter and Wigham Richardson Ltd, at the Wallsend Shipyards, 1973
Smith’s Docks were located at the mouth of the River Tyne in 1810, along with many other shipbuilding yards in that area, offering employment opportunities to the local community.
William George Armstrong (1810-1900) was a Geordie scientist, scholar and an engineer who was also an enterprising industrialist.

He founded Newcastle University and was an environmentalist, advocating water and solar power as substitutes for fossil fuel.

For more information on this fascinating man see: https://williamarmstrong.info/about-the-man/
The 19th Century was the main period of expansion in the engineering industry, led by pioneers such as WG Armstrong.

Armstrong’s Elswick factory in Newcastle upon Tyne developed into a large complex incorporating shipbuilding, marine engineering and armaments production.
Armstrong Building, named after WG Armstrong was built for the College of Science, University of Durham (1887-1906)

It looks even more impressive today (go see it!)
Cragside, Northumberland

Moving on from heavy industry, Cragside was created by WG and Margaret Armstrong, and architect Richard Norman Shaw in 1863.

Cragside was the first house in the world to be lit by Hydro Electric Power.
Dunston Staiths, River Tyne
Constructed in 1890 by the North Eastern Railways Company, restored and reopened in 2014 by English Heritage

Dunston Staiths at Dusk by Joseph Dunlop is licensed under Creative Commons Attribution 2.0 Generic.
The High Level Bridge, designed by Robert Stephenson (another Geordie!), built between 1847-1849 improved transport links with the rest of the region.
Charles Algernon Parsons, in partnership with the Tyneside firm of Clarke Chapman, developed the steam turbine for the generation of electricity in 1884. This was used in Turbinia (1887) and RMA Mauretania (1907).

Go see Turbinia in Newcastle’s Discovery Museum!

The Steam Turbine by Wikimedia Commons is licensed under [No known copyright restrictions]
Sunderland-born Joseph Swan, demonstrated the incandescent filament electric lamp at the Lit & Phil on February 3rd 1879

He went on to light up Mosley Street in Newcastle, the first street in the world to be lit by electric light

Joseph Swan in his laboratory by Tyne & Wear Archives & Museums is licensed under [no known copyright restrictions]
Throughout the 19th and early 20th centuries, coal production in the North East continued to expand, peaking at over 56 million tons in 1911, with a total workforce of over 200,000.
The Tyne Bridge under construction in May 1928

An iconic landmark linking Newcastle upon Tyne and Gateshead

The Tyne Bridge was designed by the engineering firm Mott, Hay and Anderson and was built by Dorman Long and Co. of Middlesbrough who later went on to build Sydney Harbour Bridge, which opened three years later in 1932.
Newcastle (1960-70s) through a visitor’s eyes

Laszlo Torday (1890-1975) was a chemical engineer, industrialist and a keen and gifted amateur photographer.
Northumberland Street, the main shopping street in the Toon
Fenwick, 1846-today

John James Fenwick, learned his trade as a shop assistant, where his passion for retail and customer service was instilled and nurtured. In 1882, his ambition came to fruition when Fenwick bought and renovated a doctor’s house for £181 and 4 shillings at 5 Northumberland Street in Newcastle upon Tyne.

Fenwick is famous for its Christmas window display!
Just down the road...
The introduction of the Tyne and Wear Metro in 1980, a light rail system, transformed the region’s transport infrastructure.
With the introduction of the Metro, everyone could get to the Toon match on time!

St James’ Park, home of Newcastle United F.C. (The Magpies)

In use (on and off) since 1880
Another bridge...

Gateshead Millennium Bridge, opened in 2002 by The Queen

Newcastle Architecture – Gateshead Millennium Bridge by Richard West is licensed under Creative Commons Share Alike 2.0 UK: England & Wales
The Baltic, 2002

Situated on the south bank of the River Tyne in Gateshead, England, the BALTIC Centre for Contemporary Art consists of 2,600 square metres of art space, making it the UK’s largest dedicated contemporary art institution.

BALTIC’s mission is to create exceptional access to important and innovative contemporary art in a unique setting, that encourages and enables learning and transformational thinking.

The Baltic by Glen Bowman is licensed under Creative Commons Attribution 2.0 Generic.
The Sage, 2004

Sage Gateshead is an international home for music and musical discovery, bringing about a widespread and long-term enrichment of the musical life of the North East of England.
Newcastle Breweries Limited, 1770-2005

The home of the one and only Newcastle Brown Ale... or it was. Brewed from 1927 at the Tyne Brewery on the site, it moved back to Gateshead in 2005. The brewery left the North East in 2010 and Newkie Broon (also known as The Dog) is now brewed in the Netherlands.

Time moves on. The site is now occupied by Newcastle University’s Helix, the global hub for urban innovation.

Newcastle Breweries Monument by Andrew Curtis is licensed under Creative Commons Attribution 2.0 Generic.
The North East is changing; the heavy industries and Brown Ale have gone but it's not over...

Blyth Offshore Demonstrator Wind Farm (commissioned 2000)

Providing enough low carbon electricity to power 3,400 homes
The Core, Newcastle Helix

Newcastle Helix is a £350 million flagship project bringing together academia, the public sector, communities, business and industry. It aims to create a global centre for urban innovation in the heart of the city.

The site is transforming into an exemplar of urban sustainability, working with Siemens, Northern Powergrid and Northumbrian Water to capitalise on the University’s expertise in sustainability, engineering, computer science, transport and urban planning.
Urban Sciences Building, Newcastle Helix

The new home of the University's world leading School of Computing and a flagship for urban sustainability

The USB houses a wide range of facilities funded through a role in UKCRIC (UK Collaboratorium for Research in Infrastructure and Cities)

Urban Sciences Building 59418 by John Donoghue is licensed under Newcastle University
UKCRIC includes:

**Urban Observatory** measuring air quality, climate, people, energy, water...

**EPSRC National Centre for Energy Systems Integration (CESI)** bringing experts together to assess the value of taking a whole systems energy approach to the energy trilemma

**National Green Infrastructure Facility** in collaboration with Northumbria Water Group

**Mindsphere Laboratory** researching the ‘Internet of Things’ with global technology giant Siemens

**Smart Grid** project looking at how sources of power can be managed at reasonable cost

...among others!
Are you interested in what you have seen?

Learn more – the Great Exhibition of the North is on NOW

Newcastle and the North East is geet canny as owt, man. Tek a gander!

Quayside 8295 by Graeme Peacock is licensed under Newcastle University
Get the App:
https://getnorth2018.com/visit/download-wayfinding-app/
See Stephenson’s Rocket! Visit Newcastle University’s Urban Science Building and The Core in The Helix. Go to the Life Science Centre, The Sage, The Baltic, The Keep. Take a bus to see part of the region’s largest Wind Farm at Blyth and our beautiful beaches. Go. #GetNorth2018
And don’t forget to visit the University Library too...

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Music brought to you by Jimmy Nail (Geordie, through and through) and Mark Knopfler (an honorary Geordie!)