

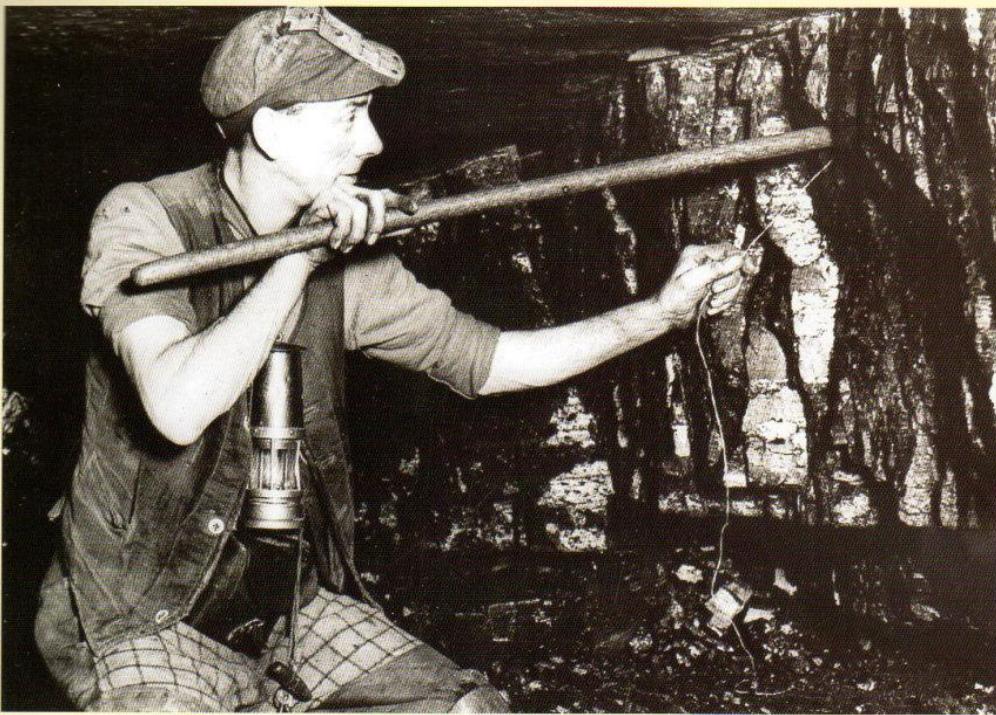
BUILT ON COAL



The Story of Coal Mining
in Benwell, Scotswood and Elswick



INTRODUCTION



The neighbourhoods of Benwell, Elswick and Scotswood extend west along the steep banks of the River Tyne from the edge of the city centre to just beyond the A1. Today there is little to remind you of the coal mining industry that was once so important in this area. However Benwell can stake a claim to be one of the first coal producing areas in the world. Coal was mined here as long ago as the Roman occupation more than 1,500 years ago. The area also hosted a number of important innovations in coal mining.

In the 12th and 13th centuries coal mining spread along the river valley from The Forth (where Central Station is today), Gallowgate and Elswick to Benwell. By the 18th century dozens of pits were being worked and a network of waggonways ran down to the riverside staithes which were used to export the coal, first by keel boat and then by ship, to London and beyond.

Benwell was among the first places to see one of the new 'fire engines', as early steam engines were called, that pumped the pits dry. John Buddle, owner of Benwell Colliery and nick-named 'King of the Coal Trade' by virtue of his significance to the industry, greatly modernised methods of mining. He used steam engines to drive pits deeper to new coal seams hundreds of feet below river level. It is widely believed that all steam engines were built by the famous engineers Boulton and Watt, but in this area almost half the early 'fire engines' used were built locally by a Mr Brown of Throckley – about whom very little is known. John Buddle himself commissioned engines from Brown to be used at Benwell Colliery.

Benwell had some of the earliest railways or waggonways, including the world's first workable 'inclined plane' railway. That used gravity and, by a system of endless ropes on pulleys at the top and bottom of the hill, allowed full coal waggons to descend the steeply sloped railway at a controlled speed. This in turn pulled empty waggons uphill. A very efficient means of transport had been developed which was later used extensively in coalfields throughout the world. Further west, Kitty's Drift can claim to be the world's first underground passenger railway.

Coal mining also helped to shape the development of Benwell, Scotswood and Elswick in other ways. Prior to the middle of the 19th century, despite the extensive mining activities underground, the area was still predominantly rural, although there were several small

settlements clustered around pits. Generally this was rather a fashionable area, at a comfortable distance from the noise, smells and health hazards of the town but conveniently situated to take advantage of its social and cultural life. Many of the well-to-do families who lived here derived their wealth from coal mining and the coal trade. In the latter part of the 19th century, it was the presence of coal that was a crucial factor leading to the development of industry along the riverside, notably Armstrong's engineering works that initially manufactured hydraulic cranes, later diversifying into other products such as armaments, with an integrated steelworks and shipyard. Other factories followed, until soon the whole riverside was filled with a variety of industrial activities. Again it was money from the coal industry

that funded much of this industrial development and the new housing developments that followed.

There is little evidence left of the long history of coalmining in this area. Victorian industry and housing, along with later developments, swept away the pit head buildings. One of the few legacies left by the pits is the names of streets such as Buddle Road, Beaumont Street, Pitt Street and Colliery Lane. The coal industry is so ancient that the evidence of the pits has been lost often several times over to new uses for the land. Colliery Lane is just one example. The site of North Elswick Pit became part of Newcastle Breweries. More recently this site has been re-developed, and will become part of Science City. The houses and brewery have all gone.



Colliery Lane which once led to North Elswick Pit. The pit was surrounded by houses, subsequently replaced by the brewery. The brewery and the houses have now all gone to make way for Science City.

COAL

Coal is a very useful mineral to people because it burns and produces heat and light, using the energy stored by plants from the sun millions of years ago. Coal is the fossil record of dead plants, so is known as a 'fossil fuel'. Burning coal also produces smoke containing different gases. Some of these, such as carbon monoxide, are poisonous; others, such as carbon dioxide, harm our planet by causing the temperature to rise. Carbon dioxide is called a 'greenhouse gas', as it traps heat in the atmosphere like the panes of glass trap heat inside a greenhouse. Oil and gas are also fossil fuels, also the fossil forms of energy from the sun, but in the form of liquids and gases.

Coal can contain imprints of the ancient plants from which it was formed. These are called fossils. Fossils can be leaves from the plants, sections of bark from trees, or even large fossils of the trunks or roots of trees. It was because of coal mining that the science of geology was started. Geology is the study of rocks, and it seeks to understand how the earth was formed, what it is made of and what shapes the planet. The first 'geologist' was a surveyor called William Smith. It was his work at Mearns coal pit in High Littleton in Somerset that gave birth to the science of geology. After many years of studying rocks and fossils he produced a map, known as the "map that changed the world", which showed the geology of England, Wales and part of Scotland. The map specifically mentions collieries and mines.

Miners in the Tyneside area contributed significantly to the new science because they had learned a lot about the different layers of rock from digging deeper and deeper underground. They also contributed many fossils they had found in the coal measures. The study of fossils is now a special branch of geology called palaeontology. Understanding fossils allows rocks to be dated. Many fossils from the coal seams around Newcastle found by miners were assembled into a collection at the Mining Institute. They were later donated to the Hancock brothers who created a museum, now part of the Great North Museum: Hancock in Newcastle. The fossils are still kept there and you can still see them today. Some came from the coal seams of West Newcastle.

Coal is a very remarkable mineral and has a complex chemistry. From coal you can make hundreds of different things which are useful to people, including soap, detergent, nylon, plastics and fertilisers that help plants grow. The seams of coal also contain a natural gas called methane. Today coal is used mainly as a fuel to produce electricity, but in the past it was used by people to keep their houses warm and to power steam engines and locomotives. Coal was also burned slowly in ovens to make a fuel called coke which was used in industry to make steel. The by-products of this process led to the growth of the chemical industry in this region. Special gasworks produced 'town gas' which was used to light streets and houses and for cooking before electricity was widely available. A big gas works was built in Elswick. Town gas was used as a fuel for cooking until the 1970s when it was

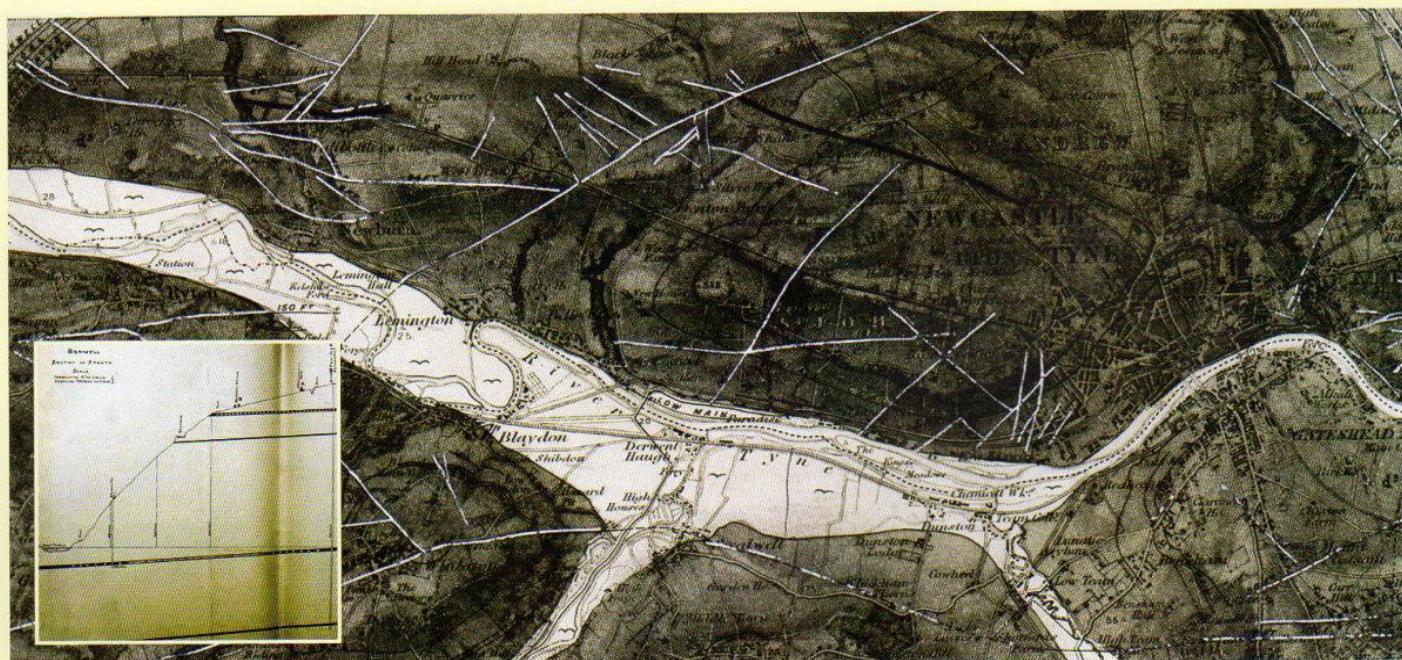
replaced by natural gas from deep below the North Sea and the gas works were demolished.

The geology of Benwell, Scotswood and Elswick

Under your feet are seams of coal buried amongst rock. About 300 million years ago the area we know as Benwell, Scotswood and Elswick was a warm and wet place filled with early trees and plants. It was near the equator and would have looked like a tropical rain forest does today. When plants and trees died they fell into shallow water or wet boggy ground. This meant that the plants did not rot away completely, rather like a peat bog. Over millions of years the deposits of decaying vegetation formed layers hundreds of feet thick, and the land gradually sank under the weight of this. These layers were eventually covered by hundreds of feet of mud and sand, which over time formed sedimentary rocks such as sandstone. Over millions of years more layers of sand, mud and silt were added. Very warm shallow tropical seas flooded the wet land, and limestone was formed above these layers, pushing the sea bed further and further down. After many millions of years, this sea bed was itself pushed up out of the sea by the huge geological forces which push whole continents around the globe and the land was moved away from the equator, eventually forming part of the British Isles. By this time, the rotten vegetation had now been squeezed and heated into layers of coal.

The area of this primeval forest was enormous, covering an area much bigger than north east England. We know this because geologists can tell us that the same seams of coal that lie under our feet on land also extend many miles out to sea. The coal seams under Benwell, Scotswood and Elswick also lie underneath the whole of the north east. This area is in the middle of a coalfield known as the Great Northern Coalfield which stretches from the River Tees to the River Tweed. In the 18th, 19th and early 20th centuries, and arguably for the previous 700 years, this was the greatest coalfield in the world.

Benwell and Scotswood lie on the steep slopes of the valley of the River Tyne. This whole area was once flat land. During the ice age, glaciers hundreds of feet thick lay over the area. When the ice melted, the water flowing off it developed into massive rivers. These rivers we today call the Tees, Wear, Tyne and Tweed, and they flow from high ground to the North Sea. Each was formed as the ice retreated northwards. The River Tyne carved the enormous valley we see today between West Newcastle and Gateshead. Smaller streams led into the river, cutting deep channels we call denes. As the Tyne and its tributary streams carved the rock away, they exposed the coal seams on the valley sides. As a result along both sides of the River Tyne, coal seams that had been buried deep underground for millions of years were now left exposed along the valley edges. Where the coal seams meet the ground surface it is called an outcrop.



The geological map above, published 1870, shows that Benwell and Scotswood lie on top of coal measures (coloured black). The white area in the middle is the River Tyne, and this also shows the mud the river has deposited over 10,000 years. Inset is a cross-section of strata at Benwell.

WORKING THE COAL

A colliery is often thought of today as one coal pit but in the past several pits often made up a colliery. There are two main types of colliery. One is a 'sea-cole' or sea-coal colliery or pit. The other is known as landsale. Sea coal pits produce coal to sell mainly by export. Coal was exported by river and the sea, hence the name sea coal. Landsale pits produce coal used locally. It is this difference that made the Great Northern Coalfield so important. Because coal was mined close to the River Tyne, it could easily be loaded into ships and exported. Other coalfields, such as Somerset, did not have easy access to water transport. Coal is heavy to move and, until railways were invented, people had to use horses to pull wagons laden with coal. It was expensive to move coal this way. Transport typically doubled the price of coal. Horses and their feed were expensive; the labour of men was cheap in comparison. Along the banks of the River Tyne, special wharves called staithes were built to load ships with coal. Elswick and Benwell were among the first places to have staithes on the riverside.

Staithes

Staithes were large wooden platforms built out into the river where the water was deeper. This allowed specially built boats called keels to moor alongside them and take coal on board even at low tide. The Tyne was quite shallow here until it was dredged towards the end of the 19th century. The staithes provided mechanisms to lower coal wagons to the boats where coal was shovelled by hand into the keels. Later, coal spouts were developed whereby coal was tipped into chutes that loaded the keels and the bigger sea-going ships known as colliers. Men called "Trimmers" were employed to level the coal in the larger ships so the load was evenly distributed. Uneven loading could sink keels and even colliers.



Benwell Staiths by Thomas Harrison Hair, c1844

Keels and keelmen

From the staithes, coal was carried by specially built boats called keels. A keel was an open barge-type boat crewed by four men and a boy. The crew rowed and sailed these small boats to Newcastle Quayside under the low arches of the old Tyne Bridge, and here the coal was loaded into colliers to take the coal to London or overseas. These larger sea-going sailing ships could only travel up-river as far as Newcastle Quayside, as their masts were too high to pass under the bridge. Keels had sails, but the masts could be lowered flat to pass under the bridge. The keelmen were essential to the coal industry from the second half of the thirteenth century to the last half of the 19th century. Steam tugs, steam colliers and the dredging of the river meant the end of the keelmen; they were replaced by the new steam technology on land and river.

In medieval and later times, when the river was shallower, the River Tyne sometimes froze over completely in winter. Coal could not be moved on the river, and coal mines had to close until the keelmen could sail the river again. In the winter of 1739-40, 200 pitmen were employed to cut a channel through the ice on the river between Lemington and the bridge at Newcastle. The keelmen were a tough breed, doing a hard and heavy job which was often dangerous. They used their power to get better wages. They also built the Keelmen's Hospital in Newcastle, every man paying into a fund from their earnings. This was to look after colleagues who were sick, injured or retired. The keelmen were one of the first groups of men to band together as an organised group of labourers. They did this through a trade's guild, similar to a trades union.

Newcastle coal in London

London was the first major market for coal from the River Tyne. At one time the Tyne colliers carrying coal from Newcastle to London were the biggest fleet of sailing ships in the world. Eventually, coal from this region was exported all over the world. It was used by the Royal Navy in steam ships when Britain ruled the waves. Other coalfields could not compete until the invention of the railways.



View of Newcastle showing keels on the River Tyne, from Brand's History of Newcastle upon Tyne, 1789

In the 12th and 13th centuries, coal was especially in demand in London, where it was needed to heat homes and in small-scale industries. Coal helped build Corfe Castle in Dorset and Windsor Castle, where it was used to burn limestone to be made into mortar. After the Great Fire of London in 1666, the king put an extra tax on coal. This raised the money to build St Paul's Cathedral and fifty other churches built by the famous architect Sir Christopher Wren. London's landscape today would look very different without Newcastle's coal.

Lighting the coal mines

Miners originally used candles to work in the pitch dark mines, but these caused explosions of gas. The next method of lighting was the Steel Mill shown in the diagram below. Young boys turned the handles and held a piece of flint against a steel wheel which made sparks. This was not very successful and is hard work. The inventor, Carlisle Spedding, was killed in an explosion in a coal mine caused by a spark from a steel mill, but the boy survived!

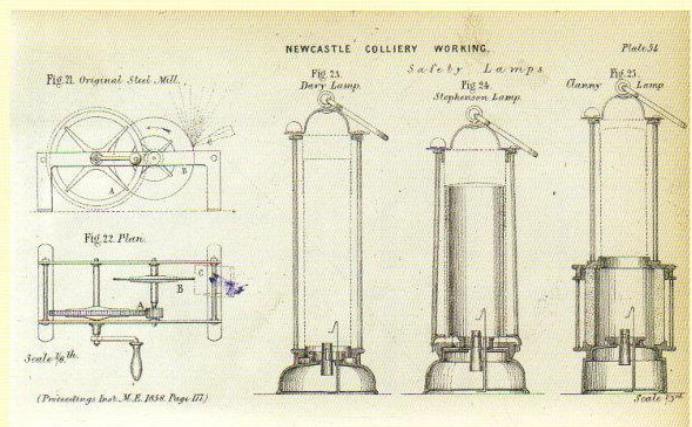


Diagram showing the three types of safety lamp.

Dr Clanny of Sunderland invented the first safety lamp but it was too big. In 1815 George Stephenson invented the first practical safety lamp, closely followed by Sir Humphry Davy. Dr Clanny improved his lamps later. John Buddle preferred the Davy lamp to Stephenson's, so Benwell Colliery miners probably used the Davy lamp.

Moving coal

Railways were first invented to carry coal, not people. They developed over 300 years from waggonways built around Newcastle, including several in Benwell. The area even had underground railways for moving coal.

Waggonways have a very long history in the Great Northern Coalfield. In Elizabethan times Benwell, Elswick and Newburn were the main areas supplying the sea coal trade. The very small pits were shallow and right next to the river. Stumblewood in Benwell had 40 pits alone and there were over a hundred others close by.

The pits were small and the coal was eventually all mined out. More coal could be mined from higher up the hillside, but this meant it had to be moved by waggons. Wooden waggonways were developed to guide waggons down to the riverside staithes, with horses pulling the empty waggons back up-hill. Benwell is among the first recorded waggonways. Later on, the power of gravity was realised, and waggons were connected to ropes and pulleys placed between the rails connecting the top and bottom of the slope. The heavy waggons full of coal going downhill pulled the empty ones up. This system was invented in 1797 by Joseph Barnes, who worked with John Buddle. This was the world's first self-acting inclined plane railway. Barnes was also the first man to use iron rails. Perhaps he used these at Benwell too. Waggonways are the fore-runner of all the world's railways.



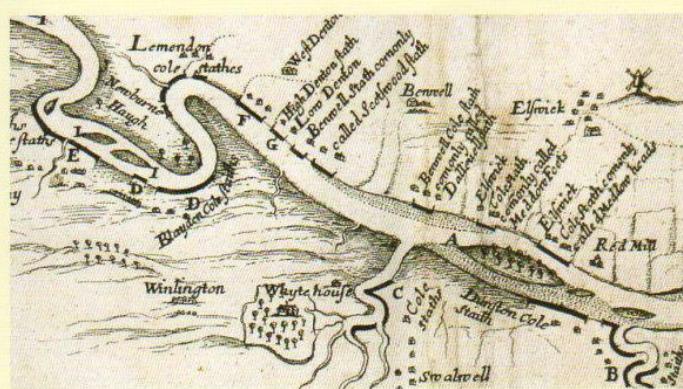
Willington Waggonway, rediscovered in 2013.

The recent discovery of this section of waggonway is of world importance. It is the oldest surviving example of "standard gauge" rails set 4 feet and eight inches apart. George Stephenson used this gauge which became the standard for most of the world's railways. Waggonways varied in their gauge, with the Wylam waggonway having a gauge of five feet, for example.

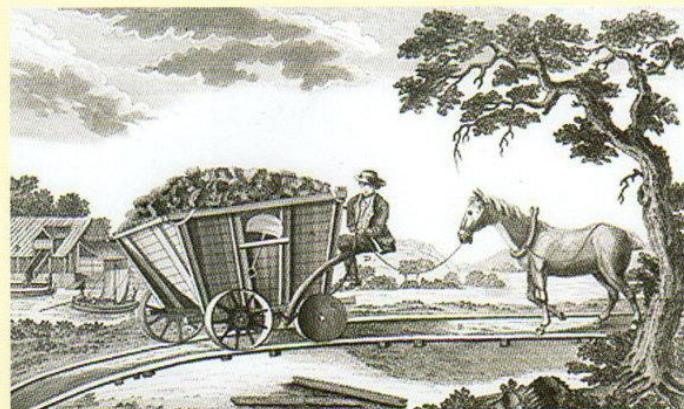
The world's first underground railway

The world's first underground passenger railway was Kitty's Drift. It predated the London Underground system by 93 years. Kitty's Drift was an underground railway built in 1770 to transport coal underground from East Kenton Colliery to the staithes at Scotswood. It was a single track wooden waggonway with passing places for horse drawn waggons. Because this was a drift mine, people could visit it easily without facing the hazardous descent in a basket on a rope. The mine attracted many tourists eager to see the inside of a coal mine and ride in the waggons.

The exact route of the underground railway is not known - it is shown as a 'Subterranean Tunnel' on Lambert's map of 1807. It is thought to have been the westernmost end of the Coxlodge Waggonway. The route was abandoned in 1805 and replaced by a surface waggonway, but the drift continued in use as a main drainage level for many years. The entrance was close to Montagu Colliery View Pit. The Mickley Coal Company utilised part of Kitty's Drift in the 1930s to take coal from Caroline Pit to the coal screens at the closed View Pit. Kitty's Drift was adapted to haul waggons by using a massive steam winder to haul the tubs the 2.5 miles to the View Pit screens, but in 1933 this was replaced by a 250 horsepower electric winder. The Mickley Coal Company intercepted Kitty's Drift with Bates Drift, at a gradient of 1 in 3 from the Beaumont seam. And the Fan Pit Level Drift, which was 980 yards long, carried tubs from the shaft up to Kitty's Drift and on to View Pit. This created a complex and extensive underground endless rope haulage system in places up to six miles in length. Kitty's Drift was closed again when Montagu Colliery shut down in 1959.



The picture above is from a map of 1670 showing the number of coal staithes in Elswick, Benwell and Scotswood.



There are no pictures of waggonways in the west end, but the picture above gives an idea of how these may have looked. The man on the waggon is there to use the brake on the way downhill. The horse is tied to the waggon, and will pull it back up the hill after the coal is emptied out into the keels.

In Willington near Wallsend a section of waggonway has recently been discovered intact near to the staithes. This gives an idea of how the waggonways in West Newcastle would have looked. The newly excavated section has a dip which would have been kept filled with water. The waggons ran through this to keep the wooden wheels wet and swollen; if they dried out the wood would splinter and the wheels would fall apart. The rails are made of two layers of timber on massive sleepers. The top layer would wear out quite quickly due to friction and have been replaced regularly. The area between the rails is made of stone setts, which give the horses pulling the waggons a solid footing to walk on.



Lambert's Map, 1807.

THE DEVELOPMENT OF COAL MINING IN THE WEST END

The earliest evidence of coal mining in this area dates from Roman times. At this point the Romans had a fort called Condercum with a civilian settlement (called a *vicus*) to the south. The name 'Benwell' means "behind the Wall". This is one of the oldest names in Northumberland. The History of St Cuthbert mentions it in about 1050, calling it "Bynnewalle".

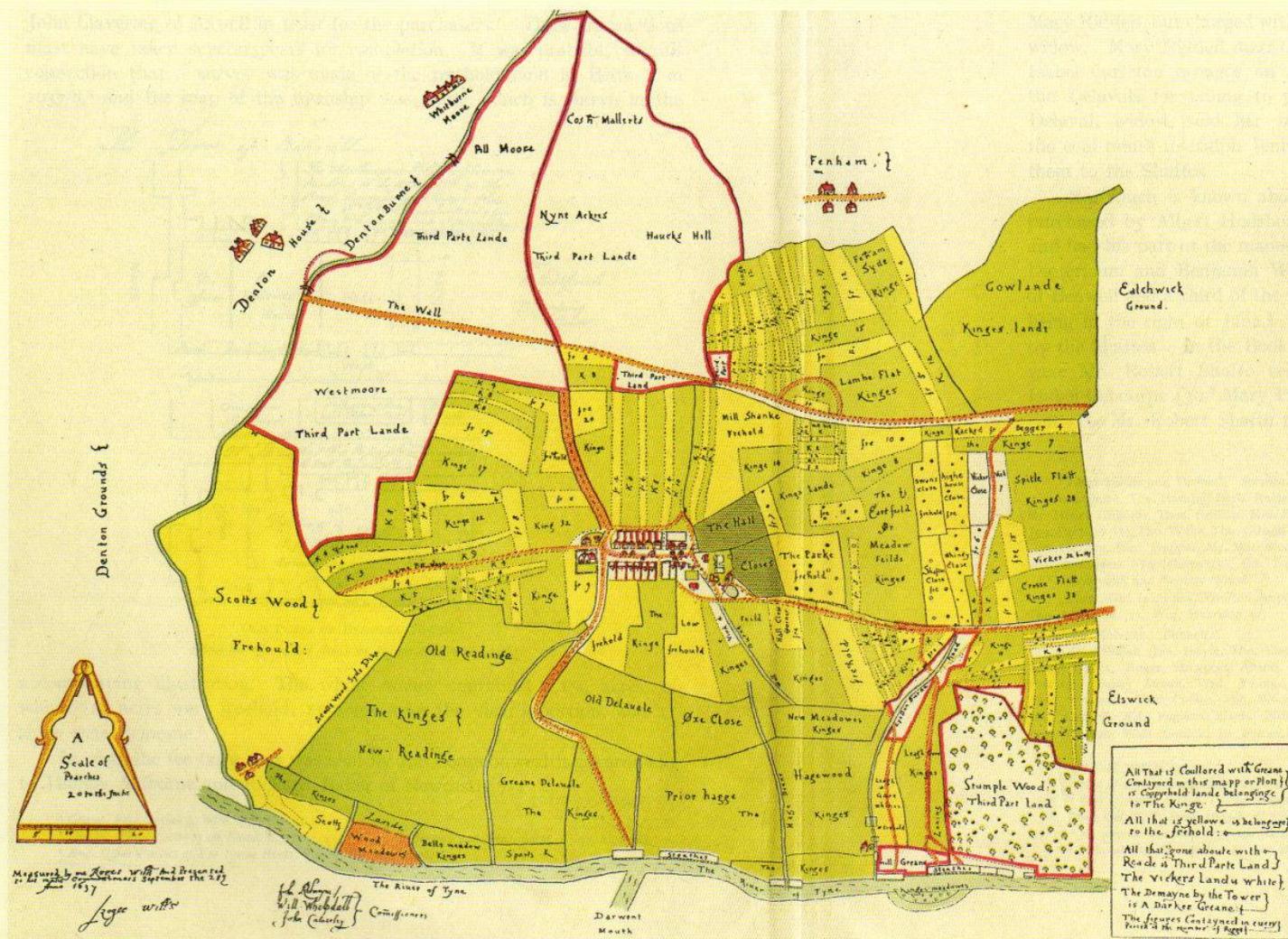
Archaeologists have found the remains of coal ash at various Roman sites in Britain, including several along Hadrian's Wall and further north in Northumberland. From this we know the Romans burnt coal for ceremonial purposes in the temples to their gods, as well as for heating water and producing steam in the Roman army regimental bath house at Condercum, and for use in the army workshops. They probably did not use it to heat their villas or to cook with, and they did not use it in great quantities. From their lead and silver mines in Spain and Somerset, we do know that the Romans were great miners, but no-one knows how much coal they dug. Coal seams outcrop in Benwell, exposed on the steep valley sides, and the Romans may have got coal from such outcrops and from the seashore. An altar from Benwell dedicated to Jupiter Dolichenus was discovered in the 18th century. He was originally thought to be the Roman God of mining, but later archaeological research has disproved this.

For about 800 years after the Romans left Benwell, there is no evidence available about coal mining or coal use in the area. After the Norman conquest of Britain in the 11th century, Benwell, Scotswood and Elswick became part of the Barony of Bolbec and Bywell, which covered all of West Newcastle from the New Castle to Bywell in the Tyne Valley. The Baron held an important position, with responsibility for the defence of Newcastle, which meant paying towards the upkeep of both the castle and men for an army to defend the town and join the king during wars with other countries. After the 1330s, this Barony was split into several parts when the male descendants of the de Bolbecs died out and the estates passed through the female line via four daughters. Elswick passed into the hands of the Prior of Tynemouth Priory.

By the 13th century, the monks of Tynemouth Priory already mined coal at several places, including Fenham, Prior's Haven at Tynemouth, and further up the coast. The monks found coal in Elswick and mined the coal here. From 1330 they leased the Elswick pits and took the profits from the rent rather than the sale of coal. The lessee was Adam de Colewell who paid 100 shillings a year for the privilege of working the colliery. The first pit was called the Heygroove. 'Groove' is an old word for pit or mine. The second pit was in the West Field and cost 80 shillings a year to rent. Ralph Bullock took over this pit in 1332. In 1334, a new colliery was sunk at Gallowflatt by John C. Carter, Richard de Colewell and Geoffrey Lane, who paid 40 shillings a year to rent it. This colliery was probably very close to Gallowgate. We also know that in 1338 the Prior of Tynemouth leased the staithes at Newcastle for £40 a year. Coal was becoming a big and profitable business and exports of coal to Calais in France were now taking place.

Coal was also mined by the Burgesses of Newcastle. These men were the early form of town councillors. From 1352, the men of Newcastle were granted rights to mine coal at The Forth and Castle Field. The site of the Forth is now underneath Central Station, and the Castle Field was part of what we now call Castle Leazes. The coal was probably mined where the Newcastle Brewery was built and where St James' Park football stadium now stands. The Town Burgesses paid the King 20 shillings a year for the right to mine the coal.

Early in the 17th century, Benwell was split into smaller estates which were bought by the Shafto and Riddell families who were merchant families interested in exploiting the coal reserves on the banks of the Tyne. The Shaftos sold land north of the new Military Road (today's West Road) to William Ord of Fenham. By the 18th century the estate was sold to Andrew Robinson Bowes to pay off the Shaftos' gambling debts. Bowes was eventually brought to trial because of his scandalous mistreatment of his wife, and was bankrupted. As a result the old Manor was broken into smaller parcels of land and sold off. John Buddle bought land for the Benwell Colliery development.



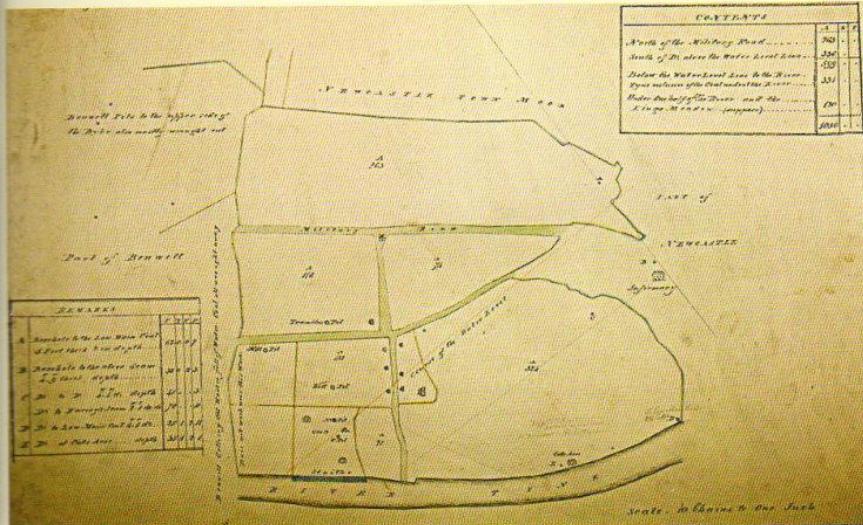
Plan of Benwell 1637. In the 16th century Benwell village was arranged in two rows of houses on either side of a wide street or green. A plain oblong tower, three storeys high with battlements around the roof was also recorded as being built. The plan above shows Benwell as it was in 1637. This may also be the world's first railway map.

THE COAL MINES OF BENWELL, SCOTSWOOD AND ELSWICK

Tracing the coalmines in the area is not easy. Pits changed their name many times. All traces of the very earliest pits have been lost as the area has developed. We know where many of the later deeper pits were, although there is little evidence on the ground today.

Elswick Colliery

The oldest pits were in Elswick. Seven pits were recorded there in 1682. Tempest and Carr owned pits by the river served by a short waggonway in 1698. In 1724 Mr Wortley & partners purchased a pumping engine in an effort to extend the life of the pit, but flooding closed this pit in 1724.

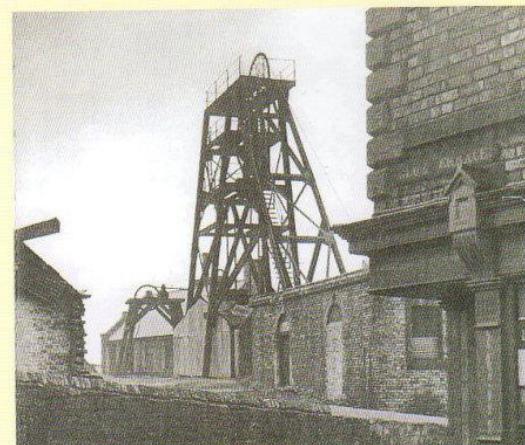
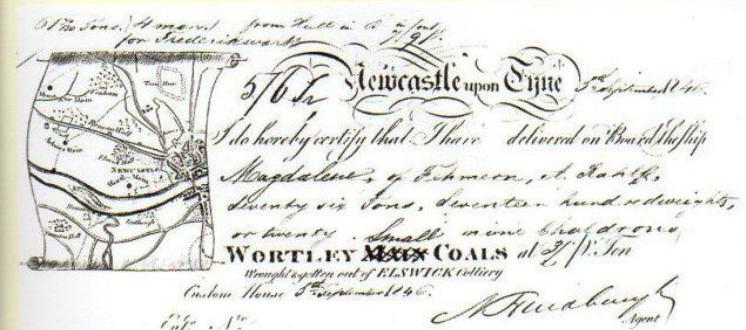


Plan of Elswick Estate and Colliery 1808.

This estate plan shows a series of pits between Elswick Road and the Tyne, including Trumbles Pit, Mill Pit, Well Pit and two pits closer to a staithes. The plan states that the old workings of Benwell Colliery were full of water and the coal all wrought away and an ominous comment was added, "dare not work near this waste". Bore holes show the coal lay between 62 fathoms and just 25 fathoms deep at the eastern boundary. John Buddle had responsibility for the Elswick Colliery between 1804 and 1843. Installing pumping engines meant the Low Main coal seam could be worked at a depth of 219 feet at the Wortley pit near the eastern boundary of Elswick Estate, just west of the site of Elswick Lead Works. A short inclined plane waggonway ran from the staithes to the pit.

To the west was the Beaumont pit with another inclined plane to the Benwell staithes. Next to it was the Billet Pit, also linked to the staithes. In 1828, the waggonway from the Beaumont Pit was extended up the hill to the Mill Pit. The Mill Pit was named after an old corn mill, Sinton's Mill. This is where the name Mill Lane comes from. The waggonway was later extended still further to what was called Fenham Pit, later known as North Elswick Pit. To confuse matters, this was not the only North Elswick Pit in the area!

In 1846 a lading bill (below) for a consignment of small coals onto a ship called 'Magdalene' shows a lovely illustration of the area. The Beaumont Pit is called 'Wortley Main' on this illustration. The whole colliery was sold by auction in 1850 and in 1853 bought by Alexander Brodie Cochrane who founded the Ormesby ironworks in Middlesbrough. In 1860 he installed the first steam driven Guibal ventilating fan in the country here. The new fan revolutionised ventilation in coal mines, making it better and safer.



Low Elswick or Beaumont Pit.

The other North Elswick Pit was situated on what was later known as Colliery Road. It became surrounded by terraces of houses and is difficult to spot on later maps. This was sunk to the Low Main seam in the 1830s and it also produced clay for a brickworks in the pit yard. The higher seams may have been worked out before this colliery started its new life. By 1841 it was sold as a result of the bankruptcy of one of its owners, and in 1847 the engine house was destroyed by fire. It is shown as derelict on the first ordnance survey map of the area in 1861. In 1881 the Elswick Coal Company was founded: as well as working the lower coal seams from the Beaumont Pit, it reopened North Elswick Colliery with three working pits. From here the lower coal seams beneath the Town Moor and Jesmond were also mined. The Beaumont Pit was linked to Armstrong's enormous engineering works and supplied coal to

it through a railway linked to the riverside Benwell staithes underneath the works which ran between Scotswood Road and the river Tyne. The Elswick Coal Company operated the collieries until their closure in 1940 threw 449 men out of work.

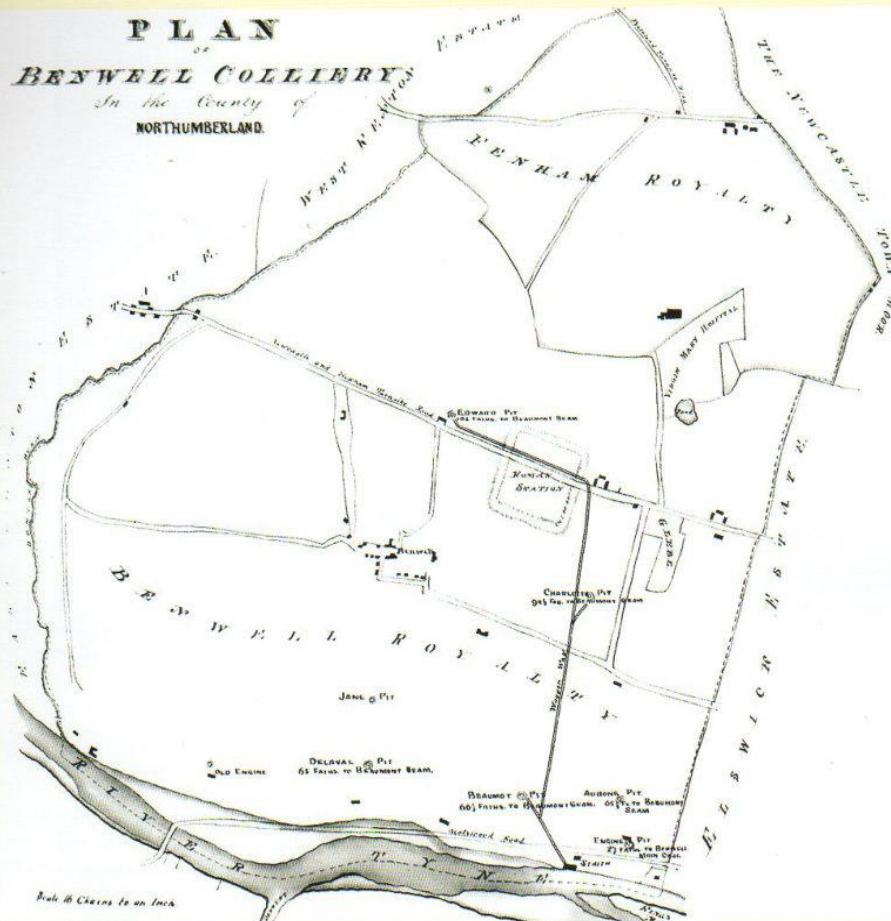
Benwell Colliery

In the 1620s Benwell was one of the greatest collieries in the coalfield. There were forty pits near to the river, but by 1632 only one was left working as most mining had moved uphill. In the 1630s there were 22 pits operating between Hadrian's Wall and the River Tyne. A waggonway was constructed all the way north to the West Road from the staithes opposite Kings Meadow (the island in the middle of the River Tyne). This ran east of Lydon Burn, a small dene running into the river, of which there is no trace today. This waggonway is shown on the 1637 map on the previous page. The colliery was productive until about 1670. It gained notoriety in 1673 when a fire, started by a candle, burned the High Main coal seam underground for almost 30 years until 1702. The fire burnt northwards under Fenham where on some days it seemed to people nearby that there was a volcano underground as smoke rose from the earth.

In 1698 Charles Montague and George Baker took a 31 year lease on the colliery and re-opened it, but their venture was short lived and the colliery was soon drowned again. In 1762 William Brown, a celebrated engineer from Throckley, built a powerful pumping engine with three boilers enabling the colliery to be worked once more. This was probably based at the pit named 'Old Engine' on the 1826 Benwell Royalty map. The Beaumont pit was re-opened in 1766 to work the Beaumont coal seam 400 feet below the surface, although it is thought the Elswick collieries were at this time closed due to flooding. In 1797 a self-acting inclined plane waggonway connected Benwell Colliery with the staithes.

The plan of the Benwell Colliery (on page 7) dates from 1826 when the colliery was leased to Aubone and William Surtees and operated under the direction of John Buddle. The Beaumont Pit is situated in the area known as Paradise. The Charlotte Pit was opened north of Benwell Lane in 1809, and the Edward Pit sunk north of Fox and Hounds Lane. The Edward Pit was served by a self-acting inclined plane waggonway which ran through the site of the former Roman fort then ran straight down the hillside to the river, passing the Charlotte Pit and the Beaumont Pit, both of which connected to the waggonway. The Edward Pit also mined coal under Fenham, moved on an underground railway.

Benwell Colliery was worked until 1848 when the Beaumont seam became exhausted. In 1821 the pit had been deepened to sink to the Brockwell seam, but the coal here was not of acceptable quality for the household coal trade.



Plan of Benwell Colliery, 1826.

William Cochran Carr re-opened the colliery in 1851 to mine fireclay from the Paradise and Charlotte Pits and from a drift mine near Elswick Station adjoining the firebrick works. Both coal and fireclay were produced until 1934 when it closed, making 478 men redundant at the height of the depression.

Delaval Colliery

Delaval Colliery operated separately from Benwell Colliery. It was owned by John Scott and mined coal and fireclay. It was a much smaller concern, employing 43 men in 1896.

Scotswood Colliery

Scotswood Colliery was a small drift mine established in the 1860s. It lay immediately west of the Montagu Pit and it mined coal and fireclay. In 1950 Adamsez Ltd. bought the colliery and operated it until 1975. The pit produced clay and coal and provided the raw materials for Adamsez sanitary ware.

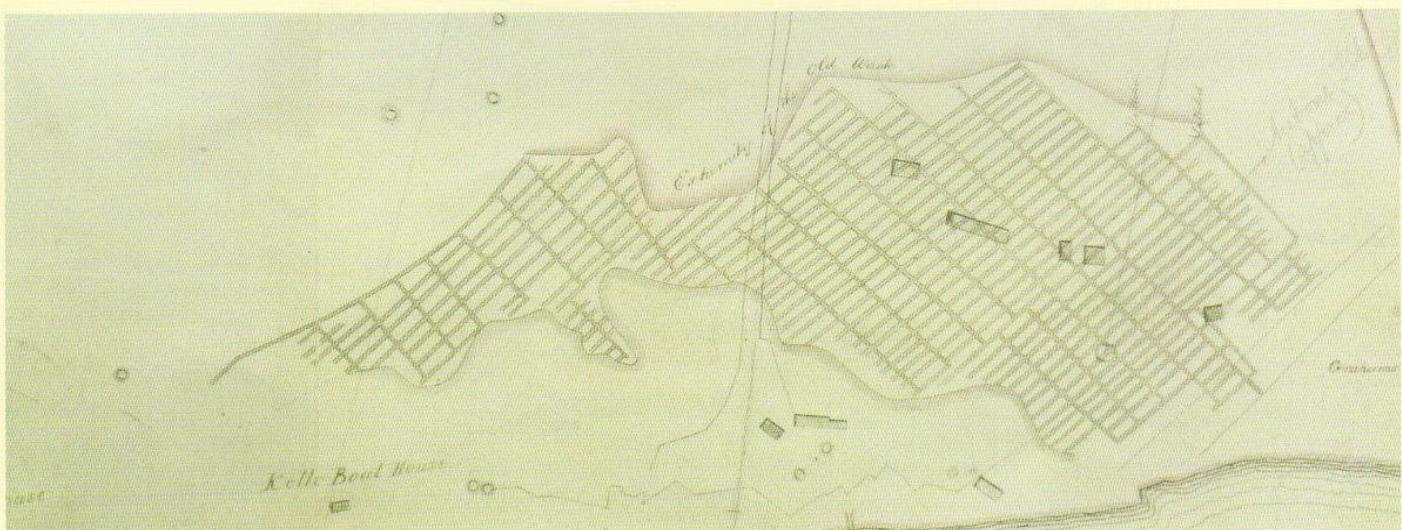
Carrs Drift

Carrs Drift was a colliery in Denton Dene. It mined ironstone and coal in 1816, later producing fireclay. This colliery was connected to the brick and tile works in Bells Close. The A1 western by-pass road now runs over this site.

Montagu Colliery

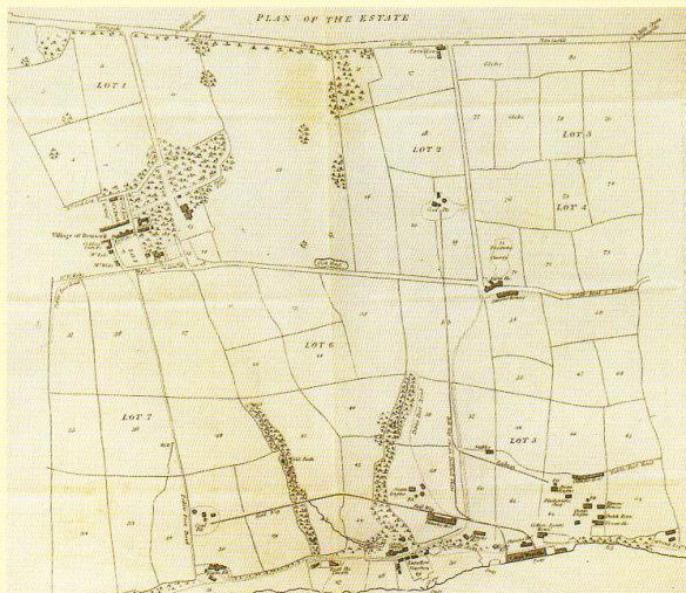
Montagu Colliery takes its name from the Montagu family. (The name is sometimes spelled Montague). Edward Montagu had been a frequent visitor to the area to manage the coal mines owned by his father Charles Montagu. By 1758 Edward himself owned two parts of the Denton Estate - East Denton and Lemington - while West Denton belonged to his relation, John Baker. Edward Montagu started the East Denton Colliery, mining coal at the Montagu and View pits in the Scotswood/Bells Close area. Engines were built to drain these pits. In the late 18th century, Edward's wife Elizabeth developed the East Denton Colliery into a major enterprise. In all, 29 pits worked the Beaumont seam south of the ninety fathom dyke as well as some of the upper seams to the north. A waggonway was built from the Caroline Pit to Scotswood. Mrs Montagu sold her shares in the operation in 1796, three years before the lease ran out. In the same year, six men lost their lives when the Denton miners accidentally broke into the flooded workings of an old mine at Slatyford. The viewer, William Thomas, called for plans of old abandoned workings to be lodged with the Clerk of the Peace after this. Although this was an eminently sensible idea, it was not until much later, after many similar accidents, that this became law. Even then, it didn't stop further tragedies occurring. In March 1925 the miners at the Montagu Colliery View Pit broke into the old workings of the Paradise Pit of Benwell Colliery causing an inrush of water that led to the deaths of 38 men.

In the 19th century East Denton Colliery was operated intermittently by Cookson Cuthberts & Co. and later Carr & Ridley. In 1857 it was bought by Benson & Hawthorn. It remained in the ownership of the Bensons until nationalisation in 1947. The Caroline Pit was deepened to the Brockwell seam and began mining coal north of the ninety fathom dyke. In the 1920s this colliery employed over 1,000 men. It closed in 1959 with the loss of 850 jobs.



This plan is a map made by a mining engineer (very probably John Buddle). It shows the area of coal worked out underground from the old Engine Pit, which was part of Benwell Colliery. It is probably the Low Main coal seam. The map makes it clear that the area was to be avoided by later pits because of the dangers of water and gas in the old workings. There are hundreds of old pits that worked coal under Newcastle. Most of the coal has been worked out, meaning that it has all been taken out by miners. Square blocks of coal, called pillars, were left to support the ground above. This system of mining coal was called 'bord and pillar'. It left a lot of coal underground, but the pillars were often worked away as coal seams were exhausted.

THE GROWTH OF BENWELL, SCOTSWOOD AND ELSWICK



Benwell, 1808.

150 years ago, the area comprising Benwell, Scotswood and Elswick today was mainly rural. At that time these neighbourhoods, along with others such as Heaton, Byker and Jesmond, were outside the boundaries of the town of Newcastle. The Industrial Revolution brought many thousands of people to work in the new factories and the town grew rapidly, enveloping the surrounding villages.

The earliest area to be settled was Old Benwell, a small rural hamlet that has been lived in for over 500 years. The next phase of development occurred around some of the bigger pits. With the growth of colliery villages, housing for the miners was developed with single rows of pit cottages. Paradise perhaps best shows the development of a small colliery village. This village achieved fame after Geordie Ridley's song 'The Blaydon Races' became popular. There are few facilities for people, no shops, schools or pubs. The OS map of 1861 (above right) shows the Benwell Colliery West Pit, with Paradise Row immediately to the south and Low Row a little further away. A Methodist chapel has been built. On the river side of the Newcastle-Carlisle railway line is the Paradise Colour Works, part of the industry that has been developing in this area.

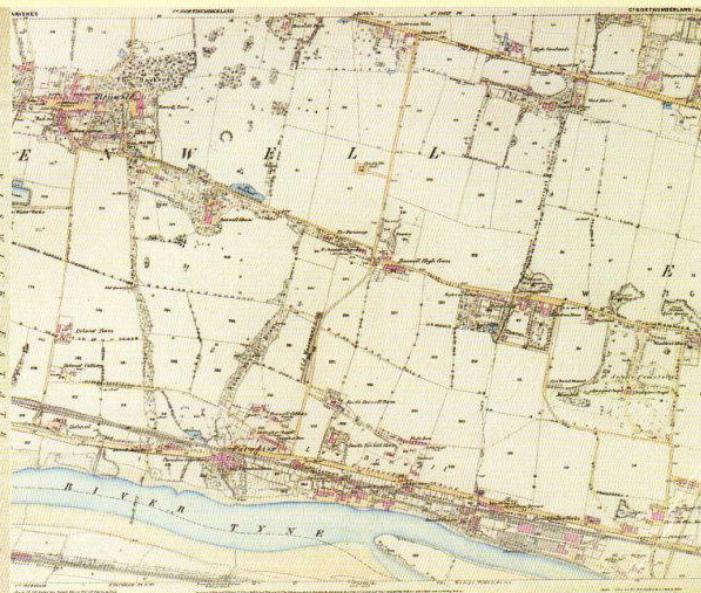


Low Row, Paradise, undated. The colliery can be seen behind the houses.

Paradise grew more industrial over time as the later map shows. You can see in the two maps the tremendous growth of industry during the first half of the nineteenth century. After this time development of homes and industry was even faster.

Benwell, Scotswood and Elswick were also home to many wealthy families, living in large houses and mansions with landscaped grounds. Among them were local coal owner and industrialist William Cochran Carr, lead manufacturer Isaac Cookson, glass manufacturer John Sowerby, banker Thomas Hodgkin, railway engineer William Hawthorn, coal owner and merchant Joseph Straker, and builder and developer Richard Grainger.

Only with the coming of large scale manufacturing did the area become densely developed with housing. From the middle of the 19th century onwards, dozens of new streets were built across Elswick and Benwell. They led downhill to the riverside factories, housing the workers for the growing industries. Tyneside flats were a cheap way of providing large amounts of housing. Miners also lived in the



Benwell, 1861.

new terraced housing as the pits grew larger and employed more and more men in the last half of the 19th century.

Tyneside flats were built in small numbers by many small builders, but to a plan. You can see this in the aerial picture of Charlotte Pit, which is on the front cover of this book. It shows gaps in the terraces where building work has yet to start. The area of land and the facilities these flats offered were governed by new byelaws which provided a minimum standard of housing. This standard was a big improvement on the housing in the centre of Newcastle, especially the Quayside which was very cramped, had no running water and at best shared toilet facilities. The Tyneside flats had water piped to the houses, they had privies in the back yard and fireplaces in each room to provide warmth, if you could afford the coal, and many were built with new gas lighting. Along the main roads, shops were purpose built and new schools and churches were developed to serve the neighbourhood.

The areas nearer to the town tended to be developed earlier. Later maps also show that large areas of Scotswood and the western fringes of Benwell were not developed until after the end of the First World War, when new houses were built both by the Council, as the era of social housing dawned, and by private builders for the increasing numbers of owner occupiers.

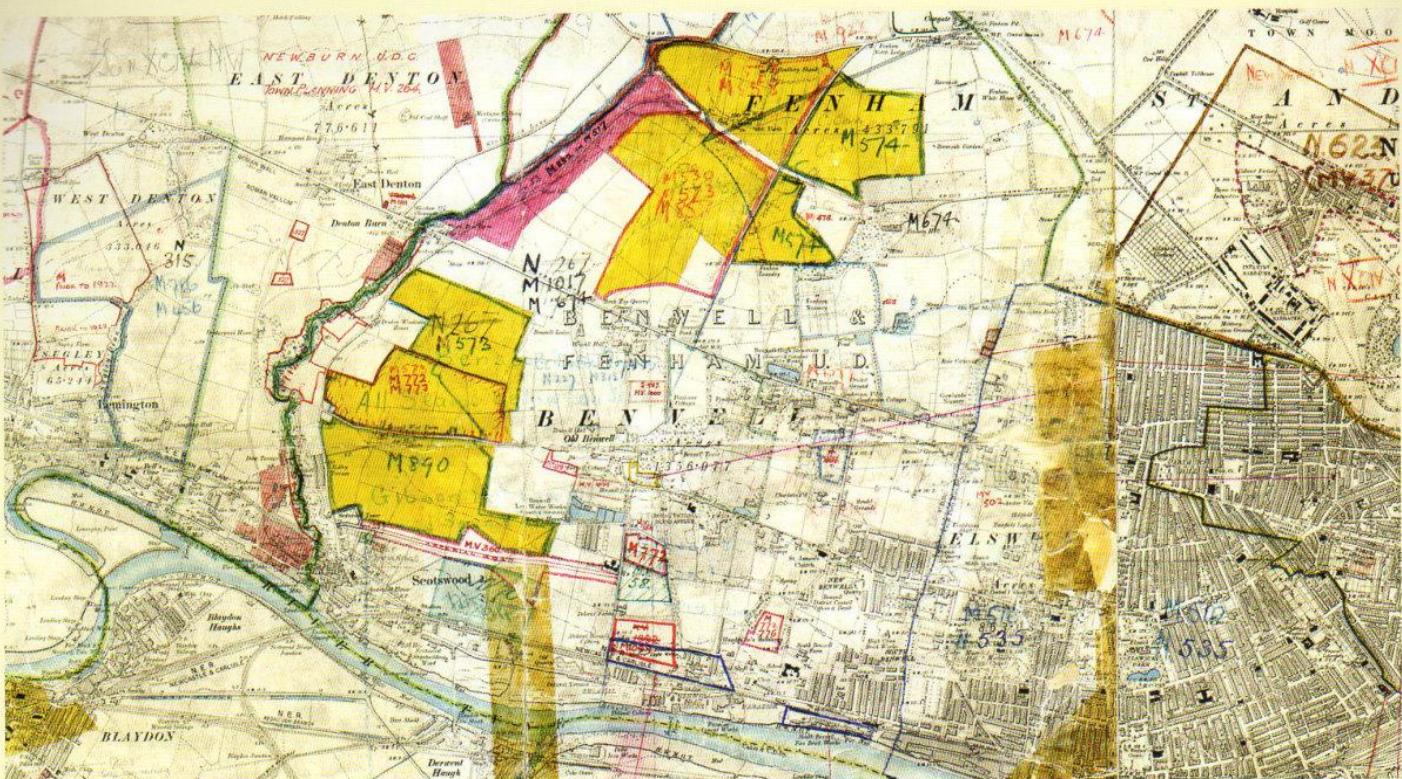


Left: Charlotte Pit behind the big stone quarry that was east of Charlotte Pit Lane and north of Atkinson Road. The quarry had closed before 1898 but was not built on until later. It was one of several quarries in the area which provided building stone extracted from the thick bed of sandstone lying below the High Main coal seam and above the Low Main coal seam.



Right: Coal was delivered locally by the horse-drawn carts you can see in the yard of Charlotte Pit. The road we know today as Condercum Road was then called Charlotte Pit Lane.

It is noticeable that there are no big heaps of spoil left by the older mines. 'Slag heaps' - big heaps of waste rock - are linked with later mines that employed machines. When mines were worked by hand waste rock was packed back into areas of the mine after the coal had been taken out. It was wasteful of time and money to bring useless stone to the surface.



1899 Benwell, Scotswood And Elswick

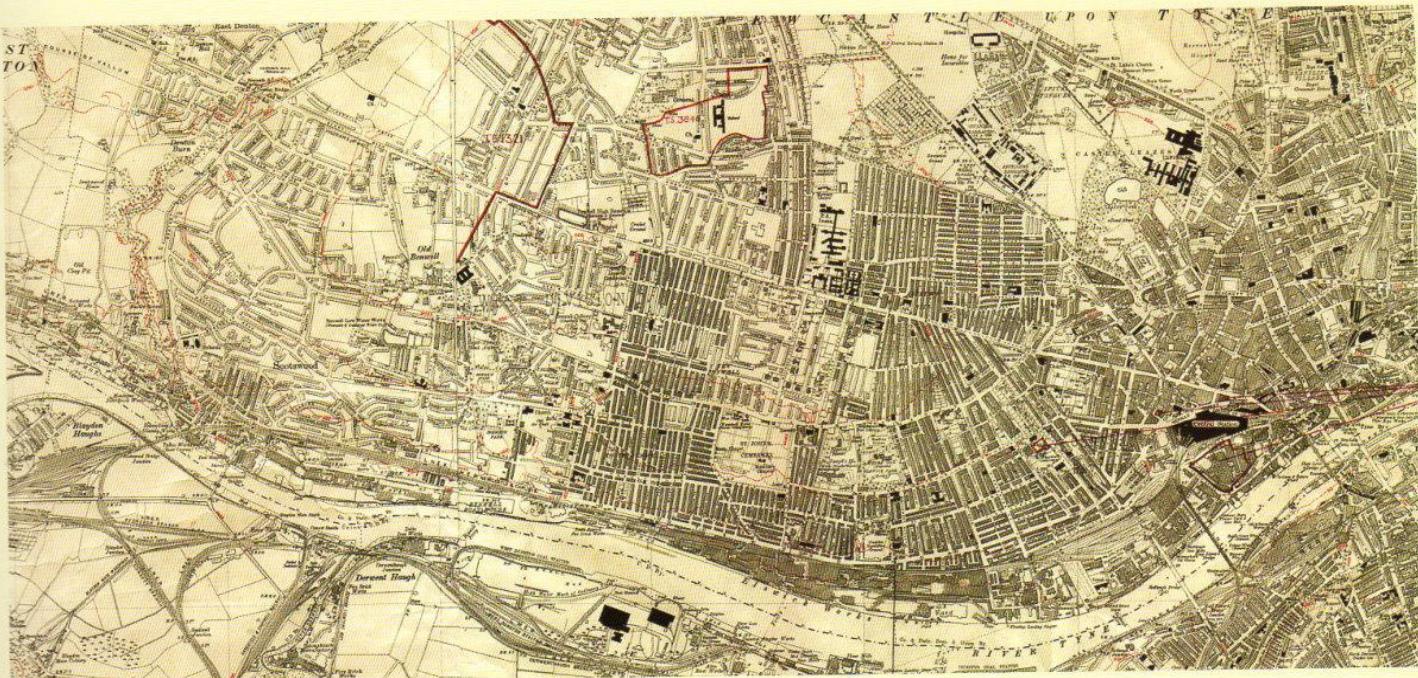
This Map shows the area in 1899. It is a mineral map showing, in blocks of colour, areas of coal underground that have been marked on at a much later date than 1899. The original map was damaged by someone putting sellotape on it. Scotswood and Montagu pits are shown. North of East Denton you can see an old coal shaft marked, with the Montagu Colliery's Caroline Pit to the east of this. On this map, Charlotte Pit and the nearby quarry opposite still exist, and the road is still named Charlotte Pit Lane. Delaval Pit remains, but West Pit has closed, although Paradise Row and Low Row are still here. South Benwell has been partly built up with housing and the Scotswood Mechanics' Institute covering the area of the older pits of Benwell Colliery and Engine Pit. Armstrong's factories are still expanding along the riverside, the river has been dredged and as a result the island of Kings Meadow has disappeared. Elswick Colliery is still in operation but is surrounded by houses and cannot be seen. North Elswick Pit, which is just off the map, is also still working.



1921 Benwell, Scotswood And Elswick

Just after the First World War, the whole of the Great Northern Coalfield was fully employed and produced record amounts of coal with around 250,000 men working in the pits. Industry was also at a peak along the whole of the Tyne. In a decade all this changed as the world entered a recession which hit the industry and people of the North East, and especially this area, very badly.

As this map shows, by 1921 massive areas of open fields have been developed to house people moving into the area. Most of the mines shown in 1899 are still there, but with more factories and houses the names are sometimes less prominent. It is not easy to spot Montagu Colliery. Industry has spread all along the river banks from Elswick to Scotswood. Some of the old colliery shafts are still marked. Charlotte Pit is still shown, but now Charlotte Pit Lane has been renamed Condercum Road. If you look closely, just above the first letter O in Scotswood Road, you can make out a pit still here, supplying coal by a railway to Armstrong's works. The rails run right to the riverside.



1938 Benwell, Scotswood And Elswick

By 1938, Tyneside was a very different place but, as the Second World War approached, more people had jobs in the factories again and the coal mines were working, although with far fewer men employed. This map shows how Benwell and Scotswood have changed as the inter-war housing boom saw thousands of new homes built and in a very different style from before. New estates of semis were springing up to join the regimented rows of Tyneside flats. It is harder to see the collieries and the former pit sites, but those that existed in the 1920s are still working and most of the evidence is still shown on the map. The next few years will see the world in turmoil, the river's industries stretched to their limits to provide weapons and ships, and the coal mines run by the government to produce the coal the country desperately needed. For the coal industry massive changes will happen after the war with nationalisation of the mining industry, the concentration of investment and new machinery in bigger pits and their eventual closure as the supply of coal is exhausted.

Immense changes have taken place in the area since the Second World War. Today almost all the traditional industries have gone from the riverside. Much of the old housing has gone - not only most of the rows of Victorian Tyneside flats but also large areas of the 20th century social housing. Big tracts of land in Scotswood and Benwell now lie empty awaiting the promised regeneration of the area.

Today the collieries and pits have all gone. There is little trace of them on the ground. And with the pits went a way of life. By 1975 all the local pits had closed, drawing to an end centuries of coal mining in Benwell, Scotswood and Elswick.

The Coal Seams of Benwell, Scotswood and Elswick

Main Post: Exists north of the 90 fathom dyke.

High Main: Up to seven feet thick, high quality. Worked at quarries at Westgate and Fenham. Largely worked out or burnt by 1830. A fire in this seam raged for many years underneath Fenham following an accident – periodically smoke and ash were seen rising above the ground.

Metal Coal: 12-18 inches thick.

Stone Coal: Not present in all the West Newcastle pits.

Yard Coal: Not found in all pits, dwindles to 16 inches thick at Mill Pit. Yard Coal found in very thick layer of sandstone of 20 fathoms thick. (A fathom is 6 feet or 1.8 metres in depth).

Bensham: Only found at the Wortley pit, does not extend to the north west.

Five Quarter: Separate seam at Elswick, seam 6 fathoms above Low Main.

Low Main or Benwell Main Coal: As you move west from Elswick, the Five Quarter merges with the Low Main seam, formed a seven feet thick seam at Edward Pit and 9 feet thick at Crooked Billet. Undulating seam of varying thickness with stone ridges throughout.

Beaumont: Varying thickness, almost nipped out entirely at Mill Pit.

Brockwell: Under increasing thickness of sandstone as you travel west

The layers of rock that contain coal are around 2,000 feet thick. The top half, called the upper coal measures, contain very thin bands of coal that are not viable to mine. The lower half contain the thicker layers of coal. These layers are called seams and each seam of coal was given a name by the miners. In differing parts of the coalfield the seams are known by different names. The seams underneath Benwell, Scotswood and Elswick were described by John Buddle in a paper to the Natural History Society of Newcastle and Northumberland in 1830, before the first reliable geological map of the area was produced. Listed above are the coal seams from the upper to the lower.

BUILT ON COAL

The Story of Coal Mining in Benwell, Scotswood and Elswick

This book is the result of a joint project between the Mining Institute in Newcastle and St. James' Heritage & Environment Group. It is based on an exhibition about coal mining in the west end which was produced with the participation of local residents.

The research for the book was carried out by Simon Brooks of the Mining Institute with help from Les Turnbull, James Watson, Jennifer Kelly and Judith Green. Thanks are also due to Ted Clark and Alexandra Watson.

Thanks to Make Your Mark for funding the production of the book.

Most of the illustrations in this book are from the Mining Institute's unique collection of documents and artefacts relating to coal mining.

Thanks to Newcastle City Library and West Newcastle Picture History Collection for permission to use other images.

Newcastle once led the world in the production of coal. Through the engineers and the miners who worked hard to provide the coal that powered the nation, Britain grew to be a wealthy industrial country. Coal powered the British Empire and fuelled the Industrial Revolution. Following coal, Newcastle was the place that pioneered much of the modern world, leading the way with shipping, iron, chemicals, electrical power, lighting and the turbine engine. The west end of Newcastle stakes a claim to a fair share of this story, and of the long history of coal mining. It is a history of which to be proud.

Over the many centuries that coal has been dug from the ground below, hundreds of men and boys were killed, maimed and injured. Their families lost loved ones, husbands, fathers, brothers, sons, and they lost homes and incomes. Today we may think the miners and their industry have been consigned to history. The simple fact is that coal still provides more than half of the world's energy. Every year coal mines still claim the lives of hundreds of people. Our coal and electricity comes from countries whose safety record is on a par with Britain in the Victorian era. Please spare a thought for these men and all those who gave their lives to provide our energy.



"Under the Coal Tyne" John Hodgson Campbell, 1887, ©NEIMME. This evocative painting depicts working conditions typical of the time under the River Tyne.

St James' Heritage & Environment Group

St James' Heritage and Environment Group is an independent voluntary organisation set up in 2010 to support the restoration and improvement of St James' Church building and graveyard. The Group has developed a database of the graves and burials at St James' as a resource for people interested in researching family or local history. It runs events and activities for people of all ages to explore and celebrate the history of the west end of Newcastle. The group welcomes new members, financial donations, and also volunteers to support its work. This booklet is one of a series of local history publications by the Heritage and Environment Group.

Write: St James' Heritage & Environment Group, c/o Search, 74 Adelaide Terrace, Newcastle upon Tyne, NE4 9JN

Visit: every Tuesday between 1-4pm at St James' Church, Benwell Lane, NE15 6RR

Email stjamesbenwell@gmail.com

<http://stjameschurchnewcastle.wordpress.com>

The Mining Institute

The North of England Institute of Mining and Mechanical Engineers (known locally as the Mining Institute) was founded in 1852 to improve the art and science of coal mining by a group of colliery viewers (or engineers) who were dedicated to improving safety in the coal mines. These men were at the very forefront of industrial and transport science and geology. Today the Mining Institute houses the world's largest mining library and globally important archives relating to the history of mining. The library is located in Neville Hall next to Newcastle Central Station and is open to the public every weekday. The Institute is also interested in increasing its collection. If you would like to contribute memories of coal mining, or have photographs or records that could be copied, please contact the Institute.

Write: The Mining Institute, Neville Hall, Westgate Road, Newcastle upon Tyne, NE1 1SE

Tel: 0191 2332459

www.mininginstitute.org.uk

Published by St James' Heritage and Environment Group 2013
Supported by Make Your Mark and the North of England Institute of Mining and Mechanical Engineers

Series Editor: Judith Green

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Front cover image: Aerial photograph of Charlotte Pitt.