THE RISE OF BOLTON AS AN IMPORTANT ENGINEERING AND TEXTILE TOWN IN EARLY 1800 ENGLAND

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INTRODUCTION

The aim of this paper is to demonstrate that Great Britain changed, in the 19th Century, from a rural economy to one based on coal and iron. In doing so it created conditions for British civil, textile and mechanical engineers, such as Robert Whitehead of Bolton, to rise to positions of eminence in their particular fields. Such men travelled across Europe, and laid, through the steam engine and railways, the foundations for many of the regions present day industries.

EARLY TEXTILES AND BLEACHING. RISE OF LOCAI INDUSTRIES

The origins of Bolton's textile and engineering industry lie back in the 12th Century with the appointment of a Crown Quality Controller called an Ulnager. During the reign of Henry V111 an itinerant historian Leland observed that

'Bolton - upon - Moore Market standeth by the cotton and coarse yarns - Diverse villages above Bolton do make Cotton' and that 'They burne at Bolton some canelle (coal) of which the Pitts be not far off'.

Coal, combined with the many powerful streams of water from the moorlands, provided the basic elements for the textile industry to grow, the damp atmosphere conducive to good spinning of thread. In 1772 a Directory of Manchester (10-12 miles distant) was published, in this can be seen the extent of cloth making in an area of about 12 miles radius round Manchester, with 77 fustian makers (Flax warp and cotton or wool weft) attending the markets, 23 of whom were resident in Bolton. The output of cloth was enhanced by the weavers using John Kay's Flying Shuttle (1773).

Cloth produced by the hand - loom weavers required bleaching before printing and dyeing could be carried out, thus another industry became concentrated in Bolton and District, evidence to this effect was seen in November 1784 when a meeting of local bleachers protested about the taxation of bleached goods. The

meeting comprised of 19 local bleachers, 10 of whom later became wealthy industrialists. Bleaching was an old established business in Bolton, as can be seen in the Works of Peter Ainsworth, Moss Bank, established in 1739, G & J Slater, Dunscar 1750, Thomas Hardcastle, Firwood and Bradshaw 1785, Thomas Ridgeway Bolton and Horwich (6 miles distant) 1775. All of whom survived into the 1960/1970 period.

For centuries cloth had been bleached by a method known as 'Grassing'. This involved washing and laying out the cloth in the open fields, and soaking in sour milk and ashes, these, combined with sunlight would, after a lengthy period, bleach the cloth. In 1736 a Scot, James Dunbar, wrote a book "Smegmatalogia" and instructed 'industrious farmers' how to prepare the ashes for bleaching. In 1774 the Swedish chemist, K.H. Scheele, discovered that chlorine would destroy vegetable colouring matter. The French chemist, Berthollet, realised the value for bleaching cloth, and that the chlorine gas could be dissolved in an aqueous solution. In 1787, James Watt, as a friend of the chemist, drew its attention to the Manchester Literary and Philosophical Society (founded 1781). A member, Joseph Cooper, in 1788, opened a vitriol works in Bolton to produce chlorine. Local bleachers Richard Ainsworth and Joseph Ridgeway (members of the Litt, and Phil.) began experiments also. Thomas Henry FRS (founder member of the Society) can be afforded the credit for successfully dissolving chlorine gas in lime water to produce a safe bleaching medium. By the late 1790's the foundation had been laid for an extensive chemical industry in Bolton, the general use of the product reducing the time for bleaching from 4-5 months to a few days to achieve the desired result in commercially viable quantities. This also reduced the need for selective cattle breeding for high milk output.

EMERGENCE OF TEXTILE MACHINERY AND STEAM ENGINES

Mechanisation of textiles with the attendant concentration in purpose built factories, stem from the invention in 1764 by James Hargreaves of Blackburn (12 miles distant from Bolton) of the Spinning Jenny with its multi spindles and hand drawn carriage. Richard Arkwright of Bolton and Preston produced a roller-spinning machine based on the ideas of John Kay of Warrington and Thomas Highs of Leigh (15 miles distant) in 1769. The Spinning Mule of Samuel Crompton of Bolton in 1779 combined features of the Jenny and the roller spinning. Richard Arkwright's machine could not be operated by hand, so, in conjunction with financial backers in the Midlands they built, in 1771 a large factory at Cromford, Derbyshire. His machines became known as 'Water frames', due to the fact that they were driven by a water wheel. He eventually employed about 600 men, women and children, and this set the pattern for phenomenal growth in textile mills. Machinery for the initial processing of cotton also came into existence; the mechanical carding machine by Lewis Paul in 1748, then two years later a comb doffer was added and in 1797 the machine at the end of the preparation process, the scutcher, was in existence.

These new machines required a power source other than water wheels, which could work regularly independent of the amount of rainfall. The answer came when James Watt, instrument maker at Edinburgh University was asked to repair a mode! Newcomen Atmospheric engine. He invented a separate condenser to conserve the heat within the steam cylinder and over a number of years (1765/72) experimented with the engine.

This engine had been invented by Thomas Newcomen of Dartmouth Devon in 1708 and was a self - acting steam engine with an operating cylinder at one end of a rocking beam, the other end being attached to a pump rod. Condensing the steam in the cylinder by spraying in cold water produced a partial vacuum and atmospheric pressure forced the piston down raising the other end and the water bucket. James Watt in partnership with Matthew Boulton, a Birmingham businessman, improved the engine, which was patented up to 1800. in 1782 the engine was made double acting with steam being admitted to both sides of the piston. Also added was a sun and planet gear to the flywheel end of the beam to obtain rotary motion. The problem of attaching the piston rod to the end of the beam was resolved by his classic invention of the Parallel Motion mechanism. This was coupled, in 1788, with a centrifugally worked bail and lever governer to regulate the steam flow. This had been invented and patented by Thomas Mead to regulate the furling of corn mill sails in 1787. When the Watts' patent expired in 1800 over 500 such engines had been made and installed in mills and other factories in Great Britain, one of the earliest in the Bolton area was in 1798 at the Ridgways Bieachworks at Norwich (6 miles distant).

Thus the scene was set for the expansion of textile, steam and general engineering in Boston and throughout Lancashire and Yorkshire to make the Northern Counties pre -eminent in these fields of expertise.

The onset of mechanical textile machinery, which were both steam and water powered, created Boston's first cotton mills. The first was St Helena Mill (1780), built by James Thweat on the banks of the River Croal, it survives today as the Probation Office. Between 1782 and 1794 the number of mills had reached 18, sizes varied, but were four or five stories high with pitched roofs and small framed windows. Damside mill at Darcy Lever was built in 1787 and was subsequently equipped with Crompton Mules totalling 3/400 spindles and driven by a water wheel from a weir (still visible today) on the lower part of the River Croal. On the outskirts of the town in the district of Halliwell, a Mr Whewell built a mill in 1793 on the bank of Dean Brook, in the early 1800's Robert Lord took this over, demolished it and built a larger one down the Brook. This was four stones high, equipped with Crompton Mules and driven by a 42-foot diameter water wheel, this formed the nucleus of a later Mode! village. Two miles away at Doffcocker, John Heaton erected a three-story mill for Crompton Mules, this was later converted into houses and survived as such for many years.

At the lower end of Boston, James Carlisle built Bradshawgate Mill in 1787, this was water wheel operated from a cistern in the roof, and water was pumped from

a reservoir by a Watt Steam engine and returned via a millrace. This was the first time such an engine had appeared in Bolton. Four miles North of Bolton a water-powered mill was built in 1782 by William Langshaw on the banks of Eagley Brook, house soon appeared and larger mills were built and subsequently developed into another Mode! Village.

The reference to multi-spindled spinning mules used prior to 1800 indicates that engineering had indeed taken root in Bolton. The makers of these machines were Isaac Dobson and his partner Peter Rothwell, who established the first engineering works in the town in part of Peter Rothweil's timber yard in Blackhorse Street in 1790.

EXPANSION AND DEVELOPMENT OF INDUSTRY IN BOLTON

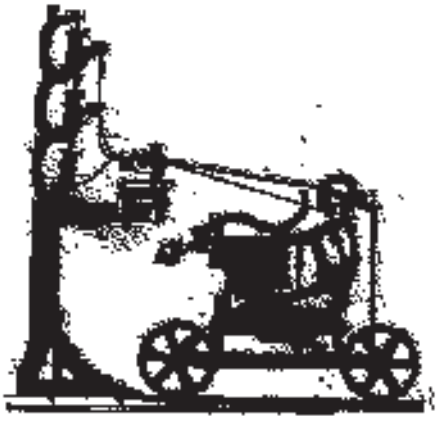
In 1801 the population of Bolton was 17000, many of whom were employed in the expanding number of cotton mills, bleaching and engineering works. Various Directories of the 19th Century list steam engines, hydraulic presses, and mill and textile machinery manufactured by Bolton firms. These firms were comprised of Thompson, Swift and Cole St Georges Street (now a night club), Dobson and Rothwell (later Barlow), Rothwells Union Foundry Moor Lane, Benjamin Hick Soho Foundry Crook Street, Thompson and Butler Wharf Foundry, John Musgrave Globe Foundry Kay Street, Thomas Ryder Turner Bridge. This latter firm made the special fluted and plain rollers and cop flyers for the Mule Spinning machines, and Richard Hough Nelson Square who made the bowls or rollers for the callender machines used in bleachworks. This was in effect, a vertical system of heavy rollers, engine driven, to squeeze and smooth cloth in the bleaching process. Robert Whitehead's father was a callenderer, and would have been employed in this specialised process at one of the many bleachworks. The basic metals required for these works products came from the Bolton Iron and Steel Company situated next door to Rothwells Union Foundry (now the bus station).

By 1853 there were about 30 engineering works, large and small, 24 bleach works, 30 coal dealers, 65 firms or individuals making cotton or muslin cloth, 115 milliners, dressmakers and over 650 shopkeepers in Bolton and surrounding districts, plus more wide ranging businesses such as saddlers, blacksmiths, rope makers and rag dealers. 200 public houses and over 300 beer houses (a form of 'off-licence') were supplied from 11 breweries. The 1851 Census gives the population of Bolton Parish as 90,000 and with the inhabitants of the Bolton Union (Poor Law) in the outlying districts, a total of 114,712.

During the period up to 1850 other qualified Bolton men had reached similar eminence, to that of Robert Whitehead. William Wain, a steam engineer went to Denmark in 1844 and became the Superintendent of the Royal Dockyard, and partner in the shipbuilding firm of Burmeister and Wain. Charles Hill migrated to Sweden in 1843 and was involved with the modernisation of the Textile industry.

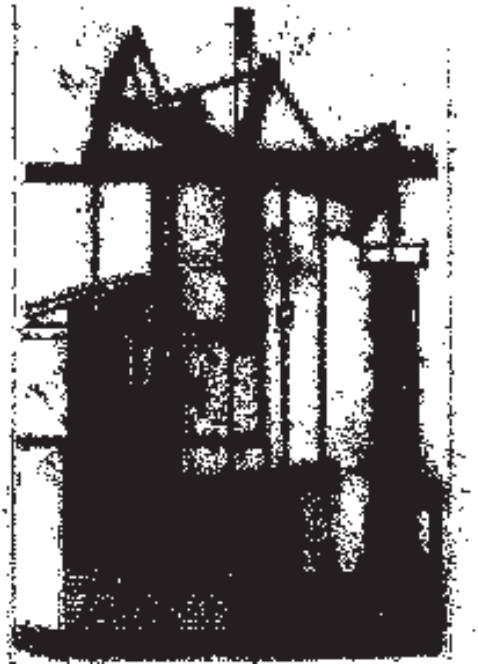
James Hargreave's Spinning Jenny. Hand powered spindles and drawing - out carriage.

Richard Arkwright's water powered roller and flyer spinning machine, called the "Water Frame"

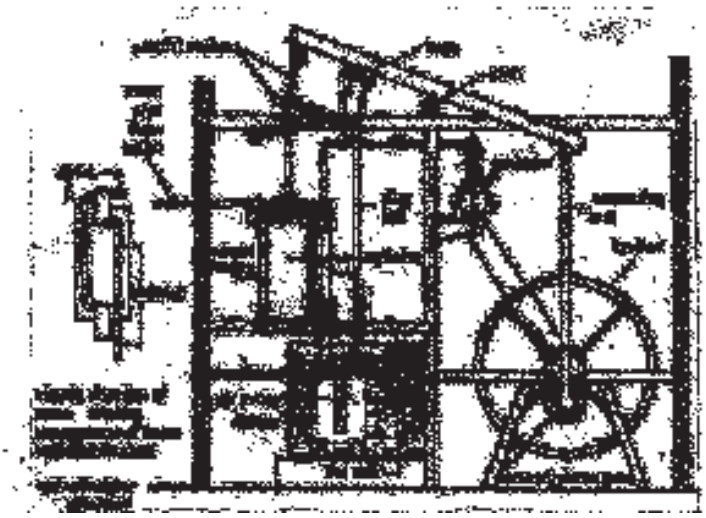


Basic elements of Samuel Crompton's Spinning Mule

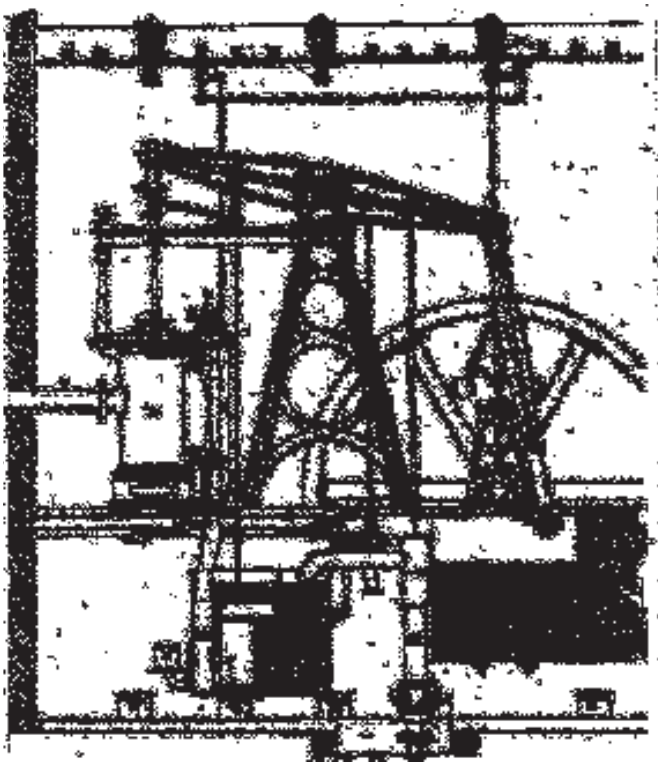
Thomas Newcomen's atmospheric engine 1782



James Watt's single acting engine. Note chain links to piston and punp rods.



James Watt's duble acting engine. Shows essential features and parallel linkage.



Beam engine made in Bolton 1840 by Rothwell, Hick and Rothwell's Union Foundry Bolton.

Thomas Sutcliffe Mort went to Australia in 1850, became a prominent businessman linked with wool and wholesale meat freezing for export and Thomas Hargreaves Ainsworth found his way to Holland in the 1830/5 period and revived the dormant textile industry there.

From 1850 the major engineering firms of Bolton were involved in some large-scale projects, such as more powerful steam engines and development of the tandem twin cross compound units and rope drives for the multi- storied cotton mills. Rothwells built the eight large beam engines and boilers for the Abbey Mills Pumping Station, which is still part of London's drainage system and a major part of Sir Joseph Bazalgette's large overhaul of the City's sewer layout. Abbey Mills was opened in 1886 and the steam engines lasted until 1931/3.

Hick Hargreaves designed, in 1880, a compact self contained cold air refrigeration plant and installed it in meat freezing works in Australia and also in two ships, SS Sorrento and Marsala, built by Alexander Stephens on Clydebank in 1882 and 1883. These were used to bring frozen meat from Australia to Europe.

John Musgrave at Globe Foundry built a large number of steam engines for many overseas cotton mills in Russia, South America, Japan and India as well as England. They also built two very large four cylinder compound engines in 1903/4 for the Manhattan Power Station and New York City electric railway; four similar, but smaller models were installed in the London C.C. Tramway power station two years later.

Hick Hargreaves also built the 1500hp engine for Ferranti's Deptford power station in 1889, London's first major electricity works. This was the world's first high voltage central generating station. Also during this period Samuel Chatwood, bankers engineer, Bolton, produced a wide range of top class safes for banks both at home and overseas. A gigantic four level strong room was built for the Imperial Ottoman Bank Istanbul in 1892; this has been fully restored and recently opened as a Banking Museum.

These are but a few of the engineers and textile men who spread their expertise across the World and in doing so made Bolton a leader in many fields.

Many steam boilers could only be made in the works yard, causing much disturbance to the local inhabitants in the form of excessive noise.

Large scale production of soda and other chemicals in Bolton, by such men as William Blinkhorn and John Rainforth, created excessive atmospheric pollution.

The site of this early Bolton engineering works is now the bus station.

Barlow and Jones, Bolton. Cotton Mill built 1851

Samuel Crompton's spinning mules inside the Abbey Mill of Barlow and Jones.

Ferranti 1000 kW alternator and Hick Hargreaves (Bolton) 1500 hp steam engine in Deptford electricity generating station 1889.

Alternator driven by 40 cotton ropes from the 1500 hp engine.
Speed of rotation 120 rpm 1889.

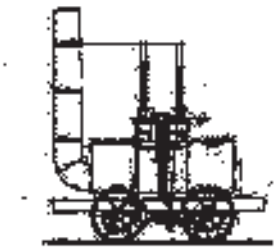
DEVELOPMENT OF INLAND TRANSPORT

By the Middle Ages the great Roman road system linking London with Chester, York, Bath and Exeter had deteriorated so much that the Crown issued a Decree in 1555 that Parishes had to maintain local roads at their own expense. Inevitably this resulted in further decay of the surfaces. By the 18th Century carriages of goods by road was by packhorse and heavy, broad wheeled horse carts. Between 1750 and 1820 improvements followed. The privately financed toll roads were repaired, the user paying a fee, which helped to pay for the repairs of the road, and made a small profit for the backers, called a Turnpike Trust.

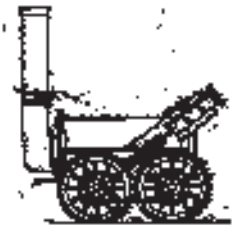
The Manchester Directory for 1772 shows the extent of the commercial road transport organisation. Heading the list was the firm of Matthew Pickford (still in existence) as 'London Carrier' with a twice-weekly service to London. Within 25 years this firm had expanded with 50 wagons, 400 horses and 28 canal boats. By 1818 Bolton firms had a choice of 28 carting agents, one of whom was a woman, Ann Boardman. All were prepared to travel to all Northern towns and into Scotland as far as Aberdeen, London and the South West Counties were not forgotten either. To cater for wagon repairs Bolton had, at that time, 11 wheelwrights and blacksmiths, two veterinaries who would attend to the horses and also act as farriers. An important mode of inland transport was the canal system, which, at that time, covered most of England and parts of Scotland. It all started in 1759 when the Duke of Bridgewater, owner of extensive coalmines in Worsley (3 miles from Bolton), built a 10-mile canal, including an aqueduct over the River Mersey, terminating in Manchester. As the coal was on two levels and extended under the west side of Bolton; a 42-mile underground canal system was developed with inclined planes linking the levels to an outlet at Worsley Delph (still visible today). Other canals soon followed; Leeds and Liverpool 1768 -1810, which via the River Aire in Yorkshire linked Hull with Liverpool. The Grand Trunk 1766 -79 joined the Rivers Mersey and Trent, then, via the Grand Junction, a direct waterway ran from the North West to London, thereby boosting trade in coal, salt and cotton. In Manchester at Castlefield Basin (now a pleasure boat marina) was the hub of canal traffic between the Bolton, Bury and Manchester (1791), Ashton Rochdale and Bridgewater canals, and a gateway into the National Network. Increasing delays on the canals led a group of Bolton businessmen to promote a railway to Leigh, mainly for coal traffic from Hulton collieries. It was opened on August 1st 1828 with a locomotive 'Lancashire Witch'. A stationary engine assisted the movement up the steep rise out of Bolton once the line was operating fully. Passenger transport in the early 19th Century was a hazardous undertaking by road, but by travelling via public houses, could sometimes be convivial. With the establishment of Royal Mail coaches, Bolton soon became a regular calling point and by 1829 44 coaches were scheduled to leave the town each week. Letters from London arrived at the Swan Hotel Churchgate, each day at 7.00 pm and departed the next day at 7.00 am.

The rapid expansion of railways in Great Britain came in the early 1830's when, between 1836 and 1837, 39 Acts of Parliament authorised building of railways. By 1838 the London - Birmingham line was open, this linked the Grand Junction, Warrington to Birmingham (1837) and thus by the late 1830's it was possible to go by rail from Liverpool, Manchester and Bolton to London (Bolton - Manchester line opened 1838) The railways created a tremendous expansion in engineering for Bolton and surrounding districts in Lancashire. Benjamin Hick's Soho foundry built a number of locomotives of which a collection of original drawings is held in the Bolton Archives. Peter Rothwell's Union foundry built over 200 locomotives, some even for Brunei's broad gauge lines (7 foot as opposed to the standard 4 foot 8 1/4 inches). Messrs Crook Dean and Thompson, Swift and Cole also made an unknown quantity of locomotives, details of buyers not known. Other engine builders arose in the area, such as Tayleur and Stephenson's Vulcan foundry near Warrington, and in Manchester Sharp Roberts and Fairburn's. The extent of engines usage on the Liverpool - Manchester line between 1829 - 1834 (opened fully in 1830) can be seen from a list of 36 engines used there, 17 were from Stephenson's at Newcastle upon Tyne, the rest from other local makers. By the end of the 19th Century large locomotive works were established at Crewe, Swindon, Manchester, Doncaster and Glasgow, and at Horwich, 6 miles from Bolton, the Lancashire and Yorkshire Railway had a large workshop and iron foundry. The railway soon spread overseas and England's locomotive builders supplied many 'Firsts'. Stephenson's supplied 'America' to USA in 1829, in 1835 three engines to Belgium and a loco named 'Der Adler' to Germany. Two years later in 1837 Tayleur and Stephenson sent the first engine to Russia for St. Petersburg. Over the years many more engines were exported before the end of the 19th Century to India, South America, the Argentine and Japan.

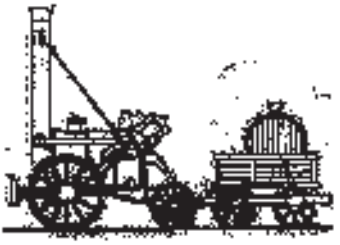
Thus the fame of Great Britain's railway engineers was spread rapidly across all parts of the globe.



George Stephens first engine "Blucher" 1814



Stephenson & Co's "Lancashire Witch" for Bolton & Leigh Railway 1828



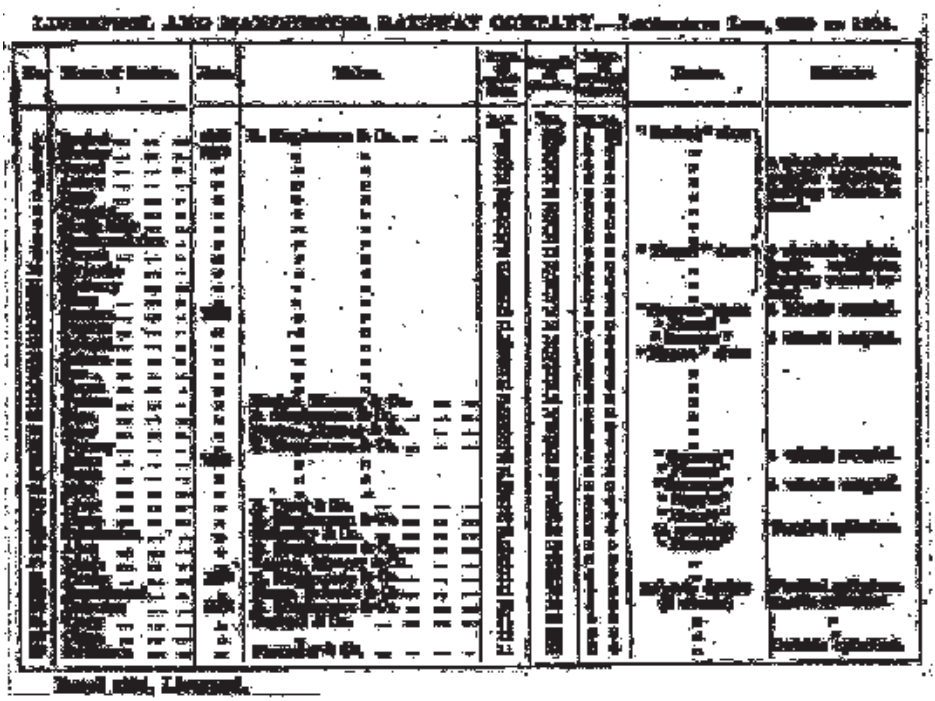
Stephenson & Co's "Rocket" winner of the Rainhill Trials 1829

7-foot gauge engine made by Rothwells Union Foundry, Bolton for Bristol and Exeter Railway 1853

The "Union" patended in 1834 by Benjamin Hick. The first locomotive made by Rothwell Hick And Rothwell, Union Foundry Bolton

Stephenson's standard passenger engine 1836. Stabilised design features blast pipe in tunnel, steam dome, safety valve, self-acting gear, and horizontal cylinder.

1895 express angine, built at Gorton, Manchester, for the Manchester, Sheffield and Lincolnshire Railway.



FOUNDATION OF LOCAL GOVERNMENT

On January 31 1792, an Act of Parliament, 32 GEO 11 CAP 71 passed into the Statute Book and the twin townships of Great and Little Bolton moved away from Manorial Court Laws towards industrial eminence. The town at that time, little more than a village, was centred on the Parish Church, and five minutes walk in any direction lay fields.

The Act permitted the Enclosure of Bolton Moor, on the west side of the town, and its sale in lots for business and domestic purposes. The Act also created two separate Board of Trustees to formulate policy whereby money could be raised for public purposes such as watching and cleansing, and also to establish obligations to aid the poor by levying a charge on business premises and certain homes. This was not perfect but at least with appointed overseers, an improvement on the Elizabethan Poor Law of 1601 which relied on moral considerations only. The Trustees appointed, which were, 40 for Great Bolton 30 for Little Bolton, were required to be in possession of real or personal estate of £1000 and £500 respectively. The first sale of lots came in 1793, which resulted in Annual lease payments of £2595. One of the first acts of the Trustees was the overhaul of the Poor Law System. A Poor House already existed in the town centre, this was closed and more spacious premises built about 1812, on the outskirts of the town (Fletcher St. Barracks now on the site). Following the formation of the Bolton and District Poor Law Union a workhouse was built at Fishpool (now part of the Royal

Bolton Hospital). The Little Bolton Minute Books (Bolton Archives) give some indications of how the growing population suffered from pollution by noise, smoke, and chemical fumes. The Trustees, in 1818 received a complaint over boiler making at a local works, a deputation claimed that they were 'unable to bear the dreadful annoyance for 15-16 hours a day'. As rivetting and plate forming was all done by hand and heavy hammers, the firm were told to enclose the assembly area or face litigation. The early cotton mils each had a lodge of water near to the engine house; this was always warm from the steam engine exhausting into it, a form of energy conservation. In February 1832 a long complaint was registered regarding the factory of John Lum, it included the following, 'his extensive lodge of filthy warm water, the stinking effluent of which is regularly penetrating our dwellings'. He was given 90 days to rectify the problem or risk fines. Two local men, William Blinkhom and John Rainforth, were manufacturing sulphuric acid and other chemicals needed by the bleaching trade. They created such poisonous fumes that they both had to close down. Chemical manufacture in general, moved down towards the River Croal at Farnworth. The smoke from mill chimneys was a continuous source of trouble for the Trustees; they maintained a 'Chimney Raising Book' (Bolton Archives) and those entered in it were ordered to raise their chimneys to disperse the smoke over a wider area.

The water supply of both Great and Little Bolton was enhanced in 1818 when the Bolton Waterworks was founded, with plans for expansion in catchment matters. In January 1824 a large reservoir, on the moors to the north of the town, was planned with a proposed 25,000,000-gallon capacity. This capacity was raised to 30,000,000 when the contract was advertised in July 1824, which included cast iron pipes of 12-inch diameter to take the water, by gravity to the town. By February 1827 the Water Company was in a position to supply works and homes at varying rates.

In July 1820 the leading industrialists, Isaac Dobson, Benjamin Hick, Thomas Hardcastle and Peter Rothwell, formed the Bolton Gaslight and Coke Company. They provided gas for industrial lighting, street lamps and public buildings. The illuminating quality was not particularly good, as the naked flame was, by reason of its shape, called 'Bats Wings'. There were disputes with the Little Bolton Trustees over costs and quality, which led them to consider making their own gas, but these were shelved on estimated capital costs.

Because of open gas flames, oil soaked wooded floors and dust; the 19th Century cotton mill was a serious fire risk. Both Boards of Trustees bought horse drawn fire engines, as did a number of mill owners. These were manually pumped by teams of men, some of the engines were quite powerful for the day, but once a cotton mill set alight it was almost impossible to prevent complete destruction.

In August 1850 a Bolton Improvement Act abolished the separate Boards and founded the Municipal Corporation. Having overcome the political troubles following the 1832 Reform Bill, and the 'Plug Riots' of the 1840's (Forcible removal of steam boiler washout plugs to cause mill shutdown), the town set course for its position of engineering and textile prominence. Public utilities such as

drainage and sewer works and expansion of the early Mechanics Institute into a technical college followed with the help of industrialists. Then came Elementary education, after the 1870 Education Act, and public open spaces (Queens park as an example) appeared in various parts of the town for the free use of its population.

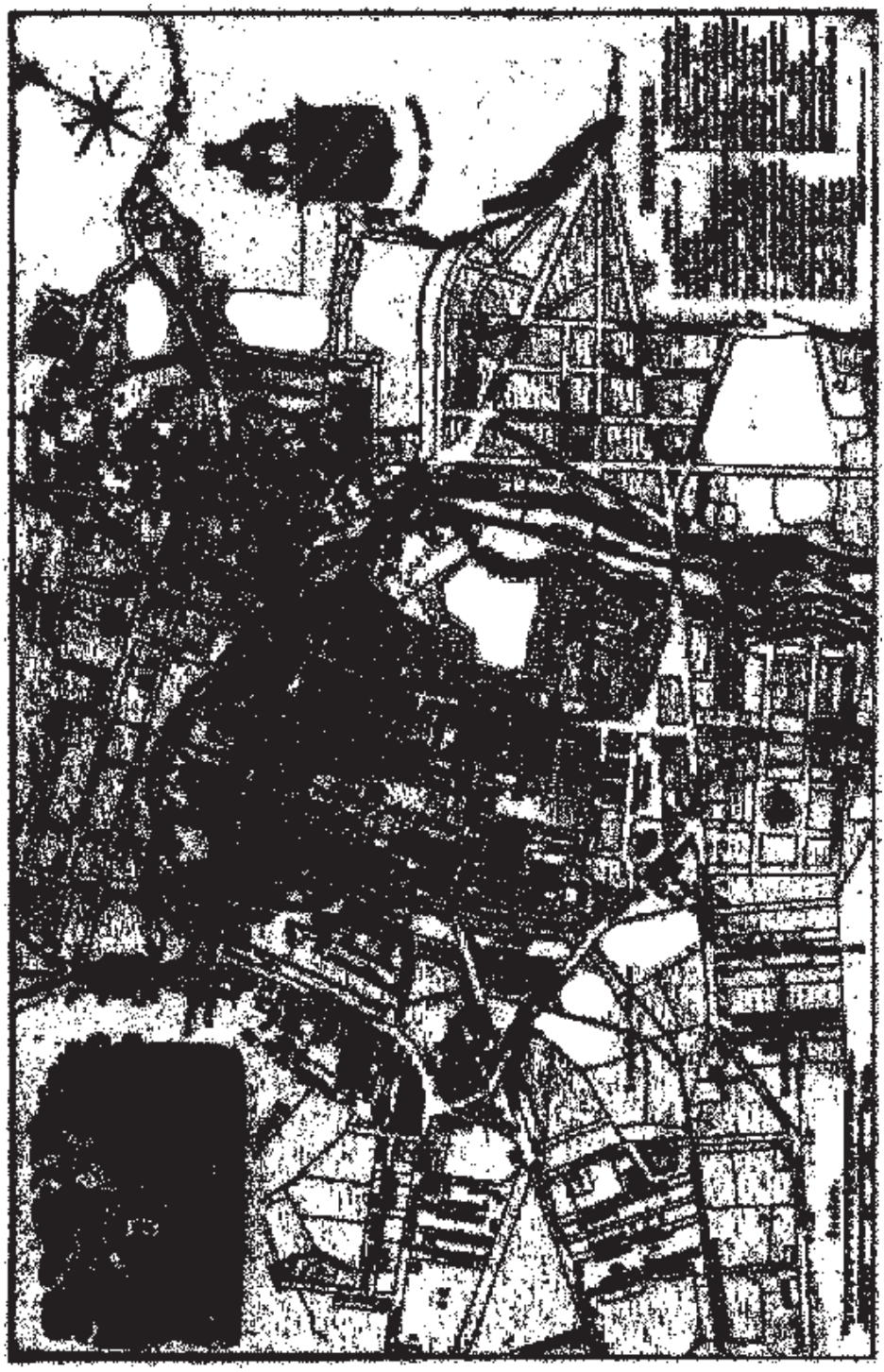
The spread of the Co -operative movement, with its emphasis on employees and equitable ideals, created the Bolton Co-Op Society in 1859 and, by the turn of the 19th Century, was in fact the largest single retail organisation in the town and provided everything its members required in food, clothing and entertainment. It survived until the extensive reorganisation the 1960's following changes in industry and the alteration in the way of life for the majority of Bolton's inhabitants.

TRANSITION: WORKPLACE TO CONSERVATION AREA

The 19th Century expansion of Lancashire textile industry created the rows of terraced housing for the employees of the many cotton mills. A rough and ready communal existence gradually developed centred on local churches, schools, public houses and corner shops. The mill owners built their opulent residences in the suburbs away from the continual smoke from factory chimneys and domestic hearths. Bolton mill owners were no exception to this trend. The employees did have some respite by waggonette trips to the countryside for picnics and Sunday School outings, and would have been introduced perhaps to the villages of Barrow Bridge and Eagley, both only 3-4 miles from Bolton and on the edge of open moorland. Both places were examples of successful social experiments for textile employees and are now Conservation Areas.

BARROW BRIDGE

In the late 18th Century a Mr Whewell built a small stone cotton mill on the banks of Dean Brook Halliwell. This was later bought, demolished and rebuilt lower down the Brook by Robert Lord, who with the aid of a 42 foot waterwheel, produced cotton on spinning mules. In 1830 a wealthy Manchester cotton magnate, Robert Gardner, bought this mill, and a large tract of land, together with 25 cottages. He demolished the old mill and replaced it with a four storey one, with new machinery powered by the steam engines of Benjamin Hick of Bolton. At the same time five rows of spacious houses were built, with a water supply from a new reservoir close to the topmost row, others were built on the banks of the Dean Brook at the top of the village for senior employees. A large building was erected close to the houses and used as a school, day and evening, and as a venue for public gatherings. To manage this village Robert Gardner entrusted his partner Thomas Bazley, and in doing so created a model based on equitable principles, fair wages and good accommodation. To further this ideal both men were agreed that it could only function if it was unencumbered by public houses



Map of Bolton 1824

Map of Bolton 1792-3

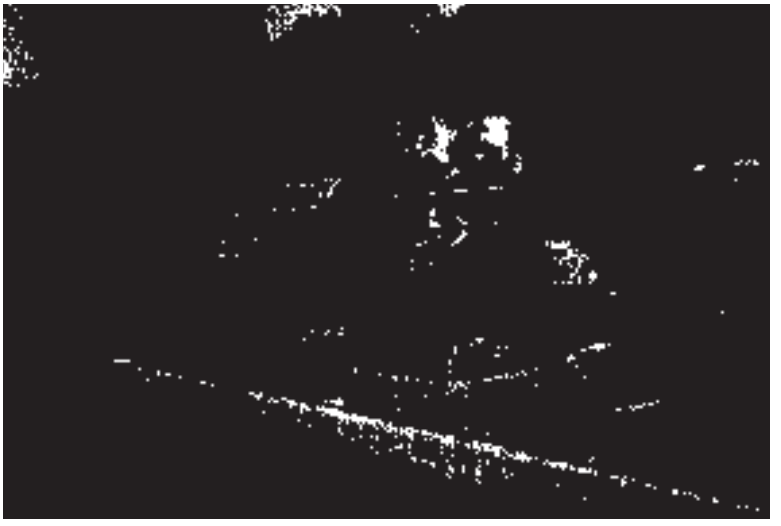
Robert Lord's mill circa 1800-10

Dean Mills circa 1810

Dean Mills 1913/14 prior to demolition

Sito of Dean Mills today (2003)

Dean Mills factory houses today (2003)



Dean Mills senior managers houses today (2003)

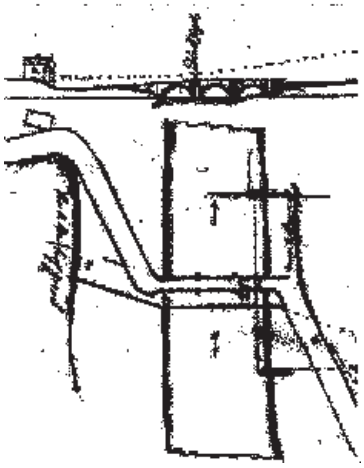
and denominational churches. The village school reflected this as the four teachers were from Roman Catholic, Methodist, Church of England and Baptist faiths. Both men did however encourage their employees to follow their own religions at the local places of worship.

The population of Barrow Bridge grew as the mill expanded. The 1841, 1851 and 1861 Census gives the following numbers of population as 238,422 and 440 respectively. Robert Gardner died in 1866 and the mill and estate came under the full control of Thomas Bazley, who had in fact retired from active participation in 1859. In 1867 he sold the entire estate and mills to a Manchester textile family called Callender. After two members of the family died, a serious financial situation arose in 1876, which revolved on some complicated legal responsibilities, and the matter was placed in the hands of the Chancery Courts, which resulted in complete closure in 1877. The village became known as The Deserted Village'. Various attempts were made to revive business, but to no avail and the mills were demolished prior to the 1914/18 War. Life at the village did revive in the shape of market gardening, a commercial laundry, boating lake and tearooms, and survived as such into the 1960's. The lake is now a car park, the Institute now converted into prestigious apartments and the whole village is now a Conservation Area under Bolton Metropolitan Council.

EAGLEY MILLS AND VILLAGE

About the time Barrow Bridge was being established, a similar project was unfolding three miles away on the banks of Eagley Brook, where a William Langshaw, in 1792 built a spinning mill on land leased from the Earl of Wilton. The Earl became its owner following threats of prison for Langshaw, who had illegally felled trees in building the mill. He promptly re leased it to a Mr Wakefield, who expanded it as business improved. After one or two more changes in lessees, the Chadwick Brothers in nearby Eccles Manchester took it over in 1820. Ten years later all was sold to Messrs J & N Phillips of Tean Staffordshire and in 1856 after much expansion, Arthur Greg, a Director of Phillips came to Eagley as Managing Director. He was a grandson of Samuel Greg, founder of Styal Cheshire, mill and model village (now owned by the National Trust), and set about the creation of a similar establishment. Extensive building followed up to 1893 when the last mill was opened, by which time over 2000 local people were employed there. It became, in 1896, a part of the Coates of Paisley organisation under the title of United Thread Mills. Business fluctuated between the two World Wars, a boom in the immediate post 1939/45 war years faded away with imports in excess of exports of textiles and in June of 1972 Eagley Mills closed forever. Two separate building firms redeveloped the area and some of the mill buildings into expensive private residences in accordance with Bolton Council's Conservation Rules.

As the mills expanded so did housing, by 1838 eighteen cottages has been built by the mills and a large managers house 'Sandbanks' appeared in 1847. Three years



1792 surveyors plan, shows William Langshaws' mill on the left hand side.

Eagley Mills 1886, note original mills in foreground

Road through the village, former Eagley Co - Op on the right hand side.

Eagley Mills factory employees' houses at Eagley Bank.

later six managers houses had been built and in 1853 forty-four had been built at Eagley Bank in 1868 eleven had appeared near to the school (built 1851). In November 1860 Arthur Greg brought his new wife, Margaret, to live at 'Sandbanks'. She soon became involved in village activities. Over the years she encouraged the Sunday school, taught girls rudiments of cooking and kept an eye on the general welfare of the mill workers. Over the years sporting activities were encouraged as well as Glee Clubs, a choir, and other musical occupations, also summer fairs and winter carols round the village, headed by the old established brass band (still in existence today). The Co -operative ideals reached Eagley in 1859 and 139 villagers founded a branch (Register in Bolton Archives). By the time (1924) of its amalgamation with the Bolton Society it had three large shops and at least twelve houses for rent to members, and matched the other social organisations such as the Book Club (later the library), Mutual Improvement Society and the Nursing Association. All of which made Eagley a fairly self-supporting village running on similar lines to the one at Styal. The village today still retains some of its original features and attitudes and is preserved, to some degree, from the encroachment of modern ideas and uncontrolled building expansion by Conservation Regulations.

CONCLUSION

This paper shows how British and in particular, Bolton industries developed. It was into this period of change that Robert Whitehead was born, and grew into the fine engineer we know of today. Indeed it could be argued one of the finest that Europe has produced.

Sažetak

USPON BOLTONA KAO VAŽNOG TEHNIČKOG I TEKSTILNOG SREDIŠTA U ENGLESKOJ OKO 1800. GODINE

Denis O'Connor

1. *Ekspanzija ručnoga tekstilnog zanata koji je u Boltonu osnovan davno prije. Tkalci posjećuju sajmove u Manchesteru (udaljenost 12 milja) još prije 1800. Izbjeljivači tkanine eksperimentiraju s klorom da bi udovoljili zahtjevima za odjećom. Prve tvornice pamuka. Podaci o stanovništvu.*
2. *Strojni proizvođači tekstila pojavljuju se u Boltonu prije 1800. godine. Projekti temeljeni na izumu Samuela Cromptona* Spinning Mule *1779., u kombinaciji sa* Spinning Jenny iz 1764. Jamesa Hargreavesa *i* Roller Spinning *iz 1769. Richarda Arkwrighta. Osnovano tijelo za poboljšanje rada i ekspanziju pamučnih predionica u Lancashireu. Rudnici ugljena u predgrađu.*
3. *Osnovane tehničke tvrtke poput* Crook and Dean, Benjamin Hick, Peter Rothwell, Dobson and Barlow, Thompson, Swift and Cole*. U planove za ekspanziju tih tvrtki uključeni parni strojevi koji se temelje na izumu Jamesa Watta.*
4. *Napredak u prijevozu, prelazi se s konja i kola, diližansi i teretnih konja na proširenje kanala i željeznice. Koriste se kanali Bolton, Bury, Manchester koji se potom spajaju na nacionalni sustav u Manchesteru. Lokalno se grade barže za kanal. Godine 1828. pušta se u promet željeznička pruga između Boltona i Leigha (prva javna željeznica u Lancashireu). Veza s nacionalnom mrežom nakon puštanja u promet željezničke pruge Liverpool – Manchester 1830. godine, koja doživljava ekspanziju u smjeru Birminghama i potom Londona. Lokalne tehničke tvrtke grade brojne lokomotive za različite kompanije.*
5. *Slijedeći* Enclosure of Bolton Moora *iz 1792. godine oformljene su općine Velikog i Malog Boltona (koje dijeli rijeka Croal), s odvojenim upravnim odborima, radi reorganizacije starih zakona i prakse te s namjerom ubiranja sredstava radi poboljšanja infrastrukture poput one vezane uz vodoopskrbu, obrazovanje, kulturu i zabavu, da bi se stvorili preduvjeti za razvoj do razine preostalog dijela Engleske. Predstavnici u Parlamentu.*
6. *Stvaranje Zajednice naselja s ciljem poboljšanja uvjeta rada tekstilnih radnika i zaposlenja. Primjeri: naselja Barrow Bridge i Eagley Villages, danas su to konzervirana područja.*

Abstract

THE RISE OF BOLTON AS AN IMPORTANT ENGINEERING AND TEXTILE TOWN IN EARLY 1800 ENGLAND

Denis O'Connor

1. *Expansion of old established hand textile trade in Bolton. Weavers attending markets in Manchester (12 miles distant) pre 1800. Bleachers experimenting with chlorine to cope with the demand for cloth. Early cotton mills. Population figures.*
2. *Formation of textile machinery makers in Bolton pre 1800. Designs based on Samuel Crompton of Bolton invention of the Spinning Mule 1779, this combining James Hargreaves Spinning Jenny 1764 and Richard Arkwright's Roller Spinning 1769. Founded Lancashire cotton spinning supremacy. Coal mining on outskirts of town.*
3. *Mechanical engineering firms founded such as Crook and Dean, Benjamin Hick, Peter Rothwell, Dobson and Barlow, Thompson, Swift and Cole. Expansion of these firms to include steam engines based on James Watt's beam design, whose parallel link motion, was a significant invention.*
4. *Transport progress from horse and cart, stagecoach and pack horses to canal and railway expansion. Bolton, Bury, Manchester canal in full use and then linked to national system at Manchester. Canal barge making locally. Bolton to Leigh railway opened in 1828 (First public railway in Lancashire). Linked to national network when Liverpool – Manchester railway, opened in 1830, expanded in the direction of Birmingham and then London. Local engineering firms made a number of locomotives for various companies.*
5. *Following the Enclosure of Bolton Moor in 1792 the Townships of Great and Little Bolton (divided by the River Croal) were created with separate Boards of Trustees, to overhaul the ancient Laws and Practices, and raise money to improve public facilities such as water supplies, education and general amenities to allow industry to expand relative to the rest of England. Parliamentary representation.*
6. *Creation of Community villages based on textiles improve workers conditions of employment. Barrow Bridge and Eagley Villages as examples, both of these are now Conservation Areas.*