



Guide to: Broadley and Broadley Wood Mill

King Cotton

Britain became the world's first fully-fledged industrial society and cotton played an important role in this. It can however be claimed that Lancashire's textile industries were at the frontline in development of the Industrial Revolution and the technology that dominated it.

Cotton made Britain the 'workshop of the world', claiming to satisfy the home market before breakfast and everywhere else afterwards; 'Britain's bread hung by Lancashire's thread' was a common saying.

Without the new technology, which was for the most part invented and developed in the North of England, this would not have been possible.



The cotton flower from Spinning the Web

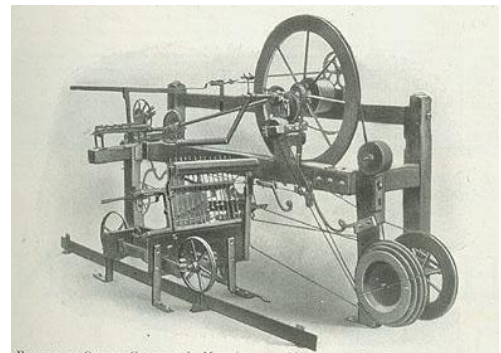


Hand Weaving and Spinning from Spinning the Web

Spinning cotton was not a difficult process, but it was time consuming. For centuries yarn had been spun at home on spinning wheels; the raw material was stretched and then twisted until it produced thread. From Thomas Highs' design of the Spinning Jenny (that was like a glorified spinning wheel which, initially, could stretch and spin six separate yarns at once), it developed to contain rollers, and eventually was powered by water. By this point the machinery was too large to fit into the home, and so textile production moved into factories.

In order to harness the force of water, factories had to be built by rivers and streams where there was a constant source of the energy that could turn the water wheels, which in turn could power the machinery. It was because of this that cotton factories were called 'mills'.

The cotton was thick and could only be used for weft, anything thinner still had to be made by hand. However, by 1779 Samuel Crompton from Bolton had designed the Spinning Mule which produced a cotton thread so strong and fine that it dominated manufacturing by the 19th Century.



Portion of a Crompton's Spinning Mule

Without the Mule and its flying shuttle, cotton production would not have become the jewel in Britain's industrial crown, accounting at one point for more than half the country's exports.

The History of Broadley Mill

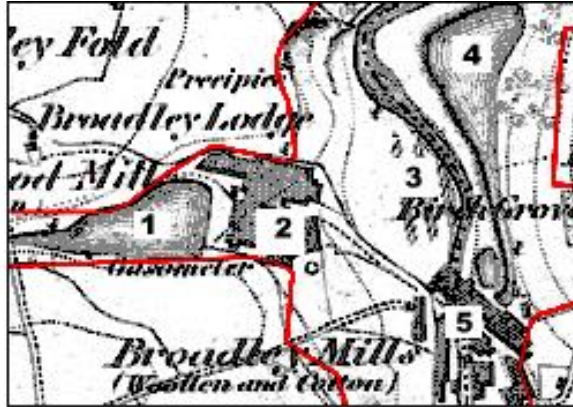
Broadley Mill is one of the earliest mill sites in Healey Dell. The exact date that it was built is contentious, with 1768 as the earliest provable date. There is, however, the possibility that it was used from 1636 as a fulling mill, and as a corn mill before that.

Broadley Mill and Broadley Wood Mill lay adjacent to each other across the River Spodden, and it was not until 1824 that they were named separately.



This was because Broadley Wood Mill grew as an offshoot from Broadley Mill as productivity and methods quickly developed.

Within a matter of years Broadley Mill and Broadley Wood Mill were distinctly separate and owned by different people and companies.



- Key:
- 1 Broadley Wood Mill Reservoir
 - 2 Broadley Wood Mill
 - 3 Tenterfield (Broadley Mill)
 - 4 Broadley Mill Reservoir
 - 5 Broadley Mill

What was at Broadley Mill



Broadley Mill

Broadley Mill was a large complex. The Spotland Poor Rate valuation of 1823 shows Broadley Mill as developing production beyond purely woollen manufacture.

However, it shut down much earlier than other similar mills, finally closing around 1880.

Between those times a cotton mill was also built adjacent to the woollen mill.

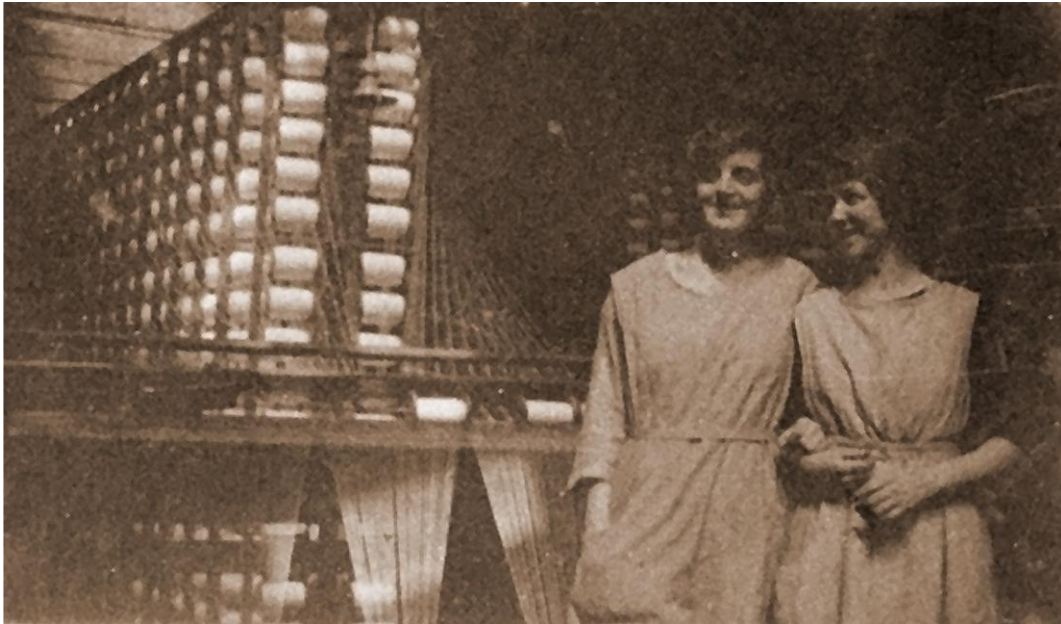
Factories and mills are often considered to have concentrated on one form of manufacture during the Industrial Revolution, but as the records for Broadley Mill show this was most certainly not the case. By 1843, the following, and more, were housed at Broadley Mill:

- Fulling Mill, stocks, water wheel and water power
- Woollen Mill
- Fire engine house, engine house, boiler house and steam power
- Dye house
- Chimney
- Smithy

Evidence implies that water power was installed in 1836. By 1890 the Mill's lease had come up for rent, at which point it was advertised that the site included a mill for fulling, spinning and weaving. There were two water wheels of 14 feet diameter, which supplied the cotton mill with 30 horse power. The weir was the original point of water power, feeding into a leat (an artificial water channel) until a reservoir was built in order to maintain and take advantage of the water.



The History of Broadley Wood Mill



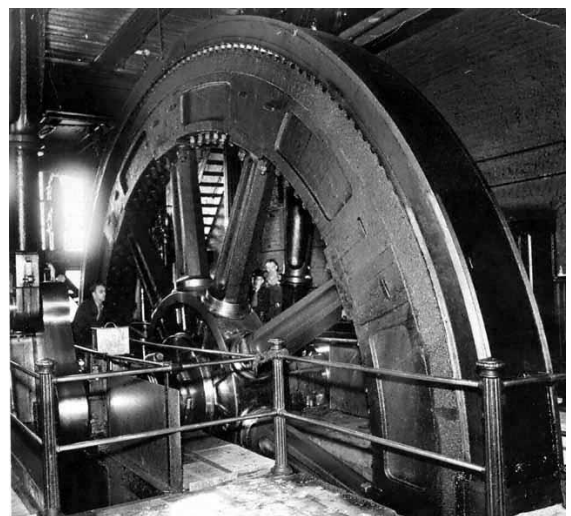
Spinners in Broadley Wood Mill

Unlike other mills in Healey Dell, Broadley Wood Mill was built on a small tributary stream rather than on the larger, and more powerful, River Spodden. There is no certain date for its erection, but it was certainly no later than 1818 when a water-powered site is shown on a local map. By 1890 there was a 40m by 17.7m single-storey weaving shed, a mill made of four buildings, including one which reached up to 4 storeys; plus an engine house which contained the surviving engine beds of three and a half storeys!

Charles Haigh occupied the mill from 1824 when previously it had been part of the Broadley Mill complex. Under Haigh it was a cotton spinning and manufactory mill, but by 1834 he had introduced steam-power. Huge expansion meant that it needed this form of power since the lodges and stream could not support the amount of work undertaken.

It is probably because Broadley Wood Mill was built on such a small stream that it was the first mill in the Dell to have abandoned water power in favour of steam, and by 1879 the only power source given for the mill is a 45hp engine.

Originally water power to the mill was provided by damming the stream to create a lodge. This is at the top of the steps. From here water was fed directly to the mill's water wheel from the headrace, while any surplus water was diverted around the south side of the mill by the still existing overflow channel called a byewash.



Stem Engine Provided by the Lancashire Evening Telegraph



The waterwheel itself must have been situated where the leat passed under the mill; this position was roughly in the centre of the mill complex and adjacent to the engine house which lay just to the north-east.

The Power of Steam

Steam was crucial to the development of industry and the factory system; it was 'the pivot on which industry swung into the modern age' (Smith 14). Compared to water-wheels, the steam engine gave two advantages to industry:

1. It provided a more consistent and reliable power to operate mass production in factories.
2. New or expanded mills like Broadley Wood Mill no longer needed to be built near a powerful river. They could be built anywhere, and this meant that the factories and the industry they supported could grow without the limitations that water power imposed.

A steam engine is a machine that changes heat into mechanical energy. Thus when water is boiled it turns from a liquid into steam which is a gas. Steam expands the volume of the water to over a 1,000 times its original size. This produces a force called pressure. It is this conversion process that is the basis of all steam engines. However, although the theory had been well known for a long time, it was James Watt's engine patented in 1769 that produced the first coal efficient, practical engine.

Nevertheless, until around 1780 the steam engine was still only used to pump water, so that early steam engines were only of any real use as an extra power source to water, as was the case at Broadly Mills. This was because the original Watt engines were a of low pressure design, whereas it was later realised that much lower coal consumption could be achieved with high pressure. In turn, reliable high pressure steam engines required big improvements in the design and manufacture of boilers. Thus it was only after the invention of the Lancashire boiler in the early 1840s that an economic proposition was seen in textile mills (von Tunzelmann, 1978).

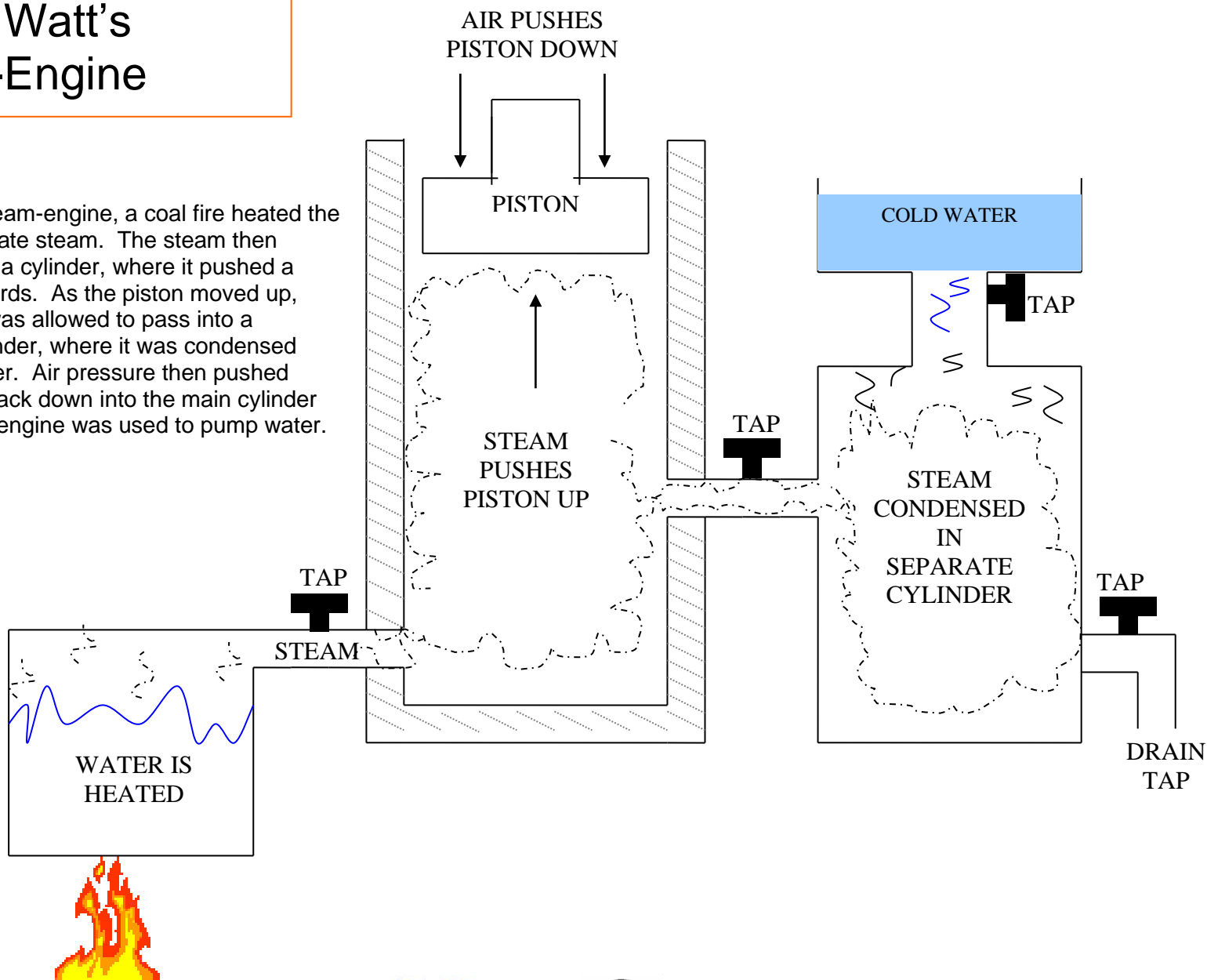
So for instance, if you go and look at the engine at the Ellenroad Engine House, you will see an engine that has remained unchanged since it was first put to work in 1842. The Whitelees engine was built by the Rochdale engine builders John Petrie & Co., and is just as James Watt left the steam engine when his patent for the separate condenser ran out in 1800.

The development of steam power meant that mills and factories could be built in towns, closer to a larger work-force. Introduction was gradual, since steam-engines were extremely expensive. In 1786 one cost £60,000. Think about that compared to a mill worker's wage in 1808; after an 84 hour week they earned an average of 8 shillings (40 pence). For mill and factory owners who adopted steam-power, they could make even more money through increased production and therefore increased profit.



James Watt's Steam-Engine

In Watt's steam-engine, a coal fire heated the water to create steam. The steam then passed into a cylinder, where it pushed a piston upwards. As the piston moved up, the steam was allowed to pass into a second cylinder, where it was condensed by cold water. Air pressure then pushed the piston back down into the main cylinder again. This engine was used to pump water.





The Tweedales of Healey



The Tweedales of Healey

The owners of Broadley Mills, John and Robert Tweedale, were involved in the most significant local industrial dispute of the early 19th Century.

When they installed the machinery that enabled mass production in their mills, the Rochdale Association of Journeymen, Weavers and Man Spinners called for a general stoppage in the area declaring:

'It is our intention to encourage by all means in our power, persons not to work after such machinery as you are now bringing to use, as we are certain that no good or benefit can arise into the labouring classes by the introduction of the machinery in question... the sole benefit... [would] go to the proprietors and not to the workmen' (Cole 43).

They were right. The machinery did the work of more people than it took to run it.

In response to this prospect, machine smashing was a common practice, but it did not help the worker's cause.

Rochdale manufacturers, convinced of the benefits to themselves, soon began to install more and more machinery, and the Tweedales continued to be an extremely important and wealthy family in the county.

The disregard for workers over profits shown explicitly during the Industrialisation of Britain caused much discontent, and the full force of the law was used against those people who protested against these inequalities. At this time workers could not vote (universal suffrage did not become law until 1928) and had no right to strike. It was therefore very difficult for them to fight the problems effectively.



What was it like to work in a mill?

As industry grew extremely quickly, so too did the amount of money the factory-owners could make. The more their workers produced the more money they would get.

The introduction of machines like the Spinning Mule and steam-power meant that everything could be done quicker and more efficiently than when people worked under the domestic system.



Healey Hall



Workers Housing

However, men, women and children were still needed to manage and run the machines, and the workers remained a necessary and important part of the production process upon which factory-owners depended for their wealth.

Little regard was given to their welfare. As a result, working conditions in the early mills were extremely harsh. This is highlighted when one looks at the conditions mill owners lived in, compared to that of their workers.

Working hours were very long, especially in the 'brisk time' when trade was very good and raw materials and finished goods could be easily transported.

A common working day was between 12 and 14 hours, but occasionally men, women and children worked as long as 19 hours a day, Monday to Saturday.

Children were extremely useful workers in mills. As the Industrial Revolution progressed many orphans and abandoned children from around the country were sold to factories and mills in Lancashire and Yorkshire and were housed either in workhouses, apprentice houses or even within the mill its self. There are some excellent websites on this, referenced at the end of the guide.



"Sarah Golding was poorly and so she stopped her machine. James Birch, the overlooker, knocked her to the floor. She got up as well as she could. He knocked her down again. Then she was carried to her house... she was found dead in her bed. There was another girl called Mary... she knocked her food can to the floor. The master, Mr. Newton, kicked her and caused her to wear away till she died. There was another, Caroline Thompson, who was beaten till she went out of her mind. The overlookers used to cut off the hair of any girl caught talking to a lad. This head shaving was a dreadful punishment. We were more afraid of it than any other punishment for girls are proud of their hair."

An interview in 1849 with an unknown woman who worked in a cotton factory as a child.

There were no laws or forms of protection for these children, so their masters could decide how much they worked and for how much money.

Children, whether

orphaned or not, were employed in cotton mills because the work was easy and needed little strength.

With jobs like piecing, where broken threads were joined together, their delicate touches and small hands were very useful. In fact, the jobs that children did could not have been done by anybody else.





For example, children who began work at around 4 or 5 years old were used to crawl underneath the machines to collect fluff off the floor whilst they were still running. Imagine what it was like to get your hair, clothes or hands caught in one of those!

A child in a mill was very poorly fed, in one mill 'apprentices struggled with pigs in the yard to get some of the food from the troughs' (Cootes 58), and because of the long hours in hot and stuffy factories, with very little sleep, their health was ruined and their bodies became deformed.



Inside a cotton Mill

As machinery used in the mills became more complicated and steam-power was introduced, less children were needed. Nevertheless, families could not generally afford to keep a child who was not working, and so they continued in some type of employment or faced destitution and the workhouse.

However awful this may sound, the workers who moved from cottage industries and agriculture in the countryside to towns and areas that had factories actually had a better quality of life.

They had worked just as long, if not longer hours previously, and the wages of the factory workers were higher than those who still worked on the land.

What the workers gave up was their independence- they began to work for someone who demanded and enforced rigid discipline. Regular hours, strict rules and regulations were heavily controlled. Children were beaten, continuously shouted at to keep them awake and alert, and their wages were reduced for mistakes or insolence.

'A few overseers were very cruel. For example a common punishment in one nail-making factory in the Midlands was to drive a nail through the worker's ear into the wooden bench.' (Gash and Watson, 13).

It was because of the lack of control over the owners that the workers revolted in the 19th Century, notably at Peterloo (1819) which resulted in the notorious Peterloo Massacre in Manchester. There is no evidence to suggest that the workers in Healey Dell were involved, but the tragic protests which were seen around the country had a devastating effect upon social conscience and ultimately, to some extent, they helped to improve the working conditions for many people in the mills.

Thus, in 1833, a new law meant that factory inspectors were employed by the government in order to control how the factory-owners treated their workers. However, in reality they were hardly effective as there were only 4 inspectors for all the factories in the whole country. It is easy to see how mill and factory-owners avoided laws which aimed to protect children and workers.

The health of people from the North of England continued to suffer until the First World War. The war effort encouraged able bodied men between the ages of 18 and 40 to sign up to the armed forces. The men from the mills however were not always able bodied, and in some cases were not physically fit enough to undertake active



service. It was this, and earlier concerns as to the fitness of the working classes after the Boer War (1889-1902), that made the British ruling classes realise that something had to be done to improve the nation's health.

Education

Although at the beginning of the 19th century there were some people who were in favour of widespread education, there was no universal desire for the education of the population as a whole, and education did not become a real priority until the year of the first Education Act of 1870. This was because:

1. The upper classes had been frightened by the revolutionary spirit seen in Europe that had been spurred on by the French Revolution (1789-1799), and wanted to try and make sure that such things did not happen in Britain.
2. The vast majority of the working class did not have any real interest in education. As we have seen, child labour was common and working-class families were very reluctant to give up the earnings of their children for the benefit of education.
3. The idea of non-religious education had never been popular, as education had been largely under the control of the churches who did not wish to lose this control. This was further reinforced by the increase in the Catholic population due to the wave of Irish immigrants during and following the Great Famine in Ireland (1845-50).
4. It was also thought that the voluntary school system was quite successful and that it was better not to encourage government intervention- and the state was only too happy to leave education to the private sector, voluntary or otherwise.

In 1841 the extent of the problem in the North of England was shown to those in power; many children could not read and write or do simple arithmetic. A Parliament Commission were shocked and appalled that British children had not heard of



London and thought the Queen's name was Prince Albert, although, some did think that it suited her! In a Christian society it was also rather problematic that few had heard of Jesus Christ. "Does 'e work down the pit?" asked one miner. Something had to be done.

Gradually, things improved for the working classes in England. Education benefited not only the workers, but also the government and the industrialists since it would give a more viable workforce in the future and allay the fears that Britain would be surpassed by international competitors, especially the Germanic States. In 1870 the Education Bill was introduced. It aimed to bring education to every child in England.

From
history.powys.org.uk/.../montgomery/edmen_u.shtml

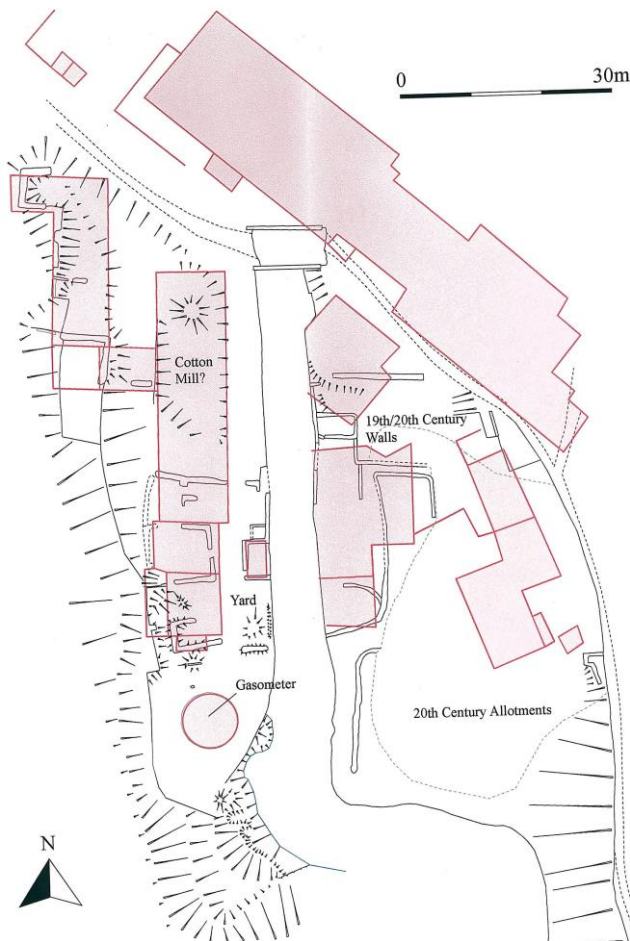


However, things were not that simple...

In a Victorian school there were often as many as 70 or 80 pupils in each class, and the education differed depending on whether you were a boy or a girl... boys learned gardening, shoemaking, carpentry and drawing... whilst girls had the extra lessons of how to keep a house, like sweeping, dusting, bathing a baby, cooking and needlework. Female teachers also earned less than their male counterparts, £58 compared to £94 per year!

Educating the workers meant that they could get ideas about moving beyond their station in life. By limiting the amount of things they could learn at Board Schools, the ruling classes still maintained control whilst making things appear better. There was no way that the education provided by the state would 'teach them to despise their lot on life' (Evans 36). Schooling was there to teach children simple literacy and mathematics, and then they went back to work. It was not until 1918 that the government forbade the employment of children under the age of 12.

The final days of Broadley and Broadley Wood Mill



Map of Broadley mill

All the later changes in education were to come too late for Broadley Mill workers. By around 1880 Broadley Mill had closed, and the 1890 Ordnance Survey map shows the site to be totally disused. By 1908 all but one of the buildings was a shell.

From the archaeological evidence it would seem that the main part of the site lay in the north, and comprised of an irregular range running roughly south-east to north-west. Its western half straddled the river.

On the east this abutted a narrower building which straddled the headrace and can therefore be assumed to have contained a wheelhouse. Whether this contained both of the mill's two waterwheels is uncertain.

The other buildings of the mill ran southwards from this main range, on either side of the river, where a number of stone footings are still visible.

On the south-east these buildings included what would appear to have been the mill-owner's house; a building which seems to have remained intact long after the mill



itself had become ruinous. This was presumably the residence of Robert Tweedale and his family.

The reference to 'throstle rooms' on the Catley Lane side of the site in 1843 implies that this was the location of the cotton mill. It was presumably located in the rectangular building lying parallel to the west bank of the river. This is not a part of the site which would readily have lent itself to water-power, in keeping with the cotton mill, and was probably solely steam-powered.

At the south-west corner of the site, the 1844-8 OS map shows a circular gasometer (a large container where natural gas or town gas is stored near atmospheric pressure at ambient temperatures), while the 1864 Rate Book indicates that the mill's gasworks were to be found on either side of the river, suggesting that the Retort House may have been among the buildings on the east bank. The columns which supported the gasometer are shown on one of the early photographs of the mill, while the site of the gasometer is still evident as a stone-lined circular depression.

The mill's tenterfield, documented from 1823 onwards on the Further Spotland side of the river, is shown on the 1844-8 map to have been located to the north-west of the mill buildings. The tenterfield was where the woollen cloths were hooked upon tenter-frames to stretch and dry.

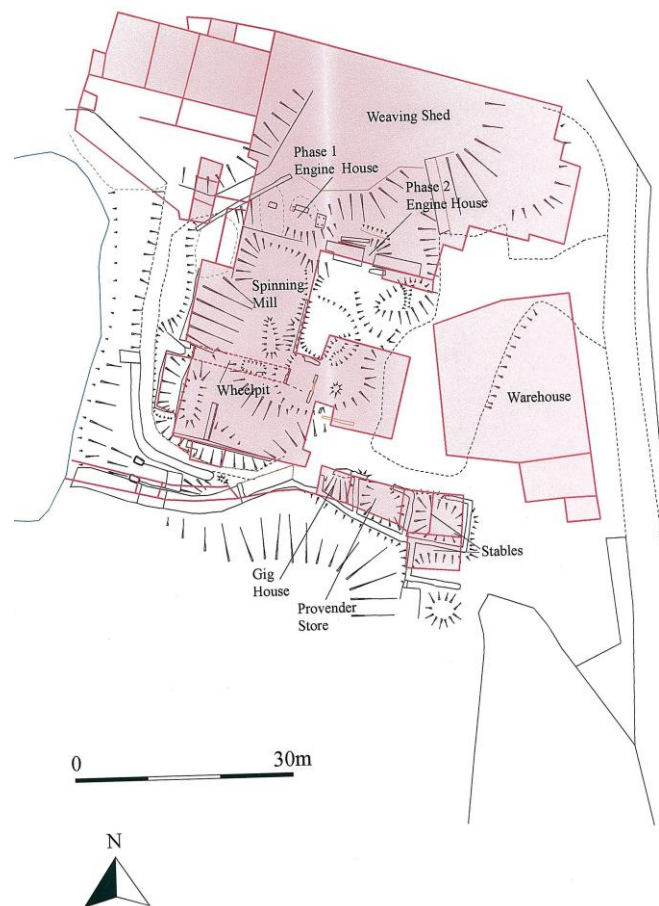
Water power was provided to the mill via a leat which may possibly have originally been fed from a weir 250m to the north. By the mid-to late 19th Century, however, it appears to have commenced at a weir situated immediately south of Tonacliffe Mill, 300m to the north of Broadley Mill, and to have then run along the east bank of the Spodden before twice crossing the river. To the south of the second crossing point the leat broadened into a reservoir built within a bend of the river, before continuing to the mill.

The Broadley Mill Chimney, which stood at approximately 150 feet tall, was demolished with dynamite in June 1913. Since then most of the buildings have been demolished, but some of the foundations are still visible, although you will have to look carefully!

Broadley Wood Mill

Broadley Wood Mill left the hands of Charles Haigh, who had occupied it for almost 50 years, in 1873. Broadley Wood Mills Spinning and Manufacturing Company took over the tenancy in 1874 and bought the mill in 1897.

1927 marked the end of the mill as the Company entered liquidation. It was demolished by 1960. Today only fragments survive of stone walling against the mill





dam. However, we can still see the remains of the brick and stone engine beds and, in the south-east of the site, the ruins of stables.

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<http://www.cottontimes.co.uk>

<http://www.spinningtheweb.org.uk> (Spinning the Web is funded by the New Opportunities Fund and is managed by Manchester City Council on behalf of the Spinning the Web partner organisations.)

http://www.dunning94.freemove.co.uk/birch_hill/birch_hill.htm

This is a web site which explains about the Birch Hill Workhouse in Rochdale

<http://www.workhouses.org.uk/index.html?Rochdale/Rochdale.shtml>

An excellent website on Rochdale workhouses and the treatment of children

Ellenroad Engine House,
Elizabethan Way,
Milnrow,
Rochdale,
Lancashire,