

LOW MOOR, CLITHEROE: A NINETEENTH-CENTURY FACTORY COMMUNITY

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ABOUT a mile west of Clitheroe, on the east bank of the river Ribble just north of Edisford Bridge, stands the impressive structure of Low Moor Cotton Mill (map reference SD 729418). Adjoining the mill to the east is Low Moor village, whose houses were built for the operatives in the factory. Together they provide an excellent example of an industrial community and are an important monument of the Industrial Revolution in Lancashire. Through the help of the present owners of the mill, Ribblesdale Cement Limited, it has been possible to explore and photograph the buildings. At the same time, a good deal of the history can be reconstructed, especially with the help of two diaries which have survived. The first is the 'Diary of John Ward of Clitheroe, weaver, 1860 to 1864', already well known as a result of its publication by the Historic Society of Lancashire and Cheshire.¹ The second, and more important from the point of view of the history of the mill itself, is the recently discovered diary of James Garnett, a member of the family which owned the mill, in partnership or on their own, from 1799 until it closed about 1930. This has been made available to me through the courtesy of present members of the Garnett family, and especially two of James Garnett's grandchildren, Miss E. R. Garnett of Clitheroe, and Mr. Robert Garnett of Wilmslow. It covers the period from 1858 to 1900, when James Garnett and his brother, William, were partners in the business, with very few gaps.

The early history of the mill, which was one of the first water-powered spinning factories in north east Lancashire, has been written by the late Arthur Langshaw in his pamphlet *How cotton came to Clitheroe*.² It was built on land leased in 1782 by John Parker, a Clitheroe lawyer and one of the town's first bankers, from Lawrence Halstead of Burnley, who owned the seventeenth-century house, which still stands at the entrance to the mill yard.

¹ Edited and transcribed by R. Sharpe France in *Trans. Hist. Soc. L. & C.*, CV, 1953.
² Published by the Borough Printing Company Ltd., Clitheroe, 1953. See pages 1-5 for the account of Low Moor Mill.

Over the door of this house is the date 1687 and the initials 'A. A.' 'A. A.' was Arthur Ashton, who built the house, and whose granddaughter married into the Halstead family.³ Parker's lease was of approximately 55 statute acres for 99 years at £115 10s. 0d. per annum. He also leased water rights on the Ribble from Thomas Weddall of Waddow Hall, situated on the opposite bank of the river in Waddington. This latter lease, dated 1 October 1784, enabled him to erect a weir across the river and to divert water to provide power to drive machinery.

John Parker was joined in his enterprise by another John Parker of Chancery Lane, London, probably a relative, and the firm was known as J. and J. Parker. The mill was built, the weir and mill race (known locally as 'the cut') constructed and some cottages provided for the workers. At this date it was usually referred to as Edisford Factory and there are a number of references in late eighteenth-century Clitheroe records. Low Moor itself was enclosed in 1788 as part of the commons dealt with in the Clitheroe Enclosure Award,⁴ which must have facilitated the building of the village. The poor rate assessment for 1789⁵ included John Parker for lands near Low Moor for a factory and as occupier of Mr. Halstead's lands. In the parish registers of Clitheroe from 1785 onwards are the names of early workers at the mill, which are recorded in Langshaw's pamphlet.⁶ Affidavits in connection with debts in the records of the Borough Court of Clitheroe also refer to one or two workers. On 3 February 1794, for example, 'James Bath of Eadsford Manufactory Cotton Spinner indebted to Wm. Walmsley of Hurst Green for £2 8s. 3d. for goods sold and delivered'. One of the millowners appears in the records on 5 September 1797: 'John Parker, Cotton Twist Spinner, to Thomas Sumner of Clitheroe, Plumber and glazier, £6 17s. 6d. Goods sold and delivered and work done'.⁷

This last entry is significant: the debt to the plumber was almost certainly due to the financial difficulties of the firm at this date. Their commitments were considerable, since they had built a second mill, Clitheroe Mill, later renamed Primrose Mill, following a lease from Thomas Weld of Stonyhurst in 1787. Moreover, they suffered a disaster when, in the early hours of 8 November 1791, the Edisford factory was destroyed by fire. A new five-storey mill was built to replace it, but in 1796 the partnership of the two Parkers was dissolved and in 1797 John Parker of Clitheroe went

³ A. Langshaw, *Some vanished homesteads of Clitheroe*, 1955, 26-7. I am indebted for this reference to Mr. W. J. Smith.

⁴ Lancs. Record Office, MBC/1.

⁵ Lancs. Record Office, DDX/28/10.

⁶ Langshaw, *How Cotton came to Clitheroe*, 1-2.

⁷ Lancs. Record Office, DDX/28/1, 2, 25 and 74.

bankrupt. The first Clitheroe bank closed and Low Moor mill was sold to Liveseys of Blackburn, from whom it passed in 1799 to the firm of Garnett and Horsfall.

The second Parker mill at Low Moor is described by Langshaw as having been 'five storeys high, 85 feet long and 27½ feet wide, containing 20 spinning frames with 1,200 spindles, seven with 720 spindles, two roving billies of 92 spindles each, . . . finishing engines, drawing, roving and reeling frames and a picking machine', powered by a single water wheel, 21 feet in diameter and 12 feet wide.⁸ Whether anything of this building survives is doubtful. The mill was rebuilt and extended by Garnett and Horsfall after 1799, though the Parker building would probably be incorporated. The present north block is narrower than the others and shows traces of early construction, but it is very much longer than the early mill. The east block is also narrower and was extended at a later date and an extra storey added. Its original measurements would correspond more closely with those of the Parker mill, but the nature of its junction with the north block suggests that the latter was there first.

Jeremiah Garnett, who came to Low Moor in 1799, was the second son of Jeremiah Garnett of Otley in Yorkshire, who owned the Wharfeside Paper Mill there, which is still working. Jeremiah senior was succeeded at Wharfeside by his eldest son William, and this Otley branch of the family continued there throughout the nineteenth century. James Garnett's diary contains many references to his Otley relatives and there were frequent visits in both directions. The connection with the Horsfalls came through the marriage of Sarah, daughter of Jeremiah Garnett senior, of Otley, to Timothy Horsfall, a worsted spinner and manufacturer who had built a mill at Goitstock, near Bingley in Yorkshire. The circumstances in which Timothy Horsfall and the Garnetts became interested in Low Moor Mill are described in an anonymous type-written paper in the possession of the Garnett family, entitled *Low Moor, Clitheroe, the history of a hamlet*. Horsfall was looking for business opportunities for his sons. He built a mill at Bradford which was managed by his eldest son, John Garnett Horsfall, and the third son became principal partner in a wool stapling business in the same town. He deputed his own brother at Liverpool and his brother-in-law, Jeremiah Garnett, to survey and report on the factory at Low Moor with a view to purchase. The report was favourable, and the Parker lease was taken over

⁸ Langshaw, *op. cit.*, 3.

by the new firm of Garnett and Horsfall, with Jeremiah Garnett as managing partner.⁹

The Garnett and Horsfall partnership continued in business at Low Moor from 1799 to 1858, and during this period the mill as it is today was substantially built. There is no evidence so far to enable the extensions to be precisely dated, but by 1824 the mill was certainly very much larger than it had been in the time of the Parkers and power loom weaving had been introduced. Baines described it as a 'cotton spinning and power loom manufactory' with 32,000 spindles yielding about 14,000 lb. of yarn and 2,500 pieces of cotton goods weekly.¹⁰ According to the author of *Low Moor, the history of a hamlet*, the introduction of weaving led to marketing in Manchester in place of Blackburn and there was some selling direct to the Far East through agents in Singapore and Hong Kong. The Clitheroe Rate Book of 1827¹¹ shows the mills assessed at £380 10s. 0d. and mentions a mechanics' shop, a smithy, a lumber room, a warehouse and a counting house. It also included a gas works, and gasometers and a gas house were shown at the north end of the mill on the 6-inch Ordnance Survey map of 1844. This map and the map associated with the Clitheroe Tithe Award of 1842¹² both show the spinning mill very much in its present shape, with the main blocks parallel to the river and a block at right angles. By this date Garnett and Horsfall had purchased much of the Low Moor property outright. The tithe award shows them as owners and occupiers not only of the mill and Low Moor House, but also of much of the land between the mill race and the river up to Brungerley bridge.

The extension of the mill necessitated an increase in the power for driving machinery. By 1824 there were three iron water wheels of 40, 60 and 80 h.p. respectively, and the proprietors were proposing to erect a steam engine of 50 h.p. 'to supply deficiency of water in the summer season'.¹³ There is a hint when these wheels may have been installed in James Garnett's diary. In 1863 the firm decided to put in a water turbine in place of one of the wheels, and on 19 October 1863 James Garnett wrote 'we have sold the old iron water wheel, which has been at work since 1810'. The Clitheroe Rate Book of 1827 includes two wheel houses in the

⁹ Information about the Garnett and Horsfall families in Yorkshire from J. Horsfall Turner, *Ancient Bingley*, 1897. Harry Speight, *Chronicles and stories of old Bingley*, 1898 and *Upper Wharfedale*, 1900, report of the death of H. W. T. Garnett in *Wharfedale and Airedale Observer*, 27 April 1928. These references were made available to me through the help of the librarian of the Otley branch of the West Riding County Library. The Wharfedale mill is situated about 300 yards east of Otley bridge, at SE 204460.

¹⁰ Edward Baines, *History, Directory and Gazetteer of the County Palatine of Lancaster*, 1824, I, 612.

¹¹ Lancs. Record Office, DDX/28/277.

¹² Lancs. Record Office, DRB.

¹³ Baines, *op. cit.*

assessment and £96 15s. 0d. for 'half power of water', nothing for steam power or engine house. A steam engine must have been installed before 1834, since in that year Pigot and Co.'s *Directory* describes the machinery as 'turned by large water wheels, and in the dry season aided by a powerful steam engine'.¹⁴ It is interesting that the supply of water was so good that the steam engine was thought of largely for emergency use.

Judging by the present lay-out and by references in James Garnett's diary the three water wheels were situated at the north and south ends of the mill and in the centre. Certainly there are inlets for water at these points and outlets to the river for the tail races. At the south end there are the remains of a water wheel pit, shaped to the circumference of the wheel. By James Garnett's time, there were also three steam engines, almost certainly installed before the diary began in 1858, and probably during the lifetime of Jeremiah Garnett. Their position corresponds to that of the water wheels, and James Garnett refers to them as the middle, high and low Engines. On 15 November he recorded that 'John Thompson and John Oddie finished putting the new pair of wheels connected with the Middle Engine yesterday'. On 6 December in the same year 'the High Engine commenced working . . . with the new beam and connecting rod and shortly before breakfast the air pump broke, which stopped the engine until noon'. The Low Engine was mentioned on 10 June 1859 when the speed was altered from 22 to 28 strokes per minute. Clearly these were all beam engines and it seems almost certain that the high engine was at the north and the low engine at the south end of the mill. These conclusions are borne out by what remains of the buildings. There is an old stone engine house at the south end between the mill and Low Moor House. Its use is confirmed by Mr. Robert Garnett, who lived at the house until after the Second World War. There are the remains of a stone engine house, with a later brick extension, at the north end of the mill between the north block of the spinning mill and the main surviving weaving shed. The middle engine house was in the yard to the east of the main block. There is a stone building there with a stone roof, similar in shape to the engine house at the south end, which could have served this purpose.

For much of the period of the Garnett and Horsfall partnership, Jeremiah Garnett lived at Roefield, by Edisford bridge, though he later took a lease of Waddow Hall and is recorded as living there

¹⁴ Pigot & Co., *National Commercial Directory*, 1834.

in Slater's *Directory* of 1851.¹⁵ William Horsfall, who became first Mayor of Clitheroe when the new corporation was formed in 1835, lived at Low Moor in the house adjoining the factory on the south, though by 1850 the Horsfalls were sleeping partners. There was also a mill manager: Baines includes among the inhabitants of Low Moor village 'Henry Parkinson, manager', and 'Joseph Parkinson, Bookkeeper'.¹⁶ After about twenty years, Jeremiah Garnett brought in his nephew, Thomas Garnett, from Otley to look after the day-to-day management.¹⁷ Thomas was the son of William Garnett, who had taken over the Wharfedale Paper Mill at Otley from his father, Jeremiah. Another son, also named Jeremiah, went into journalism and was one of the founders of the *Manchester Guardian*.

The jubilee of Garnett and Horsfall was celebrated on Friday 13 April 1849 and there was a full account in the *Preston Guardian* on 21 April. An entertainment was given to the workpeople to celebrate Jeremiah's fiftieth year as senior partner. Dinner at 1 p.m. for over 500 tenants included a whole ox, joints of beef, ham and veal, beef and mutton pies and 51 plum puddings. A brass band played and there was ale or punch to drink, with lemonade or raspberry liquor for the teetotalers. A speech was made by James Barrett,¹⁸ who had himself worked at the mill for 49 years. Later there were teas for the children and for 500 young men and women. The latter excited the admiration of the reporter: 'we never saw such an assemblage of healthy and handsome young women. We wish that those persons who draw their notions of factory people from fashionable novels had been there to witness the scene'. Dancing, opened by Jeremiah himself with Mrs. Barrett, presumably as wife of the longest-serving employee, went on until 6 a.m.

Four years later Jeremiah Garnett died, and there was a period of difficulty in the affairs of the firm. His son, another Jeremiah, never took to the business and died only two years after his father in 1855. There remained one surviving daughter, Henrietta, who continued to live at Roefield. Jeremiah left the bulk of his estate to his son, who in turn directed in his will that the property should be realised and divided in equal moieties between Henrietta and

¹⁵ Slater & Co., *Royal National Classified Commercial Directory of the County of Lancashire*, 1851.

¹⁶ Baines, *op. cit.*, 614.

¹⁷ Information from *Low Moor, the history of a hamlet*. The approximate date of Thomas Garnett's move to Low Moor can be deduced from the Census Returns of 1841. At that date he was aged between 40 and 45 and was living at Low Moor House. His eldest daughter Mary, aged 18, was recorded as having been born outside Lancashire, the other children, ranging in age from 6 months to 15 years as born in Lancashire. This suggests that the move took place between 1822 and 1826.

¹⁸ The Census Returns of 1841 show a James Barrett, aged about 70, and his wife Dorothy living at 16 High Street. Mrs. Barrett, by then a widow, was still living at the same address in 1851.

his two nieces, the Misses Orme, whose mother had died and who lived at Roefield with their aunt. There were inevitable difficulties over the valuation of Low Moor, and relations between Roefield and Thomas Garnett at the mill became quite strained: at one stage he was ordered to vacate a kitchen garden on Roefield land. The heirs were finally paid out, but there followed difficult negotiations with the Horsfalls. Eventually William Garnett, eldest son of Thomas Garnett, served them with notice giving them the option of retiring or taking over the business on terms. They decided to retire and received £60,000 for their interest, though the case was only settled in February 1858, after having been taken to Chancery.¹⁹

The outcome was a new partnership of Thomas Garnett and Sons, who ran the business for the remainder of the century. The sons were William and James, the latter, who was 30 years of age in 1858, being the author of the diary. The dissolution of the Garnett and Horsfall partnership was noticed in the *London Gazette* of 30 April 1858, and on 14 May James Garnett recorded in his diary that he had been acknowledged as a partner for the first time. William lived with his father and mother at Low Moor, though he afterwards moved to Bashall Lodge, which he built. James lived at Waddow Hall, which he later purchased, and Henrietta continued at Roefield.

The establishment of the new partnership was followed by re-equipment and improvement of the mill. The author of *Low Moor, the history of a hamlet* states that Jeremiah Garnett was more interested in merchanting than manufacturing and clung to old machinery. He also says that after Jeremiah's death, William Garnett 'read the Riot Act' at a meeting of the partners and told them that the policy which had been pursued would lead to the ruin of the firm. The mill was filled with antiquated machinery and capital must be devoted to bringing it up to date. Whatever the truth of all this, there is plenty of evidence from James Garnett's diary of a new policy after 1858.

The Garnetts began by looking at some of the latest mills to get ideas of what was needed. On 13 December 1858 William 'went to Blackburn to inspect some of the new mills, including Hopwood's Ordnance Mill', which had been opened the previous year. New spinning and carding machinery was put in during 1859 and 1860. The first mention in the diary is on 29 August 1859, when there was a man at Low Moor 'taking particulars for new mules'. On Friday 4 November in the same year James Garnett recorded that 'we commenced pulling out our old self acting mules and are

¹⁹ See *Low Moor, the history of a hamlet*.

going to substitute rather larger ones in their place'. The first pair started on the 30th of the same month. The new carding and some spinning machinery was supplied by Platts of Oldham, where William went on 25 January 1860 to give the order. Delivery dates even then could be a problem, and on 26 April James Garnett reported that 'the production of yarn is considerably below average, but this is entirely owing to putting in new Card Room machinery'. A week later he recorded the same thing, and added that 'this is solely caused by the neglect of Messrs. Platts not forwarding our new machinery, at which we are greatly disappointed'. New machinery was still being installed in November 1860. The re-equipment also included blowing room machinery, since on June 5 1862 James Garnett notes that 'Geldard²⁰ went to Todmorden to enquire when the blowing machinery is coming'.²¹

The firm now erected for the first time weaving sheds separate from the main spinning mill. The first was built in the Low Yard at the south end of the mill between the main block and the river. On 26 January 1859 John Whittaker was at Low Moor 'taking dimensions preparatory to making a plan for covering in Low Yard for weaving shed'. Excavation of the yard began on 23 February 1859, and James Garnett wrote on that day that the shed was 'calculated to hold c. 200 looms to be made by Dugdales of Blackburn'. Dugdales had the Soho Foundry in Blackburn, the founder of the firm, John Dugdale, having been born in Clitheroe. The woodwork was let to Hornby's of Clitheroe for £14 18s. 0d. on 7 March 1859.²² This shed was almost certainly the one afterwards known as the 'Old Shed' and was altered in 1894-95 when the new steam engine was installed. It was demolished during the war when the Royal Engineers occupied the mill and the site used as a parade ground. It is still an open yard.

The second shed was built between 1862 and 1864. The first reference in the diary is on Friday 5 December 1862, when Thomas Whittaker was at Low Moor 'taking particulars for building a new weaving shed. We are thinking of taking the looms from under the mill and putting them in this new building'. They began to cut for the foundations on 1 January 1863 and had to go as far down as the bed of the river before finding firm ground. The woodwork contract was awarded to James Hornby on 13 January and the iron columns were supplied by Thomas Whittaker. On

²⁰ Christopher Geldard was appointed general superintendent of the mill on 25 July 1859 at a salary of £150 per annum, as recorded in James Garnett's Diary. The Census Returns of 1861 show him, aged 41, living at Holly Hedge House, Low Moor. He was born in West Bradford.

²¹ The blowing room machinery was supplied by Lord Brothers of Todmorden. Evidence from James Garnett's Diary.

²² James Hornby, carpenter, joiner, builder and bobbin turner, York Street and Waterloo Road, Clitheroe. Slater's *Lancashire Directory*, 1865, 161.

27 May James Garnett reported that the 'new shed is making only slow progress', and in fact the first looms were not started in it until 21 April 1864. This shed was afterwards known as the 'New Shed', and it seems likely that it is the one which still stands in the upper yard between the north block and the river. This building certainly has cast-iron columns supporting a timber roof with the north facing lights usual in a weaving shed.

The introduction of new machinery and the erection of weaving sheds created a demand for more power. There is evidence both from John Ward and from James Garnett of difficulties with the water wheels. Ward's diary has several entries which show that the mill was stopped from time to time by the water in the river being either too high or too low. On 16 October 1860 the 'Ribble was so high that part of the factory had to stop for backwater'. The opposite effect was noted on 29 May 1861: 'this dry weather is much against us as Ribble is very low and in the afternoon our looms go very slow for want of water'.²³ A few days later on 6 June James Garnett wrote 'we are very short of water, so much so that we cannot run comfortably'.

One answer was to increase the steam power, another to use water turbines which were coming into general industrial use by that date. The Garnetts did both. A 180 h.p. turbine was installed by MacAdam and Co. of Belfast at the end of 1863 and the beginning of 1864. The first mention of the idea of putting one in is in James Garnett's diary on 3 August 1862: 'we have had a gentleman today who came to see about supplying a turbine'. The early negotiations were with Williamsons of Kendal, whose man came to the mill on 4 October and who gave an estimate on 24 October. In the early months of 1863 William Garnett visited a number of mills where turbines had been installed. He went to Bury on 2 February to 'look at a turbine of 60 h.p. made by the North Moor Foundry Company', and on March 18 was in Wales looking at turbines at Welshpool. On 4 April James Garnett referred to three reports of turbines made by MacAdams: 'All favourable as to the amount of power obtained and the little expense in wear and tear'. On 4 June MacAdams sent an estimate of £725 which was accepted, but when the engineer came on 28 September it was decided to have a smaller one, 'as we find the tail race is not wide enough to take off the water as quickly as would be required'. The new estimate was for £435 and the plan was received on 19 October, the date on which James Garnett recorded the sale of the old iron water wheel which had been working since 1810. On 2 December, when they started pulling out the wheel, he noted

²³ R. Sharpe France, ed., *op. cit.*, 147, 164.

that the turbine 'of not half the diameter will give us six times the power'.²⁴

The turbine ran for the first time on 15 August 1864 at one fifth full power. There were teething troubles: on 30 August James Garnett reported that it was liable 'to run away suddenly', and on 21 October that 'the mill has been stopped nearly the whole week in consequence of widening the cut where the water runs on the turbine'. There seems to be no reason to suppose that the use of water wheels was abandoned altogether at this stage, since on 7 September 1862 'new segments were put on our large water wheel, which is running today for the first time'. The firm would hardly have renewed the wheel in this way if they were considering scrapping it, so that the reference is presumably to one of the other wheels. The position of the first turbine is not clear. The plan of the mill made when it was auctioned in 1930 shows two turbine houses, one at the north end and the other at the south end of the mill. Yet it seems clear that there was a turbine in the middle, and there are still remains of the drive and of gearing below the big engine house of 1894. When the mill was closed, there were two 300 h.p. water turbines, though it has not yet proved possible to discover when they were installed.²⁵ The water entry for one can be identified by an iron grille at the side of the mill race close to the north block. On 4 January 1895 James Garnett wrote 'last week we commenced using our turbine for driving our large weaving shed'. Unfortunately there is a gap in the diary in the later part of 1894, so that it is not possible to say whether the entry refers to the original turbine or a new one. An added point of interest, however, is that in January 1895 William Garnett installed a small turbine supplied by Gilkes of Kendal for lighting Low Moor House, next to the mill, and tried to get James to do the same at Waddow.²⁶ I am informed by Mr. Paul N. Wilson of Canal Iron Works, Kendal, that a John Turnbull turbine of 457 h.p. was supplied to Thomas Garnett and Sons in 1902 for £533.

²⁴ James and Robert MacAdam started the Soho Foundry in Townsend Street, Belfast in 1837 and the firm continued in business there until 1894. They manufactured pumping machinery and water turbines of the Fourneyron outward flow type. The building still stands, though now occupied by a large carting firm. Williamson Brothers started a foundry and iron works at Kendal in 1856 and made an arrangement with James Thomson to manufacture vortex turbines. They continued in business until 1881. See Paul N. Wilson, 'Early water turbines in the United Kingdom,' *Trans. Newcomen Soc.*, XXXI, 219-41. I am also indebted to the Belfast City Librarian for information about MacAdam Brothers.

²⁵ Information from sale brochure for Low Moor Mill c. 1930, now in the possession of Ribblesdale Cement Ltd.

²⁶ Gilbert Gilkes (1845-1924) was born in Dublin and trained as an engineer in Middlesborough. He married the daughter of J. J. Wilson, a Kendal woollen manufacturer, and in 1881 bought out Williamson Bros. Between 1881 and 1900 Gilbert Gilkes & Company Ltd. manufactured an average of 52 turbines a year, originally Thomson vortex turbines, but later Girard turbines and Pelton wheels. The firm appears in Kelly's *Westmorland Directory*, 1906, as manufacturers of turbines and centrifugal pumps at Canal Iron Works, Kendal, where Gilbert Gilkes & Gordon Ltd. are still in business. See Paul N. Wilson, *op. cit.*

The increase in steam power was achieved partly by improving the efficiency of the existing engines, partly by installing a new one. Two of the engines were compounded by the addition of a high pressure cylinder on the system developed by John McNaught of Rochdale, and commonly called 'McNaughting' after him. On 7 February 1859 James Garnett recorded the modification of the high engine: 'started the High Engine this morning 'McNaughted', it works beautifully'. This engine has been fitted with a new beam and connecting rod at the end of the previous year. The 'engine in the mill yard' was McNaughted in 1863: James Garnett noted that Rothwell's²⁷ man came to take particulars on 2 September. This must surely have been the middle engine, and James Garnett's description of it as being 'in the mill yard' tends to support the idea that the surviving stone building there may have been the middle engine house. Other adjustments were made, especially to the speed of the engines. The speed of the low engine was increased from 22 to 28 strokes a minute on 10 June 1859, and one of the engines was speeded up from 28 to 52 strokes a minute on 3 August 1863. The low engine was fitted with a new crank on 22 September 1860: 'no doubt it will greatly improve the running of the wheels which drive the new shed'.

The new engine was supplied by Rothwells for £1,000, less 2½% for cash, after estimates had been obtained from a number of firms, including Daniel Adamson of Hyde, Musgraves of Bolton, and Yates of Blackburn.²⁸ The first sign of interest in purchasing a new engine appears in the diary on 9 December 1862, when James Garnett 'went over a mill at Newton with Mr. Adamson' and saw 'a splendid engine erected on a patent principle of Mr. Adamson's'. When they wrote for estimates to the various firms on 2 January 1863, what they had in mind was a 'horizontal, one high pressure the other low', in other words a horizontal compound engine. Adamson actually supplied a plan of a quadruple engine on 7 January, but there is no record in the diary of the type finally supplied by Rothwells, though it must be presumed it was in accordance with the request for estimates. The engine beds, seven tons each, arrived on 21 July and the new engine started on 6 February 1864. A new engine of this type meant a new engine house, and James Hornby tendered for the woodwork at the same time as for the second weaving shed. The house was stone built: James Garnett 'agreed with John Holgate about ashlar for the

²⁷ Rothwell & Co., Union Foundry, Black Horse Street, Bolton. Slater's *Lancashire Directory*, 1865, 94.

²⁸ D. Adamson & Co., Newton Moor Iron Works, Newton, Hyde. Kelly's *Post Office Directory of Cheshire*, 1865, 392. John Musgrave & Sons, Globe Iron Works, Kay Street, Bolton, Yates & Thom, Canal Foundry and Victoria Boiler Works, Blackburn. Slater's *Lancashire Directory*, 1865, 62, 94.

engine house' on 14 July 1863. The site of the new engine is uncertain. The evidence of the diary suggests that the other three engines continued to run and that this was additional. It may well have been at the north end of the mill, where there was still an engine until the mill finally closed

The installation of a new steam engine and the improvement of existing ones to work at higher pressure necessitated more boiler capacity. In January 1861 the firm were supplied by Adamson with a new steel boiler and with a second-hand one 'at £10 per ton, it is not quite new, but will bear a pressure of 55 lbs'. The second-hand boiler measured '30 feet long by 8 feet diameter and is much bigger than any we have'. An order for another steel boiler to work at 100 lb. per square inch was given to Daniel Adamson on 2 July 1863, and James Garnett records the arrival of 'another steel boiler from Adamson's' on 10 June 1864. To get better performance, a Green's economiser was ordered on 5 December 1859: 'from the accounts the gentleman gave we shall expect to save from 10 to 15 tons of coal per week'. This fuel economiser was invented by Edward Green of Wakefield (1799-1865) and used some of the heat from the waste gases in the boiler. It was commonly fitted to boilers in the Lancashire cotton mills in the second half of the nineteenth century.²⁹

The re-equipment of the mill from 1858 onwards was accompanied by developments on the commercial side. The main production at this period was of printers and shirtings, especially for the Chinese and Indian markets. Sales had been done mainly through agents, but the Garnett brothers now began to make arrangements to sell their own cloth. In June 1859 they decided to appoint a salesman and put an advertisement in the *Manchester Guardian* on the 30th. William went to Manchester to meet the applicants on 8 July, but it seems that they finally decided to put in one of the family, because on 28 November James Garnett wrote: 'Jerry left home this morning in order to undertake the office and duty of salesman for our own cloth'. He made his first sale on 6 December 'and got 1½d. a piece more than we have got before'. His headquarters were at the warehouse at 23 Brown Street in Manchester which William engaged on 19 November. One of the men from Low Moor, John Lambert, was sent there with Jerry to act as porter.³⁰

In the early years of his diary James Garnett gives weekly figures for the production of yarn and cloth which show that there had

²⁹ H. W. Dickinson, *A short history of the steam engine*, 1963, 133.

³⁰ 'Jerry' is Jeremiah, son of Thomas Garnett and younger brother of William and James. He was 24 in 1861 and was described in the Census Returns as an 'agent for the sale of calicoes'.

been considerable expansion. During 1859 and 1860 they averaged about 35,000 lb. of yarn and 4,000 to 5,000 pieces of cloth weekly, compared with 14,000 lb. of yarn and 2,500 pieces in 1824. Figures quoted by Langshaw show that by 1878 Low Moor Mill had 70,000 spindles and 1,087 looms and employed 750 workers.³¹

Further re-equipment and alteration of the power system took place in the later years of the nineteenth century. Ring spinning was introduced from 1880 onwards. On 22 January in that year James Garnett recorded in his diary that they had 'spun first yarn on Ring Throstle'. On 13 February he went with Tom, his eldest son, to see ring spinning at another mill, and on 19 February visited Platts' works at Oldham to see ring throstles. They were also in touch with Howard and Bulloughs of Accrington, who were putting two ring frames in on 10 May. It is significant that at the end of the year James Garnett could write on 16 December that they had spun 51,460 lb. of yarn in a week, the largest amount ever.

In 1893-94 a big new steam engine was installed, which replaced much of the earlier power system. At the same time a large new engine house was built on the west side of the mill, projecting from the main block in the middle, and rope driving was introduced. The engine was a vertical compound supplied by Yates and Thom of Blackburn, but the decision to give them the order was only reached after getting estimates from a number of engineering firms. The first enquiry mentioned in James Garnett's diary was from Musgraves of Bolton, who sent a man to Low Moor to get particulars on 24 February 1892. An entry on 27 February makes it clear that they were thinking of ordering two engines 'in the course of a few days we hope to have Musgraves' estimate for two new steam engines, one of 900 h.p., the other 400 h.p., both quadruple'. Walter Musgrave was at the mill on 3 March, when the Garnetts decided his estimate was too high and made enquiries from Hicks of Bolton, Woods of Bolton, and Yates of Blackburn.³² The estimate from John and Edward Wood, received on 24 March, was also too high, and on 28 March William Thom of Yates and Thom came to the mill for the first time.

By April 29 James Garnett thought it 'very likely we may give him (Mr. Thom) the order for engines and boilers'. During May members of the family paid a number of visits to other mills to see engines which had been installed. William Garnett and his nephew, Tom, went to Burnley on 9 May 'to look at an engine made by Musgrave of Bolton, they also wished to see Richard

³¹ Langshaw, *op. cit.*, 13.

³² Hick, Hargreaves & Co., Soho Iron Works, Crook Street, Bolton. John and Edward Wood, Victoria Foundry, Garside Street, Bolton. Slater's *Lancashire Directory*, 1892, 128.

Thompson's Triple Expansion Engine made by Yates and Thom of Blackburn'.³³ The next day they reported that they were very pleased with the latter, and on 16 May Mr. Thom came again to Low Moor to go over the specification. On 26 May Tom Garnett went to Preston to 'look at an engine made by Yates and Thom for Swainson, Birley & Co'.³⁴ The order was finally given to Mr. Thom on 28 May for a vertical compound engine working at 120 lb. pressure and to indicate 1,200 h.p. The price was £6,400, including two steel boilers 30 feet by 8 feet, all necessary mountings and pipes and the rope driving apparatus.

The final specification was not received at Low Moor until 3 September 1892, and there must have been further delays since Thom did not sign the agreement until 21 March 1893, the day on which excavations for the engine bed began. On 14 April James Garnett wrote that there were 'a considerable quantity of men engaged in making and laying down concrete for our new engine bed'. By 9 June he was hoping to have the engine house ready for roofing in another week, and in fact it was ready for slating by 14 June, when he recorded that 'we are in a rough way at the mill preparing the rope race'. On 16 July he reveals the fate of the older power equipment: 'owing to alterations we are making in our new arrangements for driving by ropes, we purpose stopping 3 steam engines as well as the water wheel'—an interesting confirmation that a wheel was still in use at that date. The new engine house and the rope race also involved a reconstruction of the central staircase. On 7 August men were 'pulling out the old wooden staircase and replacing it with iron girders and concrete'. During the week beginning 14 August the mill was stopped for four days while the concrete staircase was put in.

On 25 August the rope drum and crank were fixed on the crankshaft of the new engine, and on 18 October James Garnett hoped 'to get the plasterers and joiners out of our new engine house this week'. They were still waiting for shafting on 24 November and, in fact, the millwrights did not put the shafting in until January and February 1894. Nine millwrights were at work on 5 February. The engine ran on 29 March 1894 for the first time, and two days later James Garnett wrote that the valves were not right. This is the last we hear, since he did not keep his diary for the rest of that year after 10 April.

³³ James Garnett does not state in his diary where this engine was located. It seems likely that it was in either Britannia or Alma Mill, Padham, owned at this date by Richard Thompson & Sons. See Slater's *Lancashire Directory*, 1892, 684.

³⁴ Swainson, Birley & Co., cotton spinners and manufacturers, Fishwick Mills, Preston. Slater's *Lancashire Directory*, 1892, 711.

This Yates and Thom engine was the one which was still in use when the mill closed and was put up for sale in 1930. It was a 1,250 h.p. vertical condensing engine with a 30-inch diameter high pressure and 48-inch diameter low pressure cylinder. It had a 6 ft. 6 ins. stroke and was fitted with Corliss valves. The flywheel was 25 feet in diameter and $6\frac{1}{2}$ feet wide. It was named *Emma*, after James Garnett's wife. Yates and Thom also supplied the boilers and at the time of the sale there were five Lancashire boilers supplied by them, 30 feet long by 8 feet diameter, working at 120 lb. pressure. There was also a 10-ton overhead travelling crane with a 35-foot span and 40 track-feet of gantry. The gantry remains in the engine house, which is, however, in a very dilapidated condition inside.³⁵

The installation of this big engine completes the record of alterations and re-equipment which can be obtained from James Garnett's diary. Presumably the three beam engines were now scrapped or sold, though the horizontal engine installed in 1863 may well have continued to work at the north end of the mill. The stone engine house there was extended in brick at some date, and photographs of the 1930's show a chimney there as well as at the centre of the mill. It also looks as if the firm finally stopped using water wheels at this date, though they continued, of course, to get some of their power from turbines. The main structural alteration of a later date was the water tower in the centre of the mill, associated with the introduction of a sprinkler system for fire fighting.

The four main blocks of Garnett and Horsfall's mill survive, three parallel to the river, the fourth at right angles. They are of cast-iron frame construction throughout. The narrower north and east blocks have two rows of cast iron columns on each floor, the centre and south blocks three rows. The columns support cast iron beams running across the width of each floor between the outside walls and the floors above are supported by brick arches springing from the beams. Tie rods run lengthwise along each floor above the brick arches to the end walls. The roofs of the north, east and centre blocks have timber frames, but the roof of the south block is supported by a cast-iron frame springing from the columns on the floor below.

The north and east blocks show every sign of being the oldest. Both are built of rough sandstone with finished stone quoins. Both have plain rectangular window openings with stone sills and lintels. Both also have projecting stone latrine towers with small ventilation openings on each floor. In some of the rooms in the north block there are blocked doorways which formerly gave access to

³⁵ Information about the engine from the sale brochure referred to in footnote 25.

the latrines. Both blocks have stone roofs. The windows at the south end of the north block are cut across by the north wall of the east block, suggesting that the north block is the earlier of the two.

The north block is approximately 170 feet by 35 feet and has five storeys. On the main floors the shafting was carried on brackets mounted on the west row of cast iron columns. There are traces in the north wall of mountings and of holes for vertical shafting running from floor to floor which may well survive from the earlier power system.

The east range is approximately 150 feet by 30 feet and also has five storeys. The top storey is, however, a later addition, being built of brick. The block has also been extended to the east, the last four bays having iron columns of a different type from those elsewhere in the building. At this end there is a high room covering the first and second floors, with very heavy iron beams supported on two substantial stone columns. To the north of this room is a single storey projection some 75 feet long with a timber framed roof. The machinery in the east range was formerly driven by wheels on the outside of the building on the south wall. One such wheel survives on the third floor, but earlier photographs show several similar wheels driven by ropes, presumably from the main engine house. There is a slot in the wall of the centre block just south of the door at the north east corner which could have been used for this purpose.

The centre and south blocks are both approximately 45 feet wide and 120 feet long. The centre block has six storeys, the south block five storeys and an attic. Both have slate roofs. The relationship between them is problematical since, while the ground floors are of similar construction, the main part of the centre block is brick-built, while the south block is stone. The centre block also appears to have had a storey added, since the top storey is of a different kind of brick from the rest. The window openings on the main floors of each block are similar, having curved lintels and plain stone sills.

These four main blocks originally housed all the machinery, including the looms. The total amount of floor space for machinery is very large: over 120,000 square feet.

Two weaving sheds survive. The old shed in the south yard has gone, but the 'New Shed' still stands between the north block and the river. It has 15 aisles with slates on the south side of each roof and windows on the north. The timber frame for the roof is supported on rows of slender cast iron columns. The stone wall on the river side is of limestone with finished sandstone quoins.

There is a later brick-built weaving shed of four aisles to the north, which is presumably the one known to the local people as 'Bedlam'. It is of quite recent date.

At the north end of the mill, between the north block and the New Shed, there is the old 'High Engine' house. The early part of this structure is of stone with a stone roof, supported by a timber frame. There is a brick extension on the north, possibly associated with the putting in of the horizontal engine in 1864. The boiler house and chimney have gone.

In the yard immediately south of the east block is the 'Middle Engine House', built of large sandstone blocks with a stone roof and long rectangular window in the south wall. At the south end of the mill, between the south block and Low Moor House, is the 'Low Engine House', built of rough limestone with a stone roof and a long rectangular window with small panes in the west wall. Between the engine house and the south block is the pit for one of the water wheels.

The big engine house of 1894 projects from the junction of the north and centre blocks into the yard on the west side of the mill. It reaches in height nearly to the top of the centre block. It is brick-built with a slate roof. There are traces inside of the colourful decoration often favoured for engine houses and of the staging which gave access to the top of the engine. In the east wall is the big opening for the rope race which took the drive up to all the floors of the mill.

On the east side of the mill yard, both north and south of the east block, there are a number of single and two-storey buildings formerly used as workshops and offices. The weir and the entrance to the mill race, with its sluice control, can still be seen on the river some $\frac{3}{4}$ mile north of the mill. The race runs to the east of the north block, under the mill yard and then turns at right angles along the south end of the mill and back to the river. There is an overflow with a paddle control at the north end of the mill and three arched openings in the wall on the west side of the mill yard for the tail races, one at each end of the mill and one in the centre.

Beyond the mill on the south there is Low Moor House, where Thomas Garnett, and later William Garnett, lived. The three-storey west range has a stone roof and is the original farm building which was there before the mill. The extensions to the west were made by the Garnetts.

THE VILLAGE

The isolated situation of the Low Moor factory necessitated the provision of houses for the workers from the start. Langshaw

records that the Parkers built 28 houses at the time of the construction of the first mill.³⁶ The more rapid growth of the village came with the expansion of the mill after Garnett and Horsfall had taken over. The Clitheroe Rate Book of 1827 lists 146 cottages, 110 assessed at £1, 34 at £1 10s. Od., 1 at £1 18s. Od., and 1 at 15s. Od. The detailed Census Returns for 1831, 1841, 1851 and 1861 provide information about the population of the village and the number of houses, which is set out in Table 1 below.³⁷

TABLE 1: Population and number of houses in Low Moor Village, 1831-1861

Year	Houses			Population		
	Inhabited	Uninhabited or unrecorded	Total	Male	Female	Total
1831			183	557	686	1243
1841	204	34	238	589	683	1272
1851	234	14	248	570	702	1272
1861	216	46	262	516	541	1057

The figures show that the expansion of the village had reached its peak by 1841. The fall in population between 1851 and 1861 is striking and must presumably be due to the effects of trade depression and of the early part of the cotton famine. During the summer of 1861 James Garnett began to record the effects of the famine in his diary. On 11 July notice was given to the weavers, stopping a great portion of the narrow looms, 'as we have 27,000 pieces in stock without the slightest prospect of any immediate sale except at very unremunerative prices'. By 20 August he reported that 'the state of trade is now in a worse way than it has been for a very long time; the rupture in America causes cotton to be dear'.

The Clitheroe Tithe Map of 1842 and the first edition of the six-inch Ordnance Survey confirm that the physical layout of the village was almost fully developed by the 1840's. There were houses along New Street (later renamed St. Paul's Street) and High Street from Lancaster Road to the mill itself, along the four shorter streets paralld to High Street on the north—Clarence Street, Nelson Street, Pitfield Street and Union Street—along Queen Street at right angles to High Street, in Water Street along the side of the mill yard, and in the smaller rows on the south side of New Street and High Street—New Road, Spring Gardens, Eastford Place and St. Ann's Square.

³⁶ Langshaw, *op. cit.*, 1.

³⁷ The detailed Census Returns for 1831 are in the Lancs. Record Office, DDX/28/262. Those for 1841, 1851 and 1861 are in the Public Record Office, HO/107/507 and 2256, RG9/3087.

TABLE 2: Occupations of employed persons living at Low Moor, 1851 and 1861

Occupation	1851			1861		
	Male	Female	Total	Male	Female	Total
Cotton spinner	39	—	39	118	—	118
Cotton weaver	63	191	254	63	142	205
Cotton carder	13	30	43	25	25	50
Cotton piecer	68	10	78	11	—	11
Cotton winder	—	55	55	—	65	65
Cotton dresser	10	—	10	—	—	—
Cotton twister	7	8	15	10	2	12
Cotton twirler	1	2	3	4	3	7
Cotton warper	—	11	11	—	8	8
Cotton drawer	—	6	6	1	—	1
Cotton stripper	6	—	6	—	—	—
Cotton fluter	7	—	7	1	—	1
Cotton grinder	5	—	5	5	—	5
Cotton rover	—	7	7	—	6	6
Cotton creeler	1	3	4	1	1	2
Cotton loomer	3	—	3	1	—	1
Piece hooker	—	7	7	—	1	1
Cotton mixer	1	2	3	1	—	1
Cotton sizer	2	—	2	—	—	—
Blow minder	1	1	2	4	—	4
Cotton taper	1	—	1	6	—	6
Frame tenter	—	6	6	—	—	—
Heald knitter	—	5	5	—	2	2
Card breaker	1	—	1	—	—	—
Cotton feeder	1	—	1	—	—	—
Bobbin carrier	4	—	4	—	—	—
Cotton goods presser	—	—	—	1	—	1
Cop cellar	—	1	1	2	—	2
Cotton sweeper	—	1	1	2	—	2
Beam carrier	1	—	1	—	—	—
Cotton operative	5	2	7	1	—	1
Cotton labourer	1	—	1	6	—	6
Cotton manager	1	—	1	3	—	3
Overlooker	20	—	20	24	—	24
Bookkeeper	2	—	2	2	—	2
Warehouseman	1	—	1	3	—	3
Mechanic	9	—	9	7	—	7
Engine minder	2	—	2	3	—	3
Stoker	—	—	—	1	—	1
Oiler	—	—	—	1	—	1
Fireman	2	—	2	2	—	2
Watchman	1	—	1	1	—	1
Roller coverer	—	—	—	1	—	1
Total employed in mill	279	348	627	311	255	566
Other occupations	103	33	136	54	7	61
Total	382	381	763	365	262	627
Percentage employed in mill	73	91.3	82.2	85.2	97	90.2

The great majority of the working population were employed at the mill. Table 2 gives a detailed analysis of occupations based on the Census Returns of 1851 and 1861.

The table assumes that those in appropriate textile occupations were in fact working at the Low Moor Mill. While there may have been exceptions, the assumption is no doubt valid in most cases. It will be seen that the main occupations for women were weaving and winding and, to a lesser degree, carding. Spinning and piecing were male jobs, though there was also a substantial number of male weavers. The discrepancy in the figures for spinners in 1861 compared with 1851 appears to be due to differences in classification, those listed as piecers in 1851 being included as spinners ten years later. There was a marked decline in the total number employed between 1851 and 1861, nearly all accounted for by a reduction of 50 in the number of women weavers. It certainly looks as if, when it was necessary to reduce the hands, women were the first to go.

All the workers at the Low Moor Mill did not live in the village, of course. Thomas Garnett and Sons were employing 842 workers in 1851, 334 males and 508 females. Rather over a quarter, therefore, came from outside Low Moor. By 1861 the labour force in the mill had declined to 684, 329 men and 355 women; 119, approximately one sixth, came from outside and the overwhelming majority of these were women.

TABLE 3: Numbers of members of households in Low Moor employed at the mill

Households with	1851	1861
9 members employed at the mill	1	—
8 members " "	1	2
7 members " "	4	1
6 members " "	6	4
5 members " "	23	13
4 members " "	33	27
3 members " "	40	45
2 members " "	58	54
1 member " "	50	24
0 members " "	14	8

³⁸ *Piecers* were usually children or young people employed to keep frames filled with rovings and to join the ends of threads which broke while being spun or wound. *Warpers* wound the yarn in preparation for weaving. *Strippers* cleaned the cards of matted fibres which accumulated during the working of the engines. *Grinders* ground with emery the various card-covered parts of the carding engines. *Creelers* attended to the *creels*, frames for holding rows of spindles on which bobbins could be run. *Loomers* drew the warp ends through the healds and reed in preparation for weaving. *Tapers* took beams from the warper and ran them through size on to another beam. See *Oxford English Dictionary* and *Mercury Dictionary of Textile Terms*. *Twirlers* prepared mule cops for doubling on twiners. A wooden skewer was inserted through the cop and the twirler twirled the end round this skewer before setting it in the creel of the twiner (information kindly obtained by Mr. W. T. Cowling of the Shirley Institute).

Many households had several members working at the mill. Table 3 shows this in detail for 1851 and 1861.

There are some striking instances of families with nearly all members working at the mill. Daniel Postlethwaite, who lived at 9 Nelson Street in 1861, was employed as a cotton piecer. His wife was at home, but he had two daughters, aged 21 and 13, and two sons, aged 18 and 16, who were all piecers like their father. Another daughter of 20 worked as a warper, and there were three children at school. Thomas Robinson, a weaver, who lived at 18 Pitfield Street in 1851, had three sons employed as spinners, and four daughters, aged 20, 13 and 11, who worked in the card room. Thomas Taylor, of 12 Queen Street, in 1851 was employed as a weaver, as were his three daughters. Three of his sons were piecers and two younger ones fluters. The whole of Robert Trotter's family, of 11 Union Street in 1861 worked at the mill. He and his wife, his eldest son and eldest daughter were weavers. A younger daughter was a creeler and two younger sons worked as a piecer and carder respectively.

Many wives did not go out to work. In 1851 there were 111 who stayed at home compared with 54 who were at work. In the main it was the younger wives, often without children, who went to work. There were also a number of widows who ran the house, supported by their children who were out at work.

The figures for men and women employed include a considerable number of children. Eighty-four boys and girls under 16 were employed in occupations related to the mill in 1851, 135 in 1861; 31 of these in 1861 were under 11, compared with only nine in 1851. Boys were mainly employed as piecers, the younger ones as fluters or as hands to do various jobs in the spinning and carding rooms. The chief occupations for girls were winding, piece hooking and carding. Many boys became spinners and girls weavers by the age of 14 or 15.

By the middle of the century many of the children were attending school. Table 4 shows the numbers of boys and girls by age groups.

The overwhelming majority of scholars were under 10, and it is noticeable that many started school at a very early age. The school building still stands at the east side of St. Ann's Square and was in use until after the Second World War, when it was replaced by the modern Edisford Primary School.

The main occupations for men not working at the mill were in skilled or semi-skilled trades, shopkeeping, general labouring and farming. One or two worked in the limestone quarries around Clitheroe, a few in calico printing, probably at the Primrose Mill.

TABLE 4: Children at school in Low Moor, 1851 and 1861

Age	1851			1861		
	Boys	Girls	Total	Boys	Girls	Total
16	1	—	1	—	—	—
15	—	—	—	—	—	—
14	1	1	2	1	—	1
13	—	1	1	—	1	1
12	1	3	4	—	1	1
11	1	3	4	2	—	2
10	6	5	11	5	2	7
9	14	9	23	9	3	12
8	15	8	23	12	8	20
7	16	6	22	9	4	13
6	12	10	22	7	7	14
5	18	15	33	8	5	13
4	8	5	13	8	2	10
3	7	5	12	4	4	8
2	1	1	2	1	—	1
Totals	101	72	173	66	37	103

In nearly all cases where the head of the family was in work outside the mill, there was at least one other member who worked in the mill. Samuel Atkinson of 14 Clarence Street, for example, was employed in 1851 as a stone breaker, but had two daughters who were cotton mixers and a sister who was a cotton winder.

Retail trade was a very necessary provision for a community like Low Moor, and shops were opened in the village during the period when Garnett and Horsfall were extending the mill. Baines lists one shop in 1824: James Parkinson, grocer, tea and flour dealer. Ten years later Pigot's *Directory* includes two grocers and

TABLE 3: People occupied in retail trade in Low Moor, 1851 and 1861

Occupation	1851	1861
Grocer	5	3
Butcher	3	4
Confectioner	1	—
Shoemaker	13	8
Tailor	6	4
Baker	3	1
Hawker	1	1
Coal dealer	2	1
Barber	—	1
Shop assistant	2	3
Errand boy	2	1

a boot, shoe, clog and patten maker.³⁹ Table 3 shows the retail traders living in the village in 1851 and 1861.

By 1865 the Low Moor Industrial Co-operative Society had a shop in the village, and by 1873 there was a post office,⁴⁰ which at one time was in the old house at the entrance to the mill, built by Arthur Ashton.

The population was recruited to a very great extent from the rural area immediately around Clitheroe.

TABLE 5: *Place of birth of heads of household in Low Moor, 1851 and 1861*

<i>Place of birth</i>	1851	1861
Yorkshire	116	102
Lancashire	117	88
Total, Lancs. and Yorks.	233	190
Other English Counties	11	6
Scotland	1	—
Ireland	—	1
Totals	245	197
From Lancashire townships in lower Ribble Valley	56	40
From Forest of Bowland	88	74
From upper Ribble Valley	16	12
From Craven	10	12
Total from rural area 20 miles round Clitheroe	170	138
From Clitheroe	38	32
Totals	208	170

Eighty-five per cent of heads of households in 1851, 86% in 1861 came from not more than 20 miles from Clitheroe. Some townships were especially heavily represented. Of 56 from the lower Ribble Valley in Lancashire in 1851, 24 came from Aughton, Bailey and Chaigley and Chipping. Of 74 from the Forest of Bowland in 1861, 61 came from the four townships of Waddington, West

³⁹ Baines, *op. cit.*, 615-6; Pigot, *op. cit.*,

⁴⁰ Low Moor Industrial Society Ltd., Nelson Street, Low Moor. John Sutcliffe manager appears in Slater's *Lancashire Directory*, 1865, 163. The shop is still on the south side of Nelson Street at the east end. The post office appears in Kelly's *Post Office Directory of Lancashire*, 1873, 1494.

Bradford, Grindleton and Bolton-by-Bowland. Of those born in Lancashire, only nine in 1851 and seven in 1861 were born further away than Rawtenstall.

The records of some families suggest migration from one cotton community to another. James Edmundson was living at 29 Clarence Street in 1861. He was born at Samesbury and his wife in Lancaster. His two eldest children, aged 13 and eight, were born at Preston, the next, aged seven, at Calder Vale, and the two youngest, aged three and one, at Catterall.⁴¹ The family must have been recent arrivals at Low Moor in 1861. There is also evidence of agricultural migration. Edward Tomlinson, who lived at 21 High Street in 1851, was an agricultural labourer. He was born in Bowland and his wife came from Bashall Eaves. The eldest child, 23, was born at Ribchester, the next three, aged 20, 18 and 16, at Aighton, the next three, aged 14, 13 and 10, in Bowland, a boy of eight at Pendleton, and the two youngest, aged six and three, at Clitheroe.

The evidence also shows that there was plenty of movement in and out of the village. Of 244 family units identified in 1841, 129 were not traceable in 1851 or 1861; 43 were traceable in both 1851 and 1861 and a further 20 by direct descendants; 52 were traceable in 1851, but not in 1861. Of 100 family units which were new to the village in the ten years up to 1851, only 36 were traceable in the 1861 Census Returns. 101 family units recorded in 1861 appear to be new arrivals within the previous ten years. The picture is one of constant movement, but mainly from the area immediately around Clitheroe.

There was also movement within the village itself. Of the 43 families living in the village in 1841 and still there in 1851 and 1861, only five were at the same address throughout. Seven families were in the same houses in 1851 as they were in 1841, but had moved by 1861. Four families moved between 1841 and 1851, but stayed at the same house between 1851 and 1861. No less than 27 families moved twice during the period. The movement may be related to the size of family, either an increasing number of children or decrease through children leaving home. It may also be a matter of moving into better houses. George and Susanna Barnett lived at 8 New Row in 1841 with two children, aged 15 and seven, and two lodgers. In 1851 they were at 8 Honeymoon Street with only one child at home, and in 1861 at 14 Meadow Street on their own. Thomas and Mary Cook lived at 7 New Row

⁴¹ There were cotton mills on the river Calder, a tributary of the Wyre, both at Calder Vale and Catterall at this period. See Slater's *Lancashire Directory*, 1856 and 1865, 130.

in 1841 as newly-weds of 20 with no children. In 1851 they were at 11 Nelson Street with two children, and in 1861 at 11 High Street with five children. A house in High Street would certainly provide more room than one in Nelson Street.

How adequate was the accommodation in the houses? The Census Returns provide a basis for answering the question.

TABLE 6: Numbers of people living in houses in Low Moor 1841—1861

	1841	1851	1861
Houses with 17 occupants	1	—	—
" 16 "	—	—	—
" 15 "	—	—	—
" 14 "	2	—	—
" 13 "	1	1	—
" 12 "	8	5	—
" 11 "	7	2	3
" 10 "	13	7	4
" 9 "	9	10	8
" 8 "	22	13	16
" 7 "	24	30	17
" 6 "	35	42	28
" 5 "	22	35	31
" 4 "	25	34	47
" 3 "	17	22	31
" 2 "	18	30	29
" 1 occupant	—	3	1
Totals	204	234	215

The tendency to overcrowding was most marked in 1841, when there were 32 houses with 10 or more occupants, compared with 15 in 1851 and seven in 1861. At the other end of the scale there were 139 houses with five or less occupants in 1861, 124 in 1851, and 82 in 1841. The most common cause of overcrowding was the growth of large families, and there were a number of spectacular examples in 1841. Robert and Nancy Bradley, who lived at 24 Clarence Street, had nine children ranging in age from 20 to two. John and Margaret Chadwick of 10 Queen Street, also had nine children, seven girls and two boys, from two months to 18 years. In-laws often lived with families, sisters and brothers-in-law as well as parents. James and Esther Dixon, who lived at 5 Eastford Place in 1851, had seven children from one to nine years, and also living in the house were Esther's father, an unmarried sister and an unmarried brother. At 10 New Street in 1851 John and Alice Bamber lived with their three children, Alice's mother and two unmarried sisters, a niece and a nephew.

Many families took lodgers, even when numbers in the household were already quite large. Thomas and Alice Knowles of 12 New Street, in 1841 had seven children of their own, and also living in the house were a young couple, Richard and Ellen Parkinson, with a baby one month old. Daniel and Mary Postlethwaite had a lodger, Sophia Ferrells, in their house at 9 Nelson Street in 1851, although they had nine children living at home, including daughters of 21 and 20 and sons of 18 and 16, as well as five younger children.

Much depends on the amount of accommodation in the houses. It has been possible to obtain measurements of two houses, one in New Street, the other in Union Street. Both are substantial cottages with two rooms downstairs and two upstairs. The New Street house had a living room at the front 12 feet by 11, and a kitchen behind 10 feet by 11. The bedrooms above are of corresponding size. The house in Union Street has ground floor rooms 14 feet 9 inches by 12 feet 10 inches and 13 feet by 11 feet 7 inches, with corresponding bedrooms above. But it cannot be assumed that these represent standards for the whole village, and there is evidence that many of the houses were back-to-back in the mid-nineteenth century. This can still be seen quite clearly in the case of St. Ann's Square, and the rows on the south side of High Street. But it also seems that the houses in the heart of the village, in Clarence Street, Nelson Street and Pitfield Street were originally back-to-back, and were later converted to single houses with a back yard. This conclusion is supported by the fact that Pitfield Street and Clarence Street no longer exist, having become back streets behind the houses in Union Street, Nelson Street and what is now Albert Street. There are indications on the buildings that the yards were added and not part of the original structures. Documentary evidence in the 1861 Census Returns confirms this view. A number of houses were listed as 'double', in other words as back-to-backs, formerly in different streets, converted to through houses: 23 Pitfield Street was double with 5 Nelson Street, 26 Pitfield Street with 2 Nelson Street, 17 Nelson Street with 13 Clarence Street. This looks like the beginning of housing improvement and would explain why Nelson Street still exists, but the streets on either side have disappeared. This is confirmed by the 25" Ordnance Survey of 1893, produced on Fig. 3, which shows the houses in Union Street and Pitfield Street and on the north side of Nelson Street as back-to-backs, while those on the south side of Nelson Street and in what was formerly Clarence Street have been converted to through houses. Clarence Street has become a back street, as Pitfield Street was to do later.

There must have been at one time communal privies for the rows of houses, as is still the case in St. Ann's Square. In fact, the first edition of the 6-inch Ordnance Survey shows the houses in Clarence Street, Nelson Street, Pitfield Street and Union Street divided into two main blocks with what could well be the privies between.

All the houses belonged to the firm and, according to people still living in the village, who worked at the mill, rent was paid on Saturday mornings, a bell being rung at the time for payment. When the village was sold by auction on 16 July 1930, 214 houses with an annual rental of £2,900 were offered. The smaller number of houses compared with the mid-Victorian period is no doubt explained by improvements of the kind discussed above.

There was a church and two chapels in the village. The present St. Paul's church was consecrated on 31 July 1870 on land given by Henrietta Garnett of Roefield, who also gave an endowment of £200 per annum. £1,000 towards the cost of building was contributed by the firm and the remainder raised by public appeal. There had been Anglican services earlier in the building to the west of St. Paul's church which afterwards became the Sunday School. This building was marked as 'Low Moor Church' on the first edition of the 6-inch Ordnance Survey of 1848 and was described in 1851 as 'a chapel at Low Moor in connection with that of St. Mary', the parish church of Clitheroe. Services were, however, discontinued in 1854, and it appears that there was for a time some considerable difficulty with the vicar of Clitheroe. James Garnett states in his diary that on 8 March 1859 he had an 'interview with Mr. Anderton relative to our difference with him about the church at Low Moor'. They came to an amicable agreement, since he records on the next day that 'henceforward we can meet on terms of friendship', and on 21 March that his mother and Mr. Anderton 'exchanged civilities with each other today. This is the first time for five years'. Five years would take the quarrel back to the year when services were discontinued. The agreement must have facilitated the building of a new church, and Mr. Anderton certainly backed the appeal when it was launched.⁴²

There were two Methodist chapels, both of which remain. The older Wesleyan Methodist chapel, dated 1866 and known locally as the 'backside chapel', is at the north west corner of the mill facing Union Street. The United Methodist chapel at the east end of Nelson Street was built in 1892 on land conveyed from Thomas Garnett and Sons on 30 November,⁴³ but the sect had functioned

⁴² Information from appeal notice issued in connection with the building of St. Paul's Church in April 1867, kindly made available to me by Mr. Henry Forrest of Clitheroe.

⁴³ Information from James Garnett's Diary.

in the village from at least the 1860's in other premises. Inhabitants of the village report that the Garnetts used to ask them about church going. The Garnetts themselves were Anglicans, James going usually to Waddington church on Sundays.

There was and still is no public house in the village, but the locals say that an item of equipment in nearly every house was the ale can. Apart from the school and the religious institutions, the main provision for leisure was the Mechanics Institute. James Garnett's diary shows that there were two attempts at starting the institute. On 11 October 1858 he wrote that it was 'six years since a Mechanics Institute was founded at Low Moor. How prosperous it was for a time and then died away as quickly or even more . . . and now nothing remains but the books, and they are seldom if ever used'. The reopening was in 1861, one member of the committee being John Ward, who wrote in his diary on 2 December: 'I have joined the Low Moor Mechanics Institute and Reading Room. It is a penny per week, so I will see a daily paper regular'. Four days later he recorded that the reading room had opened.⁴⁴

I am informed by the inhabitants that this institute was situated in one of the houses on the north side of High Street. Opposite on the south side of St. Paul's Street is the later brick-built institute erected in 1903 by William Garnett in memory of his father and mother, Thomas and Susannah.

The majority of the old houses in the village are still standing and are occupied, though very much improved from their former condition. In the heart of the village are the four terraces of what were originally back-to-back houses, along Union Street, Pitfield Street, Nelson Street and Clarence Street. They were later opened out into four-room cottages with back yards and closets behind, so that Pitfield Street and Clarence Street have dwindled into back passages behind the houses in Union Street and Nelson Street. In the walls at the back of the yards are traces of the square openings, now filled in, through which the privies and ash-pits were once emptied. All the houses are two-storey, stone-built with stone roofs. There is a continuous row of 47 cottages of similar structure along the north side of High Street and St. Paul's Street, formerly New Street. On the south side of High Street there are two blocks of three stone three-storeyed houses which appear contemporary with the rest of the village. South of High Street is St. Ann's Square, with a row of old two-roomed cottages on the south side and closets in the centre of the square. East of St. Ann's Square are two short terraces of what were once back-

⁴⁴ R. Sharpe France, ed., *op. cit.*, 169.

to-back houses fronting on to Eastford Place, Spring Gardens and New Row. On the west side of Queen Street is a row of 17 cottages, 14 of which are two-storey stone built with stone roofs similar to those in St. Paul's Street, with back yards behind.

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