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STATEMENT OF SIGNIFICANCE

STANLEY MILLS



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STANLEY MILLS

BRIEF DESCRIPTION

Stanley Mills consists of:

West Lodge: small circular building with, probably c 1820-30, eyecatcher and gateway supervision function. Ogee roof is attributed stylistically to JM Robertson, Dundee, c1880-90 but is present on 1851 map. The gazebo or Monkey House, no longer extant, that replaced the gasholder also had an ogee roof.

Bell or West Mill built in 1786 and despite some alterations is the best preserved mill with which Sir Richard Arkwright, pioneer of cotton spinning, had direct involvement. Weaving of cotton belting began here and in the adjacent shed (sited on a corn mill of 1729) at the end of the 19th century.

Originally the ground and first floors probably carried the spinning frames, driven from a shaft in the basement connected to a waterwheel, the next 2 floors carried the carding machines and drawing frames, turned by straps from above, while the 4th floor contained reeling, doubling and twisting machines. The attic may (as at Belper) have been used as a schoolroom for the work people on Sundays. Once carding machines became bigger the arrangement, a logical use of gravity, was usually reversed but in this case carding transferred to the new Mid Mill. N gable signalled by bellcote and doorpiece to serve first floor office (wall safe) divided from spinning flats by internal stair. This was soon after relocated to S gable semicircular tower - water tank removed and spiral stair replaced in steel. A belt-dipping device is in a lean-to at its foot. A small two-phase weaving shed added in later 19th / early 20th century over the grain mill lade is of lesser importance and intrudes negatively into a fine river view.

Mid Mill built 1823-5, is fireproof, that is the floors are of arched brick between cast iron beams and on cast-iron columns. The mill was lengthened to either end circa 1830-40 (floodmark dated 1847) and one storey was removed (evidence in the brickwork of Bell Mill stair tower). The mill was to be used for cotton blowing and carding, requiring heavy machinery. The dust meant a high fire risk. 4 cotton cards by Tatham of Rochdale, c1950, still survive in position, the only to do so in Scotland. Most of the mill is now terraced houses and maisonettes developed by Phoenix Trust, with additional attic windows and balconies.

East Mill was “near unfinished” according to an insurance valuation in 1796, but burned down in 1799. The gable to the river contains evidence of 18th century heating systems and the string course between basement and ground floor, arched at the original wheelpit suggests that these elements are 18th century. It was rebuilt by 1809, on Robert Owen’s advice, for flax and cotton spinning, enlarged 1823-5 and altered in a small way after a further fire in

1848. At least two phases of internal timber construction, with respectively cross-wise and lengthwise timber beams on iron columns reflect the phasing. A stair of stone flags and iron beams served as a firebreak between it and another 1820s mill which was begun but never completed. This mill was used in 1892 for ring spinning and doubling, and, most recently to spin artificial fibres. A single storey outshot built over wheelpits has been demolished, replaced by a lawn (retaining weighbridge) and garaging.

The wheelpits appear to date in the most part from 1823-5, when 7 wheels were turning in place of the original, probably wooden, wheels. A number of changes include the installation of turbines in 1879. The method of conveying power by shafts and belts to the machines remains unclear. It seems that in the 1820s there were two sets of wheels in tandem formation between Bell and Mid Mills. The stone work is shattered by the actions of the wheels. The pits at East Mill garages have not yet been investigated, but the 18th century pit within East Mill is now an excavated feature in the stairway.

A gas works built 1823-5, lit the mills in winter, enabling spinning to carry on from 5 am to 7 pm. As this was particularly important to water-powered mills, many of the first gas works are to be found in rural locations. A water-lined circular tank sealed the gasholder. The chimney was 120 feet high, now reduced to c.85 feet. There also survives curious vaulted structures, probably retort houses. (This is more than survives at New Lanark)

North Range was perhaps built 1823-5 for hand weaving, later used for cloth finishing and the cigarette tape-making department. The office for administration of the mill was at the west end, with a clock. Interior of the two storey part is modern following a fire in 1995. A gap for a new footbridge was reopened by removal of an unimportant infill, then there is a 1.5 storey block similar in construction to the Back Shop. This and a picturesque Gothick lodge (which led to Stanley House) was the Phoenix site office and now is offices for Innergy.

The Back Shop/ East Range was probably built 1823-5, was used for weaving by hand and power loom (there is a small waterwheel pit) and adjoins a cotton warehouse and the stove, an area with underfloor heating to dry starched warp threads before they were woven.

The Bleachworks probably dates from 1822-5, with later alterations. During or after post-war it too was pressed into weaving. Joiners and mechanics shops nearby made the mills relatively self-sufficient. The joiners shop has been removed. The garage is of low significance.

Hydro electric power station, built 1921-2. 2 turbines by Boving and Co were coupled to a 450KW English Electric generator which generated all the power and light required in the mills, and much of that in the village, until abandoned in 1965. Now being reused by Innergy to supply power to the National Grid. Adjoining functional shed contained Ruston and Hornsby diesel engine, 1947, scrapped c1990.

CHARACTER OF THE MONUMENT

Historical Overview

- Stanley Mills were built to spin and weave cotton by waterpower, the first factory process to be carried out on a modern industrial scale.
- In August 1784 The Duke of Atholl feued 70 acres of ground to the Stanley Company, whose partners were: Mr Richard Arkwright, George Dempster MP, for the Perth Burghs, improving landowner, William Sandeman, Luncarty bleachfield, Patrick Stewart, Perth merchant, William Marshall, Perth merchant, William Keay, Perth merchant, Andrew Keay, Perth merchant and the first manager at Stanley.
- They built 'very large cotton works' at Perth, on the site of a corn mill, fed by a plentiful supply of water diverted from the River Tay, through a tunnel driven half a mile through the Stanley Peninsular in 1729, to harness the power in the rapids at Campsie Linn.
- Cotton was initially seen as a threat in Perthshire. It was the forward thinking of the local Member of Parliament, George Dempster and the business acumen of the Duke of Atholl that with their workforce and water resources they would be able to beat the competition at its own game. Work on Arkwright's Bell Mill and a new lade and tunnel, was underway in 1787, but by the time the final contract for use of the mills was signed, Arkwright had withdrawn from the project, as he did at New Lanark.
- Financial difficulty closed the mill in 1800. It only reopened in January 1802 when James Craig, a Glasgow merchant purchased the mills with the financial assistance of David Dale, of New Lanark. Dale's involvement brought the advice and oversight of his son-in-law Robert Owen to aid the ailing business.
- Because of the remote location of Stanley (10 days cart ride from the ports on the Clyde where cotton entered Scotland) the Mills struggled financially, but there were periods of exceptional growth, mostly during wartime. At the peak there was a work force of little short of a thousand people, three-quarters of them women and children.
- Stanley Mills survived for two hundred years despite significant locational disadvantages in a highly localised industry concentrated in Lancashire, finally closing in 1989. That success was down to a combination of factors including the adaptability of the owners and the workforce and the plentiful supply of water power and labour.
- 1989-1995 with the Mills closed vandalism became a significant problem, with the roofs and windows suffering seriously and quickly, exposing the Mills to structural damage from wind and weather and to a fire in the North Range. In 1992 a PLI was heard on applications to demolish most buildings and convert two of them in an unsympathetic way. These were part granted and part refused but were still too uneconomic to be put into effect.
- In December 1995 Historic Scotland took the unusual step, with the aid of funding from the Heritage Lottery Fund, of purchasing the mills to save them from demolition, brutal alteration and enabling greenfield development. Because of the scale and perilous condition of the site,

careful consideration was given to the elements that are of greatest cultural significance and least capable of adaptation. These were agreed to be Arkwright's Bell Mill, the lades and associated water-wheel pits. These, therefore, were retained by Historic Scotland while the other areas of the site have or are being sympathetically converted into housing or a variety of commercial uses. In this pragmatic, hybrid approach it has been possible to save all of the structures. Without a back-to-back agreement with the Phoenix Trust, funding could not have found to save anything else. The two converted mills have been sold on to new owners. As they are neighbours their views on future changes to the site will be taken into account.

Archaeological Overview

- Excavation of the base of the Bell Mill and the wheel-pits has helped the interpretation of the site and provided a considerable body of artefactual evidence.
- The complexity and changes to the manufacturing process can be deduced from the upstanding buildings and a close examination of their subtle changes. As much of this complexity has been retained as possible during the works for the modern reuse of the buildings.
- The mills contain evidence for warm air heating systems in flues in Bell and Mid Mill and in the hypocaust in the Back Shop.
- Bell and Mid Mills retain projecting sanitation towers.
- There remain considerable areas un-excavated that could add significantly to the interpretation of cotton manufacturing at Stanley, including the wheel pits for the East Mill.

Artistic/Architectural Overview

- Despite almost continuous operation since 1786, they are remarkably little altered. The Bell Mill is perhaps the best preserved example of the earliest type of cotton mill, and one with which the inventor was directly involved. Sir Richard Arkwright provided capital, expertise and training to the projectors of Stanley mill. Arkwright's water frame and related textile machines were ingenious, but it was the way that they were welded together to create the factory system which has given Arkwright the credit for laying the foundation for modern industrial society.
- The mills use waterpower transmitted to the waterwheel via a series of lades and from the wheel, power was carried by driveshafts to the machinery. Although not all of the details are clear, the complexity of the wheel pits and drive arrangements at Stanley demonstrates a dynamic technology.
- The cotton manufacturing process required light to undertake careful, detailed work and the design of mills reflects this need in the size and number of windows – giving the internal spaces an open and airy aspect.
- The Bell Mill is the oldest factory known to be fitted internally with cast iron columns.

- The mills were used to spin yarn, mostly cotton, and to weave fabrics, everything from fine muslin to sailcloth. Webbing was produced, both industrial (providing belts for engines) and military and endless tape for rolling cigarettes. In 1979, the new owners were closely linked to the English knitwear trade; they replaced the cotton machinery with equipment to manufacture man-made fibres, largely acrylic. Ironically, the fabric produced was used to manufacture socks, and it was the markets demand for cotton socks rather than acrylic dealt the final fatal blow financially for the Mills. Stanley Mills survived by adapting their products and switching markets – finding ‘niche markets’ to fill.

Social Overview

- The water frame was particularly suited to the exploitation of child labour. At the end of the 18th century 300 of the 350 employees were female or under 16. The company provided a school in 1805 and almost all child employees could read. The factory and education acts in the 19th and 20th centuries were to reduce but not eliminate the preponderance of young and female labour.
- The links with Stanley Village remain strong. Many people who live in the village worked in the mills and in some cases, families have been associated with the mills for generations. The work also attracted migrant workers, including Italians after WWII. The nearest building in the village to the mills served as a lodging house for migrant workers.
- Unlike some other factory colonies (New Lanark, Deanston, Catrine), Stanley village is not a Conservation Area and is for the most part not visible from the mills. Such is the level of detail alteration that it is unlikely that the council would now wish to designate it as such. However there is scope for interpreting the plan form of the village.

Spiritual Overview

None known at the mills, although an established Chapel of Ease was provided for the village in 1828.

Aesthetic Overview

- The peaceful, almost silent, setting of Stanley Mills today seems a world away from the revolutionary happenings of the first water -driven cotton mills. The rural idyll belies what would have been most striking to Arkwright’s contemporaries: these were the biggest buildings of their day. They were illuminated and noisy by night, and peopled by a work force of up to a thousand men, women and children.

- The River Tay not only powered the manufacturing process, it also dominates view of the site. The juxtaposition of the Mills against the river creates a very powerful image, particularly from elevated distant views.

What are the major gaps in understanding of the property?

- Despite Tony Cooke's excellent recent book on Stanley, there remains a significant gap in knowledge of the business records of Stanley Mills notably in the mid 19th century.
- Significant knowledge remains stored locally. A formal means of gathering this social history would be very useful.
- Much of the detailed working of the mills at all periods remains unclear, while some clarification will come with the archaeological interpretation of the excavation of the Bell Mill and the associated wheel pits. There is still likely to be significant gaps in our understanding of the Bell Mill and the waterpower system, but publication and comparison with other associated properties will help.

ASSESSMENT OF SIGNIFICANCE

Key points

- Richard Arkwright was recognised by his contemporaries as developing the prototype cotton factory system. Developing the water-frame, a revolutionary water-powered cotton-spinning machine. He provided capital, expertise and training to the project at Stanley Mill. His water frame and related textile machines were ingenious, but it was the way that they were welded together to create the factory system which has given Arkwright the credit for laying the foundation for modern industrial society.
- Stanley Mills is the best preserved mill with which Sir Richard Arkwright, pioneer of cotton spinning, had direct involvement. The actual fabric is of crucial importance.
- His involvement in the design and construction of Stanley Mills gives it a particular importance and the influence of Robert Owen and David Dale, after 1801, continues Stanley's association with the innovators in this industry.
- Stanley Mills illustrates the changes to and developments in the utilisation of sources of power. Water-wheel technology developed and was replaced by turbines, in 1921 a hydroelectric station was built (it is currently being restored by Inergy to feed power into the national grid). The flues and the gas works complete the story of power, heat and light at Stanley.
- The interest in developing and improving the industrial process, along with the provision of homes, churches and schools, covering all aspects of the lives of the workforce presents a compelling picture of benevolent control in the late 18th and 19th centuries.

Associated Properties

England: Derbyshire Mills – Cromford Mill, Masson Mill, North Mill, Belper, Boars Head Mill Darley Abbey (all in Derwent Valley Mills WHS), Haarlem Mill, Wirksworth, Cressbrook; New Mills, plus smaller mills in Yorkshire: Gayle Mills, Low Mill Keighley, Askrigg Mill and Cumbria.
Styal Mill, Cheshire (a museum with relocated waterwheel in place of turbine)

Scottish Cotton Mill colonies – New Lanark WHS and Deanston, Doune (both have internal mill structures that are all post-1833),
Catrine and Blantyre, mills demolished. Some archaeological potential to investigate water systems (e.g. Catrine Voes SAM). Housing survives.
Spinningdale Mill: also owned by David Dale, now a ruined SAM notable for heating towers (compare Bell Mill flues),
Johnstone Mill, Renfrewshire (the Old End of 1787 is the closest comparable timber structure to Stanley Bell Mill,

Scottish Flax and Jute mills: Grandholm Works, Aberdeen: large water-powered mill est. 1792, with a turbine in the wheel pit.
Dundee: Manhattan Works (owner Col FS Sandeman also was the longest owner of Stanley Mills, and lived in Stanley House)
Verdant Works (Dundee Heritage: main textile museum for the region)
Blairgowrie – Keathbank and Ashgrove Mills are especially notable for in-situ water wheels and steam engines of 1865
Luncarty- a company village associated with the now demolished bleachworks.

Perth City Mills: fairly large waterwheel on town lade by TIC. Visitor Centre now closed.

Cromford Ratingen, Germany: first continental cotton mill on Arkwright System.
Rhenische Industrie Museum works replica machinery.
Slater Mill, Pawtucket, R.I., USA: first American cotton mill on Arkwright System.
National Historic Landmark.
Port Law, Eire: 1820s cotton mill (now much damaged) had large cast iron waterwheels in parallel wheel pits. Paternalistic village.

Keywords Cotton, waterpower, water wheel, wheelpit, mill, spinning, weaving, textile, gas, iron, turbine, lade, Tay, industrial,