

2. Justification for Inscription

2(a) Significance

"New Lanark is significant in itself, but even more so when seen as part of a chain at one end of which is the founder David Dale who links it directly to Arkwright and hence the birth of the industrial revolution, in the middle Robert Owen with all his other schemes, and at the other end his visionary disciples on both sides of the Atlantic. If one includes the beginnings of trade union and co-operative movements, and Owen's influence on education, the ramifications are immense." (T.A. Markus)¹

New Lanark is a unique reminder that the creation of wealth does not automatically imply the degradation of its producers. The village offers a cultural response to the challenges presented by industrial society, and was the test-bed for ideas that sought to reform humanity. Today the village provides physical evidence of Owen's model for a New Moral World.

New Lanark is a great landscape modified, through the medium of architecture, to meet the needs and vision of a pioneering working community.

The simple grandeur of the Scottish urban tenement tradition comes through both in the tall New Buildings and in the architectural treatment of the then new demands of mill construction. Contrast and variety are given by individual buildings, but the theme remains good proportion, good masonry and simplicity of detail. The artisan's understanding of Scottish classical vernacular, built up through the 18th century, reaches something of an apogee at New Lanark. This common building language produces a monumental unity of character remarkably suited to convey to us today the idealistic paternalism of David Dale's and Robert Owen's great enterprise.

New Lanark Nursery Buildings, New Buildings and Mill Number 1, 2000.

¹ T A Markus *Buildings and Power*, (1993) p286



Corra Linn, by Jacob More, 1771. (NLCT/National Galleries of Scotland)

The community spirit generated by Dale, fostered by Owen, and nurtured by subsequent owners, has survived the end of manufacturing and rapid slide into decay, and also the stresses of again becoming a showpiece. New Lanark attracted attention in the days of Dale and Owen as a model village and one of the greatest sights of its kind. Today, warmed by the ideas of two of the greatest and most humane industrialists of the industrial revolution, it has become again one of the greatest sights of its kind.

New Lanark combines this unique cultural heritage with an outstanding natural setting. The gorge in which it is located contains, by volume, the greatest waterfalls in Britain. These became an essential stop for every late 18th and early 19th century picturesque tourist, a resource for outstanding poets and artists, the response to which is still readable in the landscape and visible on the walls of our national galleries. The

Falls of Clyde have achieved iconic status as the archetype of the picturesque or sublime landscape in Britain. They have been visited, written about, drawn, painted and photographed for some 300 years. Today's visitors stand on the same ground to admire the Falls as did artistic and literary figures such as William Wordsworth, William Turner and Sir Walter Scott.

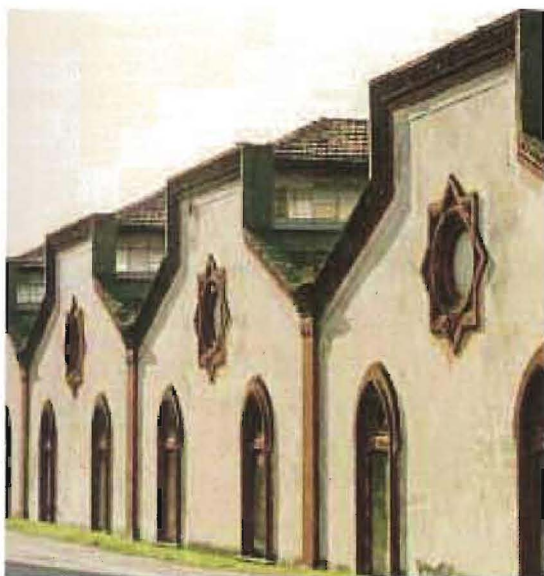
Without them our appreciation of sublime scenery would not be what it is today. Owen commissioned artists' views of New Lanark that firmly place it in this awesome, yet designed, cultural landscape.

2(b) Comparison with Other Similar Properties

A small number of inscribed world heritage sites have an industrial character, and the majority of these are mining settlements, such as

Banska Stiavnica, Slovakia. New Lanark was first nominated as a World Heritage Site in 1986, but inscription was deferred until comparison could be made with other sites and criteria identified that could, together with criterion (vi), justify inscription. There is therefore a need to expand here on New Lanark's world significance as a new purpose-built textile village, as one dictated by water-power, as part of a picturesque landscape, as a paternalist colony and as of very special universal value as a prototype utopian community.

The only textile complex so far to have been inscribed as a World Heritage Site is Crespi d'Adda in Lombardy, Italy, founded in 1875 by Cristoforo Crespi, and where numerous community buildings (church, orphanage, school, hotel, laundry) to a common Italian gothic motif were erected between 1893 and 1925.² The philanthropic aims of the owner were tempered by the need to retain a workforce at that water-powered site and to dominate it even beyond the grave from an enormous ziggurat mausoleum of 1907. Housing was initially in blocks, latterly as cottages. There are similarities with the much earlier New Lanark, and also with Saltaire, not least in the combination of founder's name with the river on which the settlement sits. Crespi d'Adda is an excellent but relatively late example of the genre.



Crespi d'Adda

² A Fohl, A and M Hamm, *Die Industriegeschichte des Textils* (1988) pp142, 144-7. Information also from website and Budgett Meakin *Model Factories and Villages* (1905) pp357-8

³ TC Smout counts 126 new settlements in his "The Landowner and the Planned Village in Scotland, 1730-1830" in *Scotland in the Age of Improvement*, NT Phillipson and R Mitchison, editors (1970).

In Southern Italy, the World Heritage Site at the Royal Park of Caserta includes within it the San Leucio silk factory, founded in 1789 as part of the intended utopian city of Ferdinandopolis. It is therefore described below.

To offer a context, numbers of other sites will be mentioned in the following pages. As a preface, it should be noted that New Lanark predates the great majority mentioned. While relative antiquity of a site is not in itself sufficient to justify outstanding universal value, when the site was widely publicised at the time and served as a model to which others aspired, the early date assumes greater significance.

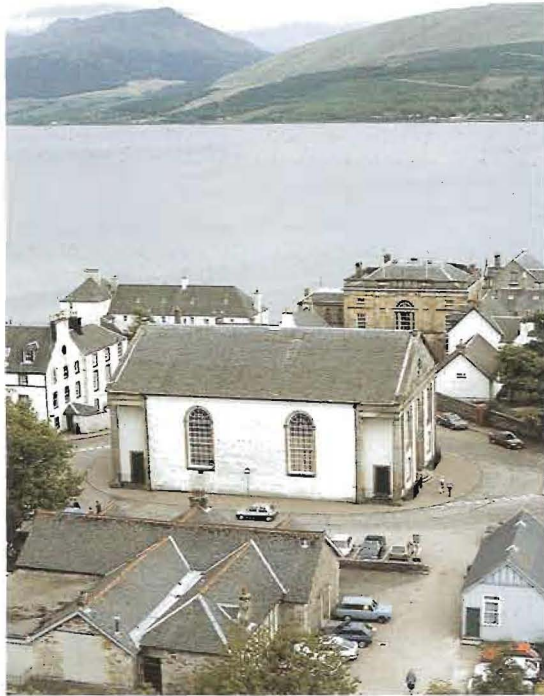
New Lanark as an Improvement village of the Scottish Enlightenment

New settlements have been made for the following reasons:

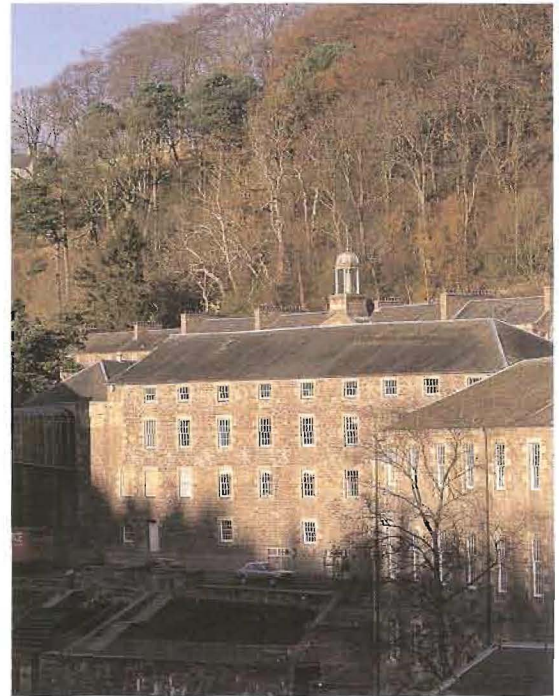
- 1) improvement of a barren or under-developed landscape and growing population
- 2) economic exploitation of resources, such as minerals, timber or water-power
- 3) idealism: utopianism.

New Lanark fitted all three: founded as part of (1) a general wave of new communities in enlightenment Scotland and (2) to harness water-power to new factory systems. The place is made still more remarkable for the ideas that it prompted regarding the possibility of (3) shaping a better society by a fresh start.

Scotland in the age of improvement of the later 18th century saw phenomenal change in the landscape, an agricultural revolution in the south and depopulation in the north. Planned settlements sprang up everywhere.³ Many fell far short of ambitions, such as New Leeds in Buchan and Lochbay (or Stein, 1790-98) in Skye, by the British Fisheries Society. Some, where the layout and original buildings are still recognisable include Inveraray, Newcastleton, Keith and Grantown-on-Spey: usually a grid plan around formal squares occupied by public



Inveraray, Scotland, 1989



New Lanark, Scotland, 1999

buildings such as church, courthouse, orphanage and so on. Scots had developed such abilities in planning new settlements that one, William Hastie, went on from 1795-1832 to lay out another 100 in Russia, some, Moscow included, very large indeed.

The earliest well-preserved housing of the industrial revolution in Scotland is at Charlestown, Fife, built from 1759 to supply lime to Carron Ironworks as single storey terraces laid out to the initials -C.E.- of its owner around a green. This was followed in the 1790s by similar single storey houses for bleachers and weavers at for example Trottick north of Dundee and Carlops south of Penicuik. Both of these hamlets are conservation areas. A greater number of once comparable communities are today unrecognisable due to alterations.

New Lanark's hillside location and topography militated against the generous spacing, low-rise and formal layout that was achieved in most of the recognised planned settlements. The streets are terraced and the housing is stacked vertically, coming up to the height of the mills. In this New Lanark prefigured the characteristic tenements later found in Scottish cities. Even

the cotton spinning villages of Catrine, which had the twist mill at the centre of its square, and Stanley conform to a more conventional grid of two-storey tenement blocks. However, New Lanark's organic layout appealed to picturesque sensibilities at the end of the century, and the place has retained its intimate character ever since.

So whilst New Lanark looks distinctively different from other planned settlements of the period, Dale's motivation - a combination of improvement, profit, philanthropy and concern to stem emigration (ironic given the direction it drove Owen) - makes the village emblematic of a host of other, less well preserved, communities.

New Lanark as a company village

The company town may be defined as a settlement created by a single enterprise and run in such a way as to attract, retain and control the workforce. The term was first applied in English, pejoratively, to mining camps in the Appalachian mountains of the United States. Parallel terms *bruk* in Swedish and *cité ouvrière* in French carry less negative undertones.

The first settlement identified as having been created specifically for a dedicated workforce is Deir el-Medina, for the artisan creators of the royal necropolis in Upper Egypt, 1524-1518 BC. The excavated single-storey houses of three or four linear apartments compare favourably with the one or two rooms provided for families in New Lanark 3,200 years later. Social and spiritual provision was also made, in the form of tombs and temples. However, subsequent examples, slave plantations apart, are few or less well studied, before those of the 19th century.

An outstanding example in Belgium is Le Grand Hornu, an engineering works arranged in an oval courtyard linked by arcades completed in 1831 and now mostly preserved as an unroofed ruin. Here, 400 houses built between 1819 and 1832 are two-storey, each of six rooms. Owner Legrand said he “was trying to attract strong men by unheard-of comforts” which makes him paternalist rather than utopian. Another model company village is the Menier chocolate factory, Noiseul, near Paris, which saw large semidetached houses with gardens (60 by 1878, 100 by 1889, 156 by 1896) follow completion of the celebrated wrought-iron skeletal-framed, turbine factory in 1872. The village incorporated free schools, dining rooms, laundry and baths.⁴

In modern times, company housing was a liability to the owner. Return on investment was either low or nil, and housing was usually of superior quality than could normally be obtained for the price, in order to be attractive to tenants. Pullman in Illinois, USA (from 1880) found that excessive paternalism backfired, and handed the housing, now much damaged, on to private landlords.

In England the prototype garden villages are considered to be Port Sunlight, Cheshire, (for Lever Brothers, from 1888) and Bournville (Cadbury's, mostly from 1895), set up after factories decamped from town centres to green fields. In terms of town planning they are similar to the Krupp settlements in Essen, Germany. The widely spaced housing in gardens differs dramatically from New Lanark, but the ideas behind these communities make some close connections despite the hundred-year gap. At Bournville there was a strong emphasis on outdoor activity and recreation, and at Port Sunlight heavy paternalism accompanied an excellent art gallery. Training of body and mind was similarly to the fore in Owen's New Lanark 80 years earlier.

The recognised potential of a single-purpose enterprise to translate into reality what could



Deir el-Medina, Luxor, Egypt

⁴ John S Garner “Noiseul sur Marne and the Ville Industrielle in France” in *The Company Town*, John S Garner, Ed (1992). Meakin (op cit, 1905) pp355-7: “the streets themselves are not interesting.”



New Earswick, York

otherwise only be dreamed about attracted the most creative 20th century architects to work on industrial settlements, such as Alvaar Aalto at the Sunila cellulose factory (1937-39), Kauttua pulp mill (1938-40) and associated housing in Finland. The Bata factory and housing at Zlin, Moravia (Le Corbusier's plans were rejected in favour of Frantisek Gahwa), and East Tilbury, Essex, near that for Crittall at Silver End (Thomas Tait and F. McManus, 1926), in England, offer other examples. British pioneer town planners Parker and Unwin were given rein by confectioners Joseph and Seeborn Rowntree at New Earswick, York (from 1901), before they could famously design Letchworth Garden City (1903) and Hampstead Garden Suburb (1905).

The connection between the company town and the possible betterment of society was first made in a small number of special places founded in the late 18th century, New Lanark foremost among them.

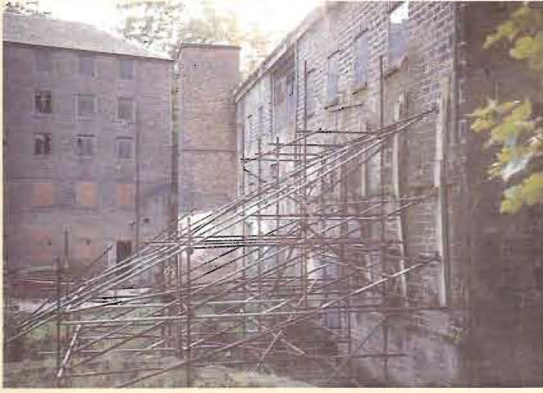
Arkwright Mills in England and Beyond

Richard Arkwright's genius was to assemble other people's ideas, and a few of his own, into a workable factory system that produced a commodity, cotton yarn, for which there was an insatiable demand. He first harnessed his system to a water wheel at Cromford in Derbyshire. Necessarily, he sought to keep imitators out of his mills and so Cromford was never as openly accessible as New Lanark, founded 14 years later during the surge of interest that accompanied challenges to his patents. Richard Arkwright had then come "to find a razor in Scotland to shave Manchester" and was briefly a founding partner at New Lanark and Stanley Mills, but was longest and most closely associated with the Cromford Mills that were his own creation.⁵

In England the principal groups of Arkwright-type mills are in Derbyshire: Cromford, Wirksworth, Milford, Belper and Darley Abbey: collectively very important, even if in less pristine settings. The Milford mills have been demolished and the housing at Cromford and Belper is scattered infill within existing settlements, rather than entirely new creations. Darley Abbey (from 1783) on the outskirts of Derby, was more of a single-company village. Arkwright and Strutt's role in developing the factory system there, technical innovations in iron-framed construction and heating systems, and variations in house types, give these places international significance. New Lanark, through Richard Arkwright's participation in the original partnership, and loan of technical expertise, owes a debt to Cromford (founded by Arkwright in 1771), and so, less directly, does every other cotton mill in the world.

The principal mills, and most of the associated housing, in the Derwent Valley are protected as listed buildings within conservation areas. The Arkwright Society is making steady progress in the conservation and interpretation of mills at Cromford. There the first cotton mill in the world is reduced to a three-storey shell that resembles the state of New Lanark's Mill 1 prior

⁵ RS Fitton *The Arkwrights Spinners of Fortune* (1989)



a)



b)



c)



d)



e)



f)

Mills and Housing in Derbyshire:

- a) Cromford Mill (1771), in 1987
- b) North (1804) and East (1912) Mills, Belper, in 1992.
- c) Long Row, Belper, (1792-7)
- d) Brick Row, Darley Abbey, (1826)
- e) Masson Mill
- f) The stair in Masson Mill runs behind the left Venetian windows. The door serves a privy. The same arrangement applied at New Lanark Mill Number 1

to its restoration. Masson Mill (1783 and later) has recently been well adapted to retail and visitor functions. Together, the mills there, and the detailed account of Belper North Mill in Rees Cyclopaedia which may be compared with the actual building, help to fill the gaps in our understanding of the details of the mills at New

Lanark. An example is the very close similarity between the intact wooden stair with counting house/supervisory rooms at each landing at Masson Mill, and the masonry shell of the projecting stair, of similar dimensions, at New Lanark Mill Number 1.

Quarry Bank Mill, Styal, Cheshire, established in 1784, is in an attractive wooded setting and retains the community buildings that served it, but the scale is much smaller: 2,425 spindles in 1796, 3,452 in 1805, 4,000 in 1811 (to New Lanark's 30,710 in 1813). The community buildings include the two-storey apprentice house (for 100 in two shifts), later extended, Oak School built in the 1820s, and cottages rebuilt in the 1830s: rents and wages were low. It is a well preserved and popular visitor attraction, with machinery brought in to work as the principal cotton mill museum south of Manchester.

The majority of cotton mills built in the explosion of interest following the reversal of Arkwright's patents were small-scaled and short-lived. Their survival rate is greater in rural areas such as Cumbria and the Dales of Yorkshire than in Lancashire, where the industry took off. There are good, but small examples at Gayle Mill, Hawes, built 1784, converted to flax spinning in 1813 and then to a



Quarry Bank Mill, Styal, Cheshire



Gayle Mill, Hawes, Yorkshire, 1784

saw mill, Askrigg Mill and Settle Bridge Mill, all conforming to a pattern of an isolated three-storey building 20 metres long and 10 metres wide.⁶

The first Arkwright mill in continental Europe was Brügelmann's Cromford Mill, Ratingen, Germany. Foundations of a 1,000-spindle type mill have been excavated. A second mill, now known to date from around 1800, has been converted back from housing to a museum in which replica water frames, modelled on that in Helmshore, England, work again. Tenemented workers' housing and the owner's house surround the mill, but modern housing has obliterated the gardens.



Replica spinning machinery at Cromford Mill, Ratingen, Germany.



Other Arkwright-type mills in Scotland

The Bell Mill at Stanley, near Perth, was built in 1786 and shares a brick exterior over a stone basement with the similar treatment of North Mill, at Belper; Masson and Wirksworth Mills, in Derbyshire. Unlike New Lanark, Catrine and Masson, Stanley lacks Venetian windows, and the bellcote, original office and stair were located at the gable of the mill rather than in a central stair tower. Its most striking feature is the use throughout of cruciform cast-iron columns, more to carry the driving system than for structural reasons: the oldest to be found in any mill. The water system begins, similarly to New Lanark, with a weir and tunnel, but differs in that the lade bifurcates to feed two sets of wheels beside and parallel to two mills. Archaeological investigation has found that the East Mill of 1799 originally had a transverse basement wheelpit in the New Lanark manner, but there had not been room to fit larger wheels in that location. Stanley Mill was less economically secure, being supported financially and technically by the New Lanark Company from 1800-1813, receiving a water wheel from the New Lanark foundry, for example.

Stanley Mills are now in the care of Historic Scotland and two of the biggest mills have been converted to housing by the Phoenix Trust. The village developed fitfully as a two-storey grid, is less well preserved than New Lanark, is not visible from the mills, and is not a conservation area.



Bell Mill, Stanley Mills, Perthshire (left) and village (right).

⁶ George Ingle *Yorkshire Cotton* (1997)



a)



b)



c)



d)



e)



f)



g)

a) b) Deanston Mill, Doune, Scotland: the 1830 new mill and dome-vaulted weaving shed. The 18th-century mill stood to its right. The housing lines the lade to the left, and pairs of doors have been combined to serve single tenement stairs

c) Blantyre: The mill stood above and to the right of the wheel arch. The only remaining workers' housing is on the hill beyond, and is preserved as the birthplace of David Livingstone

d) Catrine: The twist mill - before demolition in 1968 - stood in the middle of a square, like the double church in Inveraray. (RCAHMS, 1960)

e) The Old End at Johnstone Mill, Renfrewshire, 1787

f) g) Cartside Mill Kilbarchan, Renfrewshire, 1794, under demolition in 1992

Deanston Mill, Doune, Perthshire was founded in 1785, but the original mill was demolished in 1947. The earliest single-storey housing no longer exists. A conservation area protects surviving two-storey housing erected in 1811 and 1820, which housed 1,200 people in around 1840. Extant mill buildings, now part of a whisky distillery, date from 1830 and 1949.

Blantyre, Lanarkshire, was founded by David Dale in 1787 and sold in 1792. The five-storey mill and most of the housing has been demolished, leaving a three-storey tenement preserved as the birthplace (in a single-roomed house) of African explorer David Livingstone. This is the closest comparable type to the housing at New Lanark but has external turnpike stairs.

Catrine, Ayrshire, was also founded and co-owned by Dale from 1787-1801. The mule and twist mills were demolished in 1946 and 1968, the housing is altered and the most significant remaining element is the water system.

Spinningdale Mill, Sutherland, 1792, is of interest as having been founded by a partnership including David Dale for philanthropic motives, to stem emigration from the Highlands. In Owen's view "the locality was unfavourable for extension or for permanent establishment", so Dale sold his interest in 1804 and it burned down in 1806.⁷ It now forms a romantic but unstable ruin, with heating tower and Venetian windows to hint at its New Lanark parentage.

In Renfrewshire, Johnstone Mill, the fifth cotton mill in Scotland, was founded by Corse Burns and Co in 1782 and extended in 1787, the latter still existing as the "Old End" of Paton's bootlace works. It contains heavy joisted timber floors comparable to Stanley Mills. The other big water-powered mills that survived until recently – Cartside 1794, at Milliken Park, with two tiers of Venetian windows, and Fereneze, 1803 at Barrhead – were demolished in 1992. Both had cylindrical cast-iron columns throughout.

At Gatehouse of Fleet, the Bobbin Mill was built as the lesser of two cotton spinning mills in



Gatehouse of Fleet: the ruins of the twist mill, the restored Bobbin Mill (in 1994) and Scott's Mill above



Spinningdale Mill, Sutherland

1788 and was restored in 1987-92 from a ruinous shell. The archaeological value is therefore limited to the walls and water systems. Two waterwheels installed there contain components brought from neighbouring grain and saw mills of 1824 and 1924. Another smaller cotton mill, Scott's, (1790), has been made down into two three-storey houses. The small planned industrial town never justified the hopes placed in it.

Only at New Lanark does the 18th-century housing still have a close visual relationship with its mill, and there are only two other 18th-century mills in Scotland that are better preserved internally.

7 A.J. Cooke "Cotton and the Scottish Highland Clearances- the Development of Spinningdale 1791-1806" in *Textile History* 26 (1) 1995, pp89-94

New Lanark's place in the Scottish cotton industry

In 1787 there were, according to S.D. Chapman's revision of Colquhoun's census, 26 cotton mills built on Arkwright principles in Scotland, 182 in England and Wales, four in France and five in Germany.⁸ Only a few of these have survived in any form. Those at New Lanark were then much the largest: the Arkwright standard was 1,000 spindles, but at New Lanark, Mill 2 alone had 6,000 spindles in 1793, rising to 11,676 in 1813. New Lanark was then easily the biggest mill complex in Scotland and in the 1790s had probably been the biggest in the world.

In 1835 there were 159 cotton mills in Scotland, a textile district still second in size in the world to the 779 in Lancashire and Cheshire.

In 1850 Britain had 21 million spindles spinning cotton, France 4.2 million, the USA 2.5 million, the Austrian empire 1.4 million and the Russian empire 1.1 million. Scotland then contributed 1.4 million of the British total, equalling the entire production of Austria, Hungary, Czechoslovakia, Yugoslavia and parts of Italy.

British domination of the cotton industry meant also a leading edge in machinery manufacture and technical development, although from the early 19th century this position was under attack as all developing countries sought to nurture their own cotton industry.

The American Civil War cotton famine and growing foreign competition hit the Scottish industry hard. The number of cotton factories in the west of Scotland fell from 149 in 1850 to 64 in 1875 and kept falling.⁹ The survivors concentrated on thread production, net making and other particular special forms of cloth rather than attempting to match head-on the then dominant Lancashire industry. Scotland's last cotton spinning mill, (Anchor Thread Mills, Paisley) closed in 1993.

The consequence of this early decline is that the 19 surviving Scottish cotton spinning mill

buildings represent either the very earliest phase of the industry globally, or (in just four cases) the latest technology at the end of the 19th century as firms combined to obtain economies in scale. New Lanark is an exceptionally well preserved representative from the earliest phase, and always was unique.

New Lanark's Mill 3 in the development of iron-framed mill architecture

New Lanark has a place in the evolution of modern, metal-framed architecture, forming an important interchange in developments in building technology. Mill 3 has fireproof iron-framed construction dating from the 1820s and 1830s under iron strut and timber roof trusses. The link to Mill 4 has flagged floors on iron grids and a wrought and cast iron roof unique in Scotland and matched in England only in Admiralty shipyards and Beehive Mill, Ancoats, Manchester.

Arched brick construction springing from iron beams was a type then unique to the United Kingdom. The first of its type in the world is at Ditherington, Shrewsbury, England, 1797, and the second to survive is North Mill, Belper, of 1804, which conforms to the linen lineage of cruciform columns. Every subsequent iron framed cotton mill has cylindrical columns after those used at the demolished Salford Twist Mill of 1801. There are estimated to be around 50 iron-framed buildings extant in England, and five in Scotland¹⁰, New Lanark's No 3 among



Ditherington Flax Mill, Shrewsbury, England, the world's first iron framed building, erected in 1797.

⁸ S.D.Chapman "The Arkwright Mills- Colquhoun's Census of 1788 and Archaeological Evidence" in *Industrial Archaeology Review* Vol VI No 1 1981-2 pp5-26
⁹ W.W.Knox *Hanging by a Thread: the Scottish Cotton Industry c.1850-1914* (1995)



Mill Number Three, New Lanark, with Platt Brothers mule of 1891 under a brick arched, iron-framed ceiling.

them, preceding the development in 1830 of theoretical formulae for beam design, and before many had been built on the continent.

Architecturally, Mill 3's proportions, central pediment and advanced bays, make it amongst the first of a small group of sophisticated neo-classical spinning mills. It was followed by Travis Brook Mill, Stockport, Lancashire (1834) and Robinwood Mill, Todmorden, Yorkshire (1839) both with advanced end pavilion wings, and both now demolished. Dean Clough A Mill, Halifax (1840), Folly Hall Mill, Huddersfield (1844) both Yorkshire, and Ettrick Mill, Selkirk, Scotland (1836 and 1850) repeat the formula of central pediment and advanced wings, and culminated in the massive pedimented mills of Dundee, such as Tay Works (1851-65).

Most mills of the earlier 19th century were absolutely unornamented, obtaining their architectural presence by sheer bulk and repetition of elements. This is the forceful impression given by the long six-storey Clyde River frontage of New Lanark Mills.



Ettrick Mill, Selkirk, Scotland, from which the mule was transferred to New Lanark.

10 Keith Falconer "Fireproof Mills- the Widening Perspective" in *Industrial Archaeology Review* XVI, No 1, (1993). The Scottish mills are Broadford Works in Aberdeen, 1808 and c1821, Old Rutherglen Road, Glasgow, 1816, Stanley Mid Mill, c1823, New Lanark No 3 Mill circa 1826/33, Logie Works, Dundee, 1828.

New England cotton mill communities at waterfalls

A sign of the early pressures on, and the advanced nature of, the Scottish industry is the extent to which Scots mill engineers took the chance to emigrate, taking their know-how abroad. Following the passage from Derbyshire to Rhode Island of Samuel Slater with his memorised spinning technology, the power loom was introduced to America in 1815 by a Mr Gilmour with patterns from Glasgow. James Montgomery was another, born in Blantyre on the Clyde in 1794 (see above) and recruited from managing a Glasgow mill in 1836 to run American mills. His *Practical detail of the Cotton Manufacture of the United States of America, and the state of the cotton manufacture of that country contrasted and compared with that of Great Britain* (1840) remains the essential text for the history of the American industry and offers insights into the Scottish mills he left behind.¹¹

Montgomery took as typical of best Scottish practice an urban steam powered mill, which he contrasted with American mills, nearly all of which were water-powered. In describing many of the features of the American mills he could in fact have been describing New Lanark: mills of four to five storeys and a semi-basement, with an architectural feature made of the central stair tower, as were the original mills in New Lanark. The first of the Mills, always "Number One" and invariably distinguished from the others by its bellcote cupola, would stand at the end of a lade, or power canal. Between one and six other mills, numbered sequentially, would stand in line parallel to the lade, closely spaced but initially detached from each other and from lower, parallel, picking houses. The principal difference externally was the double monitor roof, giving way in the 1840s to conventionally pitched roofs similar to the British model, before moving on to shallower pitches. Constructional paths diverged with the use of iron frames in a minority of British mills from 1797 and the "slow burning" timber floor in America from 1826. The standard American mill was 50

metres long and 15 metres wide: New Lanark's Mills 1, 2 and 4 are the same length but originally nine, ten and 11 metres wide, apparently without internal supports and constrained by timbers less substantial than were available in America.

The tall brick or masonry American mills are often described as to the Waltham System, after the place of its first use in 1814, and to distinguish them from the small timber-clad mills which housed the technology first transferred by Samuel Slater from Belper. They were most often sited on the rivers in New Hampshire and Massachusetts that dropped from plateau to plateau, hence mill communities at Great Falls (1826-30: brick boarding houses destroyed, timber family houses survive) and Salmon Falls (woollen: some housing survives from 1820s-60s). At the waterfall company towns of Dover (Mill 1 built 1812, Mill 2 1821 etc) and Newmarket (1823, 1825 etc) the boarding houses are destroyed.¹² Schools and libraries feature relatively early in the provision offered at these company towns. Each in their own way owes something of their domestic, social and moral welfare provision, in the accompanying barracks and boarding houses, as well as in the management of water to spin cotton, to New Lanark.

The world's biggest cotton mill complex developed from 1838 to 1912 to employ 15,500 workers, 24,000 looms and 670,000 spindles. Amoskeag Mills, Manchester, New Hampshire acknowledges a debt in the name of its city to Manchester, England, but its layout, parallel to the power canal taken from Amoskeag Falls, owes rather more to New Lanark.

Lowell, Massachusetts, was so successful that it became a city. Ten companies repeated between 1824 and 1848 the New Lanark pattern along power canals planted with tree-lined walks to offer the mill girls promenades as far as Pawtucket Falls. A key difference with New Lanark is that its population was very transient. Provision of boarding houses for the respectable accommodation of farmers' daughters from

¹¹ David J Jeremy *Technology and Power in the Early American Cotton Industry* (1990)

¹² Richard M Candee "Early New England Mill Towns of the Piscataqua River Valley" in J.S. Garner ed., *The Company Town* (1992)



Bird's Eye View of Lowell, Mass., USA, in 1876. Cotton mills (2 Merrimack, 3 Laurence, 6 Boott, 7 Massachusetts, 9 Tremont and Suffolk) are each aligned axial to or parallel to their power canals, with rows of mill girl boarding houses perpendicular to them. Massachusetts Mills are a mirror image to the layout of New Lanark. (American Textile History Museum, Lowell, Mass.)

round about were an important part of Lowell's initial success. Two and three-storey brick terraces such as those of the Merrimack Co. on Dutton Street are demolished. Now that Lowell – declared America's first urban national park in 1978 – is recovering its identity, it became necessary to reconstruct a row of 1837 boarding houses in order to fill a gap in the telling of the story. Four of the ten mill complexes at Lowell, including the first, the Merrimack Co, and Lowell Machine Shop, are entirely demolished, but others, such as Boott Mills exist, well adapted to other uses.

The similarities between the mills of New England and those of New Lanark, laid out 40

years previously, suggest not only a functional response to the harnessing of a waterfall but familiarity with the pioneer at New Lanark. Nathan Appleton, the Waltham partner, who helped found the town of Lowell in 1821, met Francis Cabot Lowell in Edinburgh in 1810, and on his tour of Scotland made careful notes on the experimental factory at New Lanark, describing its production, use of waterpower, and apparent prosperity.¹³ The link between the new improved mills and communities of New England and New Lanark may be shown to be a consequence of Americans directly copying from Scots.

¹³ Information from Patrick Malone, Brown University, USA

European mill communities at waterfalls

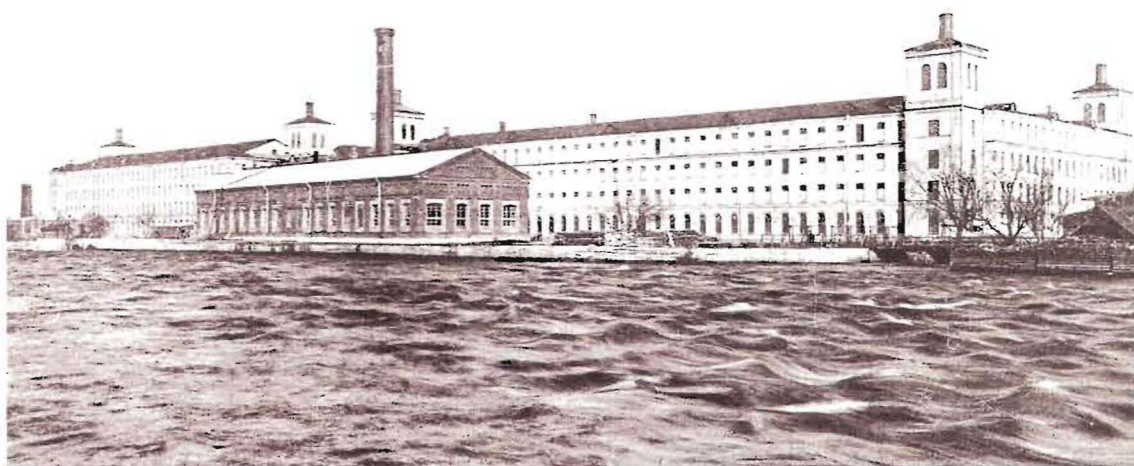
Large water-powered mill complexes are the exception in Britain as steam power allowed textile mills to concentrate in pre-existing urban districts. A wooden-dammed waterfall powered small woollen mills at Tillicoultry, Clackmannanshire. The rapid drop in the River Erich, Perthshire, allowed 12 small flax and jute mills to use water power at Blairgowrie, where three wheels, two turbines and two steam engines survive to make an important water-powered textile landscape. However, no waterfall in Britain could match the potential power of the Falls of Clyde.



Finlayson Cotton Mills, Tampere, Finland, founded in 1828, now part of a mixed-use development. Photo 1989.

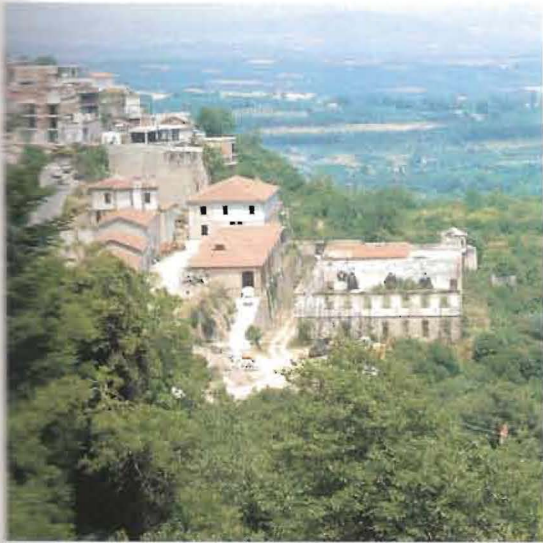
New Lanark can be considered a precursor to the foundation of another city around waterfalls, besides Lowell. Tampere, the second biggest city in Finland, was founded by a Scot, James Finlayson, born in Penicuik and undoubtedly familiar with the west of Scotland cotton industry. He sited Finland's first cotton mill at a waterfall there in 1828. A second mill of 1837 survives, containing the oldest iron columns in Finland, now a museum of work. Other mills and weaving sheds are adapted to an innovative mixed-use development that will safeguard its future. Other companies were attracted to the falls, so Tampere was not for long a company town.

On the border between Estonia and Russia a large waterfall divides Narva from Ivangorod. There, first Baron Steiglitz erected in 1845-9 a flax mill designed by the Scot Sir William Fairbairn and then Ludwig Knoop founded the Krenholm cotton mills on an island in 1858. These, expanding on the Estonian side along a power canal, became the biggest mill complex in Europe, having 458,350 spindles by 1901. Large barracks in brick and smaller timber houses, hospitals, churches, baths and schools were provided for the workforce. While the Steiglitz complex on the Russian side is in poor shape but intact, the Krenholm cotton mills on the Estonian side were badly damaged by fire in the Second World War but have since been repaired and re-equipped.¹⁴



Krenholm Mills, Narva, Estonia, founded 1858: the old mill on the island, with power station in the centre and waterfall to the left. Photograph circa 1900 supplied by Stuart Thomstone.

¹⁴ Information from Stuart Thomstone, Nottingham University, and Jaan Vali, National Heritage Board, Estonia.



Lingou-Kyrtsi-Tourpali cotton mill, Naoussa, Greece, founded in 1874, burned down in 1936, under restoration since 1986. Photo 1997

Smaller mill communities developed in the 19th century at waterfalls in Switzerland such as Guyer-Zeller, Neuthal, Kanton Zurich, c1825. In Greece, Edessa and Naoussa from 1874 had small single and two-storey mills, equipped from Britain and Germany, clustered at waterfalls feeding high-head turbines. These are now subject to imaginative conservation projects focussed on water parks.

In Spain, similar groups of housing and social buildings clustered at new settlements founded on water-powered cotton mills, such as the Colonia Sedo (established 1846) and Colonia Vidal (1892) both in Catalonia. The Parc Fluvial Navàs-Berga is a project to develop tourism along a section of the river Llobregat in Catalonia that has a high concentration of historic cotton textile colonies.¹⁵ These were established during the second half of the 19th century, attracted by the close managerial control which the textile village allowed, and by the hydraulic power potential of water in a country with little coal. The aim of the Parc is to

encourage tourism to replace the declining textile economy and, by raising consciousness of the historic value of the colonies, to secure their future. The colonies trace their origin to the 18th century textile settlements in Britain, of which New Lanark was the greatest, and the only one substantially utilising a waterfall.

New Lanark as a philanthropic textile mill village

Dale and Owen set a standard for a philanthropic mill village. Despite this, philanthropy is hard to detect as a motivation to employers in moulding other communities. The most obvious motivation was generally financial success, the fruits of which might be spent in later years founding public parks, supporting hospitals and brass bands and endowing colleges. Linen manufacturers Baxter Brothers did all of these for Dundee, but their attempt to provide housing within the city for their own workforce failed. Their half-time school (demolished in 1916) had a high reputation but the community could not be insulated from the rest of the city. Baxter Park is some distance from Baxter's Dens Works, and Dundee University is at the other side of the city, so a clearly defined area of Baxters' sphere of influence, exclusive of other magnates, is impossible to delineate. The same applies to the later munificence of the Clarks and Coats in Paisley.

More closely under mill-owners' thumbs was Walkerburn, founded in 1855. Two woollen mills for members of the Ballantyne family, the early elements of which are demolished, stood on a new site using water-power from the River Tweed, to be supplemented by a pumped-storage system. The housing, built from 1855-



Guixarda, Catalonia (www.geocities.com/RainForest/Andes/1284)

¹⁵ Information from website www.geocities.com/RainForest/Andes/1284

1920 for owners and workforce survive (the former but not the latter is listed) and the place still resembles a mill village. The owners' provision of limited facilities – the Ballantyne Memorial Institute, 1904 – may be described as paternalist rather than philanthropic. This was the only large water-powered textile mill community founded in Scotland in the 19th century.

In Northern Ireland new linen communities were being built after that phase had all but ceased in Scotland: community buildings and housing of a model form were provided at Bessbrook (Richardson's), from 1848, and similarly at Sion Mills (Herdman's), and Hilden, Lisburn, (Barbour's, from 1831): in each case some of the housing is substantially altered (back to back housing of the 1830s at Hilden demolished) but mills and community buildings survive. At Bessbrook, Meakin (1905) described the steady levelling up of the whole population, only to have the community provisions almost all dropped once a public company was created. Conservation Areas protect two squares of housing, the dam but not the mills at Bessbrook, and mills and housing (somewhat altered) at Sion Mills.

In Lancashire, England, New Eagley Mill, and the settlements of Bank Top, Turton and Egerton, north of Bolton, were renowned for the paternalism of the Ashworth family. Houses built in the 1820s to 1840s were claimed to be of five or six rooms each and issued with bookshelves. Employees had to change their shirts twice a week and infractions were enforced with fines. However, recent field investigation established that it may be that the quality of the Ashworth housing – a high proportion back to back or with cellar loomshops – was "not exceptional and the belief that it might have been is the product of too readily accepting highly-selective and well-publicised contemporary comment, not least by the Ashworths themselves".¹⁶ Virtually all the windows and doors have been replaced and the mills are demolished or derelict, whereas the



Hilden Mill, Lisburn, Northern Ireland, dining room.

adjacent Eagley Mills of the Chadwicks are now in multiple use, having been rebuilt in the 1880s. A park, library, dining and bathing facilities were provided there from the 1850s onwards. These paternalist showpieces were very much the exception, and would not be found in cottonopolis Oldham, where the mills were in the hands of limited liability companies and no single owner held sway.

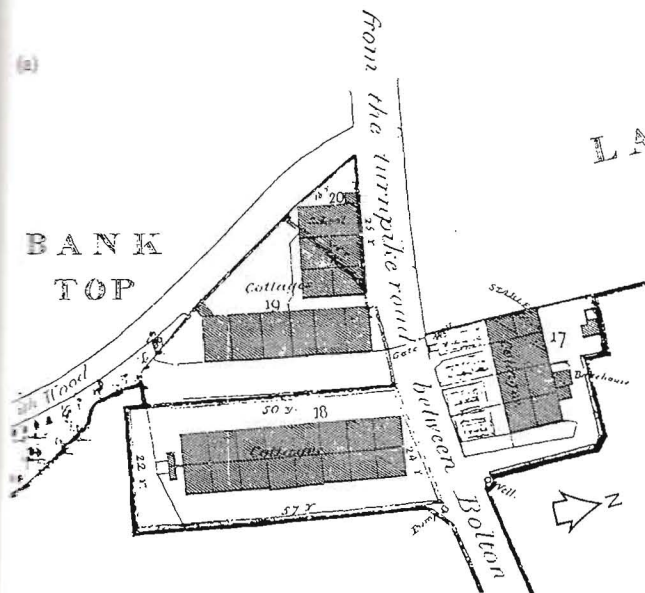
English woollen firms were on average smaller than cotton, and community settlements were consequently smaller. Tonedale, Wellington, Somerset is an example of a mill village under the paternal thumb of the Fox dynasty. More architectural cohesion is to be found in Yorkshire where Col. Edward Akroyd MP first built a new village at Copley from 1849: gothic but with many detail alterations. The associated mill has been demolished. This was followed by Akroydon, to designs in 1859 by Sir George Gilbert Scott and W.H. Crossland: 350 houses focused on a village green with a replica Eleanor Cross and nearby magnificent All Souls Haley Hill church, Halifax.

Apogee of the paternalist mill town, in both scale and ambition, is Saltaire, Shipley, dominated by a mill opened in 1853 which was Fairbairn's last influential word in mill technology. Gradations of housing and community buildings followed from 1854-76. The mill has an assured future, and the housing is well conserved. Sir Titus Salt had the capital and the vision to make his village a showpiece for caring capitalism, without the intention of changing society as a whole.

16 G. Timmins, *Industrial Archaeology Review*, Vol XXII No 1, May 2000.



Above and left: Former back to back cottages at Bank Top, England, as they are today and in a plan of the Ashworths' property in 1833 (G.J. Timmins *Industrial Archaeology Review* XXII No1, May 2000)



Right: Col. Akroyd's statue in front of his Haley Hill mill in Halifax, Yorkshire, and above right, housing in Akroydon in the domestic gothic style by GG Scott and WH Crossland. Their mullioned windows are not appreciated by all of the modern occupants.





In England the earliest village of the class under consideration was Saltaire, founded in 1853 on the outskirts of Bradford by the late Sir Titus Salt for the 3,000-4,000 employees at his woollen mills. Now that our ideals have so far advanced, and we have industrial villages beside which Saltaire is dismal and cramped, there is a tendency to disparage the immense stride marked by its construction over half a century ago just as the improved houses secured by Robert Owen for his people at New Lanark almost as long before would now be looked down upon as quite inadequate for present day requirements. This however is a mistake, as whatever models we can point out today are the direct outcome and development of these early pioneer experiments, and of the principles which underlay them.¹⁷

In Verviers, Belgium, there are a number of mills, oldest being the large hand-powered woollen "au chat" mill of circa 1801, with Venetian windowed gable, followed by the Dethier Mills of 1802-6. Two parallel blocks of four-storey back-to-back tenements, each with single-room flats, for a population of around 800, were erected from 1808-1830, showing some similarities to the earlier New Lanark models. They are being renovated. *The Parc de la Societe Royale d'Harmonie de Verviers*, from the mid 19th century, points perhaps to knowledge of Owen's ideas.¹⁸



Top: Salts' Mill, Shipley, Yorkshire, opened in 1853, (middle) the attic and (bottom) the first phase of housing in Saltaire, built in 1853-4: three-storey boarding houses fronting Caroline Street (after Mrs Salt) and two-storey overlookers' houses on George Street (after one of their sons). 1996.

¹⁷ Budgett Meakin, *Model Factories and Villages: ideal conditions of Labour and Housing* (1905)
¹⁸ P. Viane, *Industriële Archaeologie in België* (1990) pp236-242



Workers casino and housing opposite Poznanski's cotton mill, Lodz, Poland.



Art as advertising: an engraving by John Winning, commissioned by Robert Owen, of New Lanark to accompany the substantial exports of the mills' products to Russia. "On each ten-pound package we were wont to paste an engraving of the mills and village; and our yarn in consequence went by the name of picture yarn" (Robert Dale Owen). The inscription reads in Russian: "New Lanark, Robert Owen and Co weft yarn of second best quality". The sluice gate, Mechanics Shop and Waterman's house are in the foreground. (NLCT)

Later in Mulhouse, France, row and cluster houses were built for the Dolfuss cotton mills as the *Societe Mulhousienne des cités ouvrières*, founded in 1853. By 1866, 600 houses were built and the total was 1,243 houses by 1900: a substantial town rather than a village. MM Sainte, Freres had erected some 500 houses at two "cités" at Flixecourt, considered by Meakin not ideal but convenient and cheap, subject to regular inspection by the firm.

Lodz is the chief textile city in Poland and expanded phenomenally in the 19th century to supply the Russian empire. There the pattern of closely knitted urban estates, comprising owner's palace and park, mill, housing and casino (combining place of recreation, dining room and self improvement of the workers) is still remarkably intact. Those of Poznanski and Scheibler were the biggest: in each case the mill owner's house is a museum, the housing is still inhabited – e.g. Scheibler's 22 two-storey blocks in three rows built 1875-8, with school, shops, casino, hospital, fire station and a lot of trees; Poznanski's, from 1878-1888, are four-storey and facilities include a relocated timber church – but the long term future of the mills is in doubt.¹⁹ As the landscape is flat and urban, there are

considerable differences as well as obvious parallels to New Lanark.

In Russia proper, the late 19th-century Yaroslav mills were equipped with laundries, baths, a reading room, model dairy and hospital, well before the Palace of Culture became the staple of communist workplaces. Smaller mills, now closed, in Tver were also equipped with multi-purpose reading rooms not dissimilar to the Institute at New Lanark. As New Lanark was a major exporter to Russia in Owen's time and as the future Tsar Nicholas I visited Owen, the similarity to New Lanark of these later 19th-century paternalist mill complexes, and of their communist successors, however imperfect, may not be accidental.

New Lanark as a Utopian village

A strict Greek definition of Utopia is that it exists nowhere. Visionary schemes that came to nothing are not available for comparison of their state of conservation and so need not be recounted here. However, it was necessary for many of the visionaries, Robert Owen and William Allen among them, to point to a real place that came close to that perfection: namely,

¹⁹ Information from Politechnika Lodzka and the Regional Centre for the Study and Preservation of the Monuments in Lodz, Poland.

New Lanark. Although New Lanark was founded as a philanthropically run village with profit as a prime, but not over-riding, objective, yet the way it was run under Owen allows it to be held up as a practical model to Utopians. Other practical examples were few.

European Utopianism first came to impress British sensibilities in the form of small religious communities. Moravian settlements set standards in England and Ireland, with deep religious conviction behind a set formula of planning and social organisation. Fulneck in Yorkshire came first, from 1744, in the form of two long terraces. Fairfield near Manchester was last to be built, from 1785 as a square within a square now inside sprawling Droylsden.²⁰ Owen probably knew of it, as the layout compares with his *Villages of Co-operation*. Shaker communities in America similarly have roots in central European religious communities.

Two continental 18th century settlements built under royal patronage may be mentioned as the application of enlightenment thinking to architecture, town planning and improved manufacturing processes, and have been seen as the springboard to a utopian future.

In Italy Ferdinand IV of Naples founded the San Leucio Royal silk manufacture in 1789 as a model factory and technical school, where moral and behavioural codes were applied to a specially selected colony of 700 silk weavers,

with families.²¹ Although it was inspired by J.J. Rousseau's theories, the armies of the French First Republic ended the experiment in 1799. It lies within the Royal Park of Caserta, inscribed as a World Heritage Site in 1997. The UNESCO inscription declares it "also of outstanding interest because of the idealistic principles that underlay its conception and management. It is an eloquent expression of the enlightenment in natural form integrated into rather than imposed upon the natural landscape."

In France the Saline Royale de Chaux at Arc-et-Senans is by C.N. Ledoux, in 1776-79: a panopticon hemisphere of remarkable neo-classical workers' barracks with communal kitchens, and two salt pan houses flanking a director's house as if it were a temple. Ledoux' time in prison enabled him to theoretically expand Chaux to encompass the saltworks within a whole imaginary city. Published in 1804 as a visual allegory – architecture as an



Arc-et-Senans, France. Monumental classicism by CN Ledoux, 1776-79. 1986



San Leucio, Italy. The only part of the radially-planned town to be completed is in the foreground. The silk works is uphill to the left, arranged around a courtyard, and the terraced Filanda dei Cipressi cotton mill was added to its right in circa 1826-30. (G E Rubino, Università degli Studi di Napoli Federico II)

20 Gillian Darley *Villages of Vision* (1978) Pp 148-175

21 G.E. Rubino "Storia e conservazione della Manifattura Reale Borbonica di San Leucio" in *La Fabbrica come Laboratorio* P Chierici, ed. (Torino, 1998)

instrument of egalitarian social reform – Ledoux thus retrospectively transformed his saltworks much as Owen's writings were to transform perceptions of New Lanark. Salt production ceased in 1895 and the director's house was dynamited in 1926. Restoration from a very damaged state began in 1936, replacing all the roofs and much stonework, to house *Le Centre International de Reflexion sur le Futur*, now the *Fondation CN Ledoux*.²² It too is an inscribed World Heritage Site, and one that co-operated with New Lanark and Le Grand Hornu in the promotion of a conference on contemporary industrial architecture in 1999 and the exhibition "Ideal Cities" in 2000.

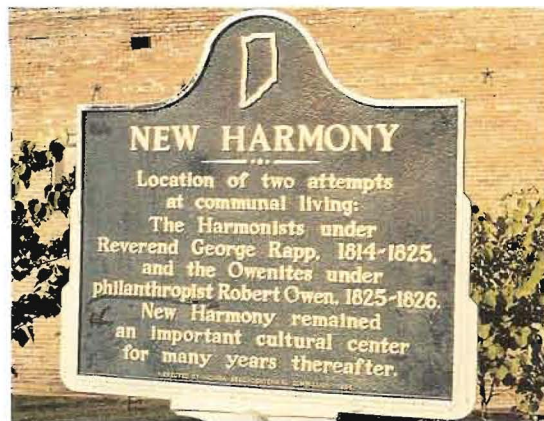
"While contemplating Ledoux' Utopia the mind moves back to Robert Owen and forward to Fourier".²³ Charles Fourier's *Le nouveau monde industriel* came out in 1829 but the first French *phalanstères* it promoted had to wait until after J-B Andre Godin started his stove foundry at Guise, North East France, in 1846. In 1880 he gave ownership to his 1200 workers. Communal family living was and is promoted in four four-storey tenement blocks with deck-access from wrought iron-roofed courts, *Familistères*, built in 1859-1883 opposite a theatre, school and baths built in 1869.²⁴ These are in good condition, now owned by the municipality and inhabited by 300 families.

Inspired by Fourier, and indirectly Owen, Albert Brisbane took this philosophy to the USA, where more than 50 phalanxes were set up (e.g. Phalanx, New Jersey, 1849) in the mid 19th century, having an average life of two years. Kibbutzim in Israel may be said to have a similar origin.

New Lanark as an Owenite village

Inspired by Owen's vigorous promotion of his experience at New Lanark, several Owenite communities were set up in the USA and seven in Britain. None achieved the success hoped by their founders.

In 1825 Owen moved on from New Lanark to inject new life into a co-operative community at New Harmony, Indiana, USA, established by



New Harmony, Indiana, USA. The Owen Community House (and plaque) (New Lanark Conservation Trust, 1983)

²² P Bonnet *The Royal Salt-Works of Arc-et-Senans* (n.d.)

²³ N Pevsner, *A History of Building Types* (1976) pp278-283

²⁴ F Bollerey *Architekturkonzeptionen der utopischen Sozialisten* (1977) pp150-167

Father Rapp in 1814. Inevitably, and lacking a manufacturing purpose, the project faltered and the community buildings surviving there are somewhat scattered amongst subsequent development. The grid plan does not possess the architectural and townscape coherence of the tighter site at New Lanark. Several buildings are individually protected, but some of these have been moved from their original location. The Harmonist log cabins are reconstructions. The communal granary was restored in 1999. Historic New Harmony Inc. is wholly owned by descendants of Robert Owen and cultural exchanges with New Lanark Conservation Trust are strong.



Orbiston, Motherwell, Lanarkshire: the site of the communal building and re-used stone from it at a forge nearby (in 2000).

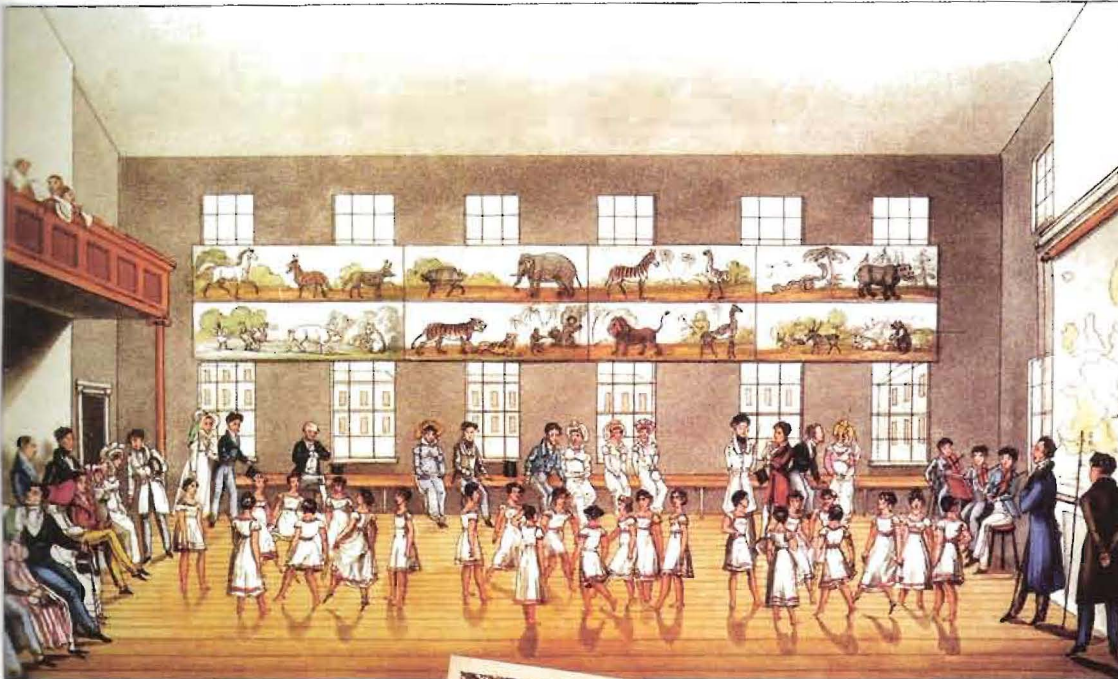
Orbiston, Lanarkshire, was an offshoot of New Lanark while Owen was in America, receiving as teacher the freethinking sister of Stedman Whitwell, Owen's architect. It had the appearance of part of a Village of Co-operation, or one wing of a Fourier phalanx, but lasted only from 1825 to 1827. "The huge structure that had been intended to hasten in the millennium was razed to the ground and for a time served as a quarry for the neighbourhood".²⁵ Beside a weir in Strathclyde Country Park the cut-down walls of a forge seems to incorporate re-used dressed masonry from this building.

The last of Owen's colonies, Queenwood at Tytherley, Hampshire, England is now a deserted ruin that has returned to nature. It was established in 1839 but was unable to support itself. The large public building, Harmony Hall, erected before any cultivation of the land that was to support it, was defunct by 1845.

William Allen, one of Owen's new Quaker partners from 1814, while horrified at Owen's diffidence regarding revealed religion, was sufficiently inspired by the New Lanark experiment to promote, through his publications, *Colonies at Home*. From 1846 the Chartist Land Company built five settlements in England directly influenced by Allen, but collapsed in 1851. Charterville and O'Connorville comprise mostly cottages and smallholdings and are the antithesis of urban. Ideals alone could not support such communities: manufacturing industry was required to give an economic base to support a sizeable population: this New Lanark had.

New Lanark was a major element in Owen's propaganda for the New System of Society, articulated forcefully on trade union, co-operative and political platforms in the 1830s and '40s. Owen could rightly claim that his social experiment in man-management at New Lanark had been a success and might serve as an inspiration to others at home and overseas.

²⁵ Alex Cullen, *Adventures in Socialism* (1910)

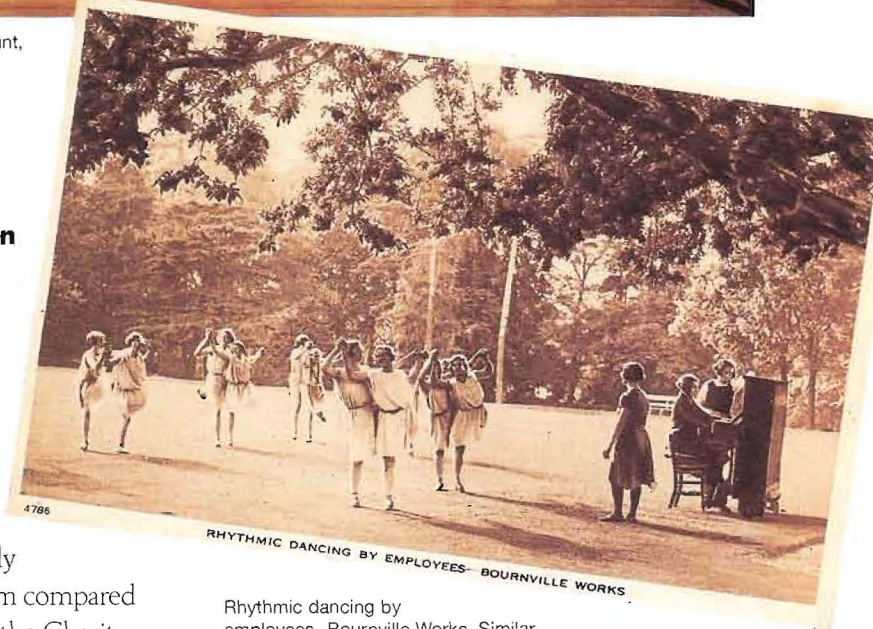


Mr Owen's Institution, New Lanark, by G Hunt, 1825 (NLCT)

New Lanark as a pioneer in education for all

Dale provided innovative schooling in which children, a significant part of the workforce, graduated through eight different levels of attainment. This must have been in Mill 4, and possibly briefly in New Buildings. The curriculum compared favourably with that provided in the Charity Schools with which Dale was more or less altruistically involved, and with that at Catrine (probably in an attic of the demolished mills). A school was also provided at Woodside cotton mill south of Glasgow. In England, Arkwright and Strutt provided Sunday Schools in Cromford and Belper in 1785, and Rees' drawings of the Belper North Mill of 1804 show a further schoolroom in the attic of that mill.

Therefore, no free standing factory schools of the 18th century survive, or appear to have ever existed. Schoolrooms improvised in attics



Rhythmic dancing by employees- Bournville Works. Similar classical forms of dress to that used by children in the New Lanark of Owen's time were used more than a century later at an English model factory community. Either both refer back to the original classical source, or perhaps this is a copying of New Lanark?

continued to be quite common well into the 19th century. The first purpose-built mill schools are those built by Owen at New Lanark.

When Owen reformed the partnership in 1814, his partners Jeremy Bentham, William Allen and Joseph Fox were primarily interested in New Lanark's educational potential. The New Institution and the School were rapidly

completed and offered a curriculum emphasising the expressive arts, dancing, singing and recitation. They also performed other communal functions, as lecture and dining rooms, and for religious services. They consist of large well-lit rooms in which the students (infants to adults) were taught by assistant teachers all overseen by the master on a platform at one end – possibly the galleries, when not taken up by visitors or musicians.

Designed to give nourishment for mind and body of all ages, the New Institution seems to be the earliest of its kind anywhere and was the first concrete expression of Owen's environmental and communitarian ideas.

The closest comparable school surviving in England is the Sunday School at Macclesfield, 1813, four-storeys externally, the upper two lighting a single large galleried room in which the Lancasterian system of education by monitors was practised. This is now a museum to the silk industry.

The Lancasterian system gave way in educational thinking to the Stow system, in which children were gathered on stepped galleries at one end of a school room. The Normal Seminary on Garscube Road, Glasgow, 1836 is the pre-eminent surviving example built to that system. The great majority of Scottish schools were built after the 1872 Education Act. New Lanark Primary School of 1883 is a typical single-storey example to offer a contrast with those built by Owen.

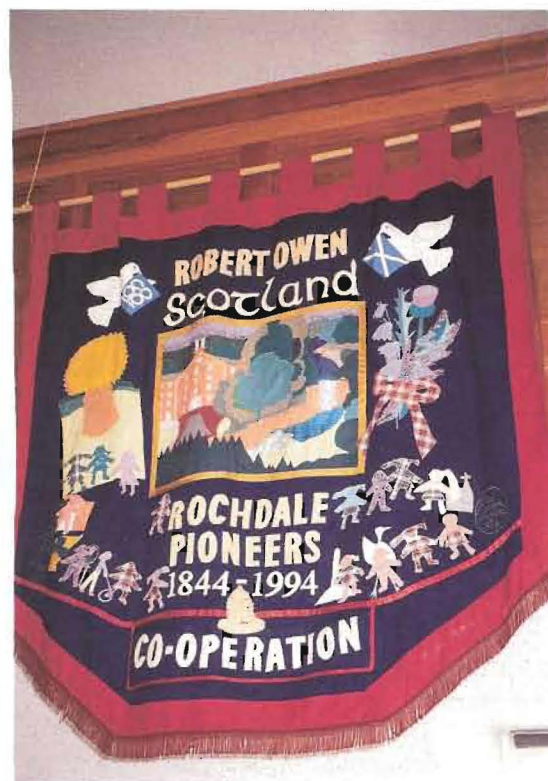
The Half-Time system, in which pupils would work alternate days or half days as shifters in mills, was of continuing importance in Scottish textile districts. Surviving schools of the mid and late 19th century exist at: Alexanders', Duke Street, Glasgow; Coats, Ferguslie, Paisley (fire-damaged and under threat); Paton's Kilncraigs, Alloa (a recently shut mill shop, so also under threat); Cox's Camperdown Works, Dundee (a Boys Brigade Hall) and Valleyfield Paper Mills, Penicuik (small, converted to a house). All owe a debt to New Lanark.

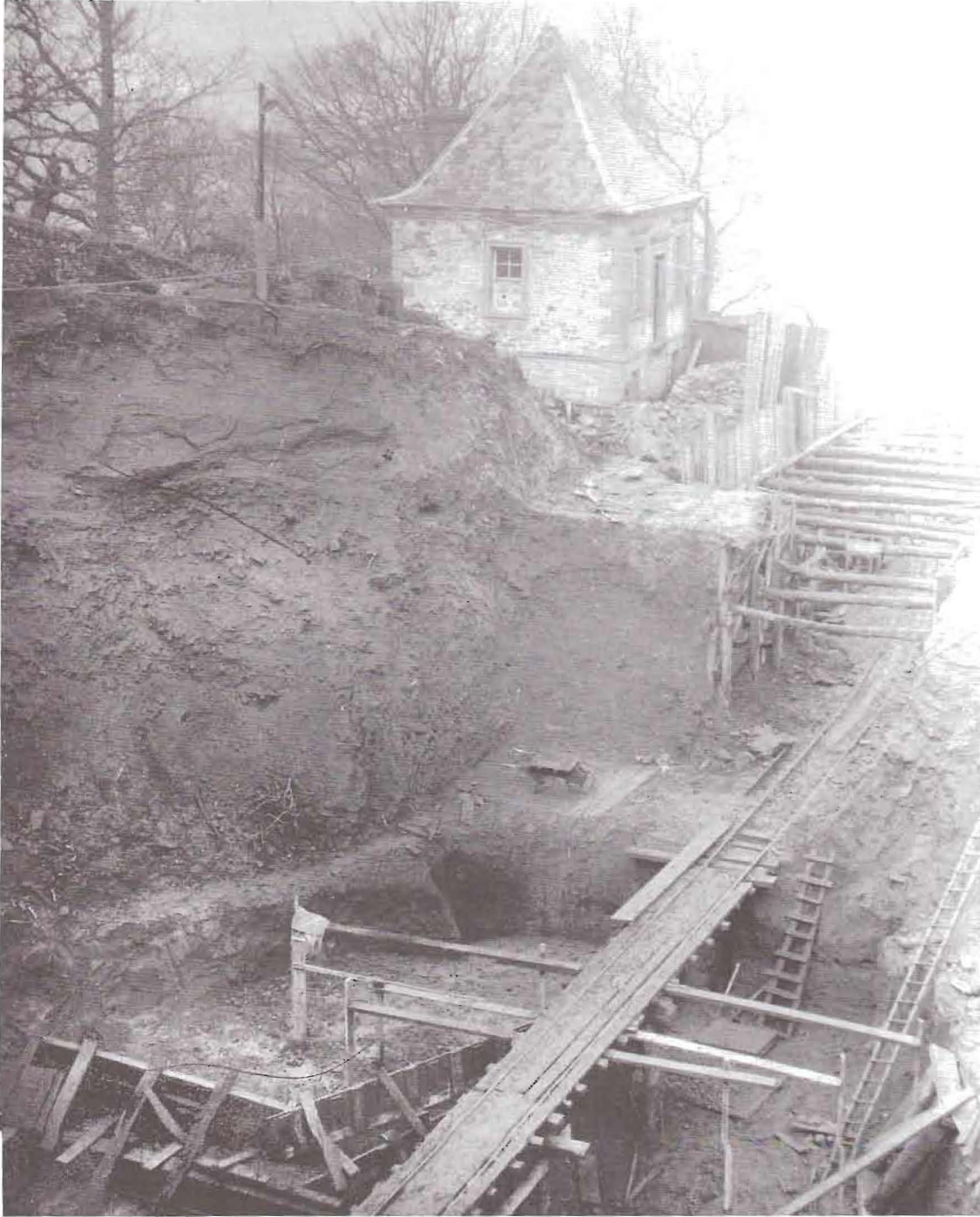
New Lanark as the birthplace of co-operation

The Village Store at New Lanark, founded by Owen in the early 19th century and still a shop today, pioneered a fair trading system, which brought benefits to the community and its users. Profits from the store paid the teachers' salaries. It is regarded by the International Co-operative alliance as the seedbed of the co-operative movement. There were three million members of co-operative retail societies in Britain alone by 1914.

This sets it apart from the factory truck shops that were set and run without scruple by other entrepreneurs in otherwise similar shops, few of which are recognisable today.

A close link with the British co-operative societies exists in the shop founded by the "Rochdale Pioneers", themselves Owenites, in Rochdale, Lancashire in 1844. It is now a museum but its immediate environs in a pedestrian precinct do not compare with those of New Lanark.





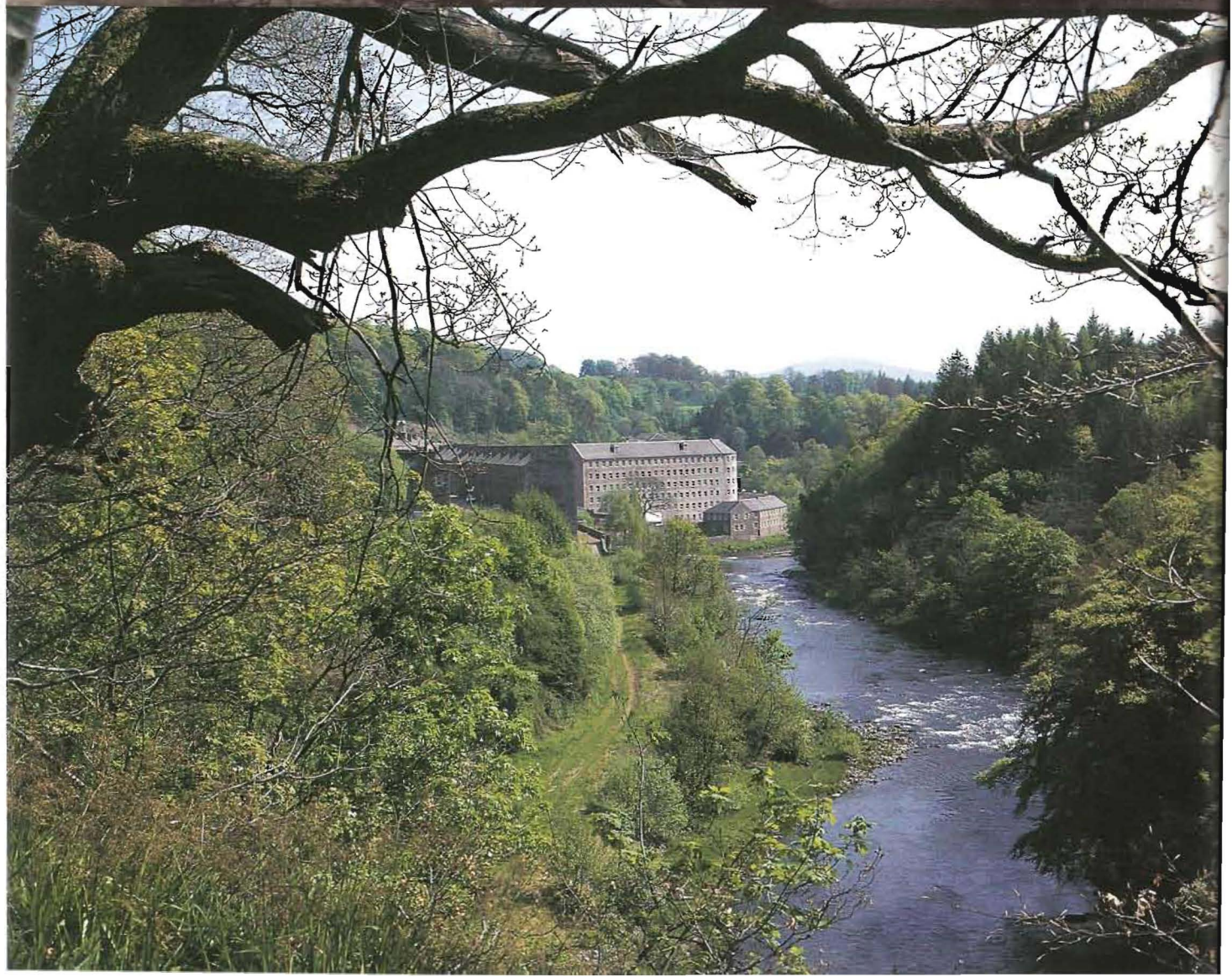
The Falls of Clyde as a source of power

The continuing importance of the Clyde as a power source is underlined by the pioneer development on the Falls of Clyde of large public hydro-electric power stations in Britain. At two similar white concrete power stations at Bonnington (1927) and Stonebyres (1928) the original Francis turbines still generate 11,000 kW

The pipes for the Bonnington Power station were contrived to just miss the View House in 1926. (RCAHMS Scottish Power Collection)

and 5,500 kW respectively. For comparable or larger sites from that period it is necessary to look to Canada, USA and Scandinavia.

The modern design aesthetic established at Bonnington, guided by a committee established to ensure the sympathetic insertion of the hydro



Left: Water colour of New Lanark from Braxfield, c1810 by Hugh William Williams shows Mill Number 1 still without the waterhouses, and the ends of Double, Long, Mantilla and Braxfield Rows. (NLCT/Kelvingrove Art Gallery and Museum, Glasgow) and below the same view today.

scheme into the landscape, was repeated ten years later at Galloway and, post-war, by the North of Scotland Hydro-electric Board. Sir Edward MacColl, engineer for the latter, had first cut his teeth at the Falls of Clyde.

The use of tilting weirs, which do not raise water levels, and the absence of dams on the Clyde is a factor that has preserved the cultural and natural landscape of the buffer zone. In winter, and on a few days in the summer holidays, water is routed over the falls so that their full force may be appreciated.

New Lanark as part of a Sublime Landscape

Although implicit in Chinese landscaping for centuries, it was in Britain that the theory of picturesque and sublime landscaping was first defined during the 18th century. Scotland, with an abundance of wild scenery close to the settled lowlands and a dramatic topographical and geological structure, became a principal focus for picturesque and sublime appreciation. As waterfalls, precipices and gorges comprised the main ingredients of sublime and picturesque attractions, sites such as the Falls of Clyde, Roslin Glen and the hills and glens around Dunkeld became essential stopping places for those 18th-century tourists who had come in search of wild nature. It is on the Bonnington estate, immediately upstream of New Lanark, that we find the earliest known building in Scotland specifically sited for the enjoyment of wild nature. Built in 1708, the Bonnington view-house created an explicit visual dialogue between the ordered beauty of the park on the one hand, and the wild grandeur of the neighbouring gorge on the other. Carefully sited riverside paths, bridges and

"You come to a spot, as you descend the hill, where you have a full view of the great falls of the CLYDE, with the accompanying rocks and woods which form the banks of the river. At the same time you see the green hills, and the cattle and sheep feeding upon them, at the summits of the banks on each side and over the tops of the trees. The fine buildings of the factories are just under you: and this, all taken together, is by far the most beautiful sight that my eyes ever beheld".

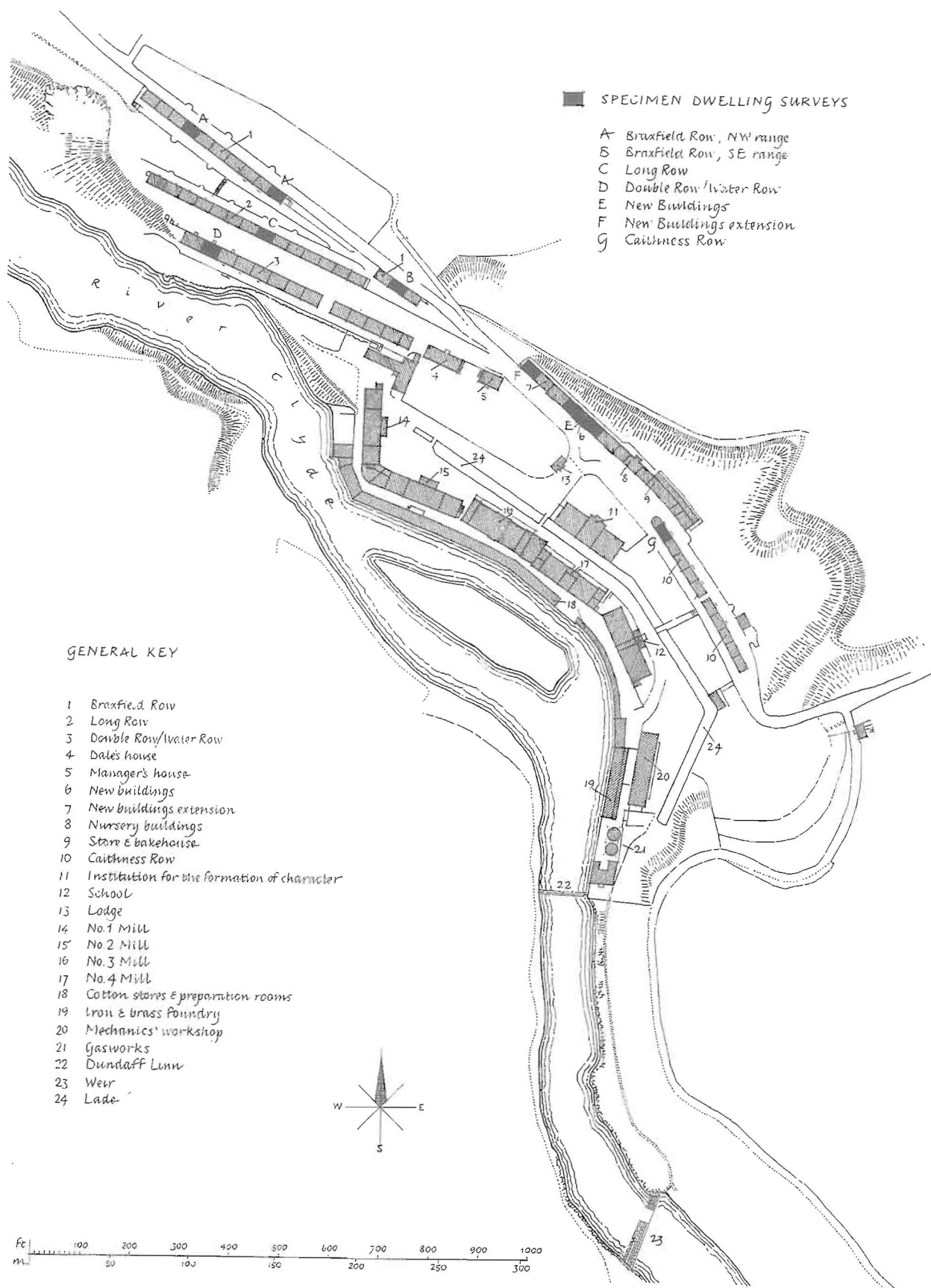
William Cobbett, 1832.

viewpoints have been combined with judicious planting on this and the neighbouring estates of Corehouse, New Lanark, Braxfield and Castlebank to create a composite landscape of national significance. Each borrows views from the other.

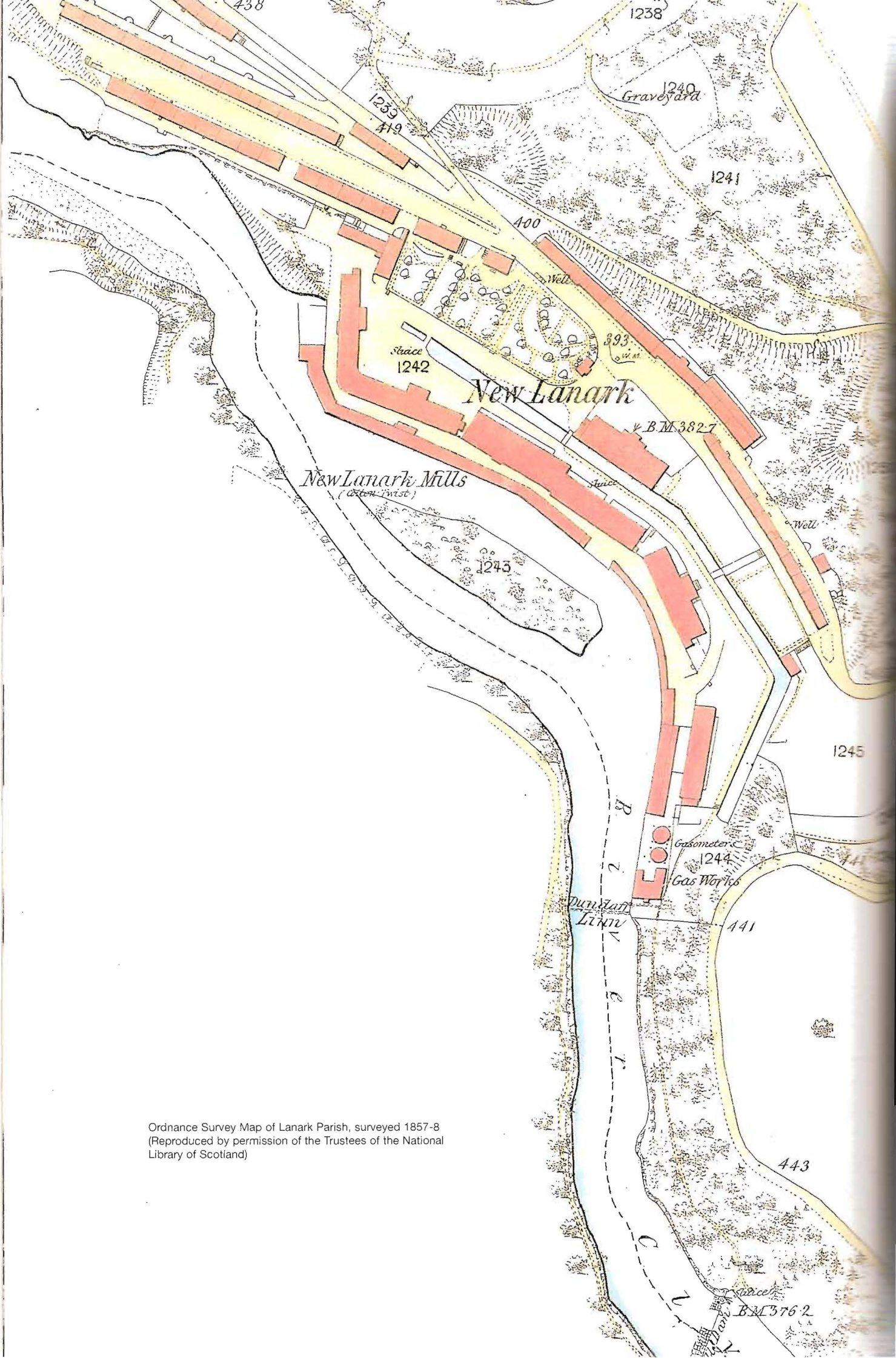
The designed and natural landscape forms the setting and ambience of New Lanark and is intimately bound up with the value of the site.

2(c) Assurance of Authenticity and Integrity

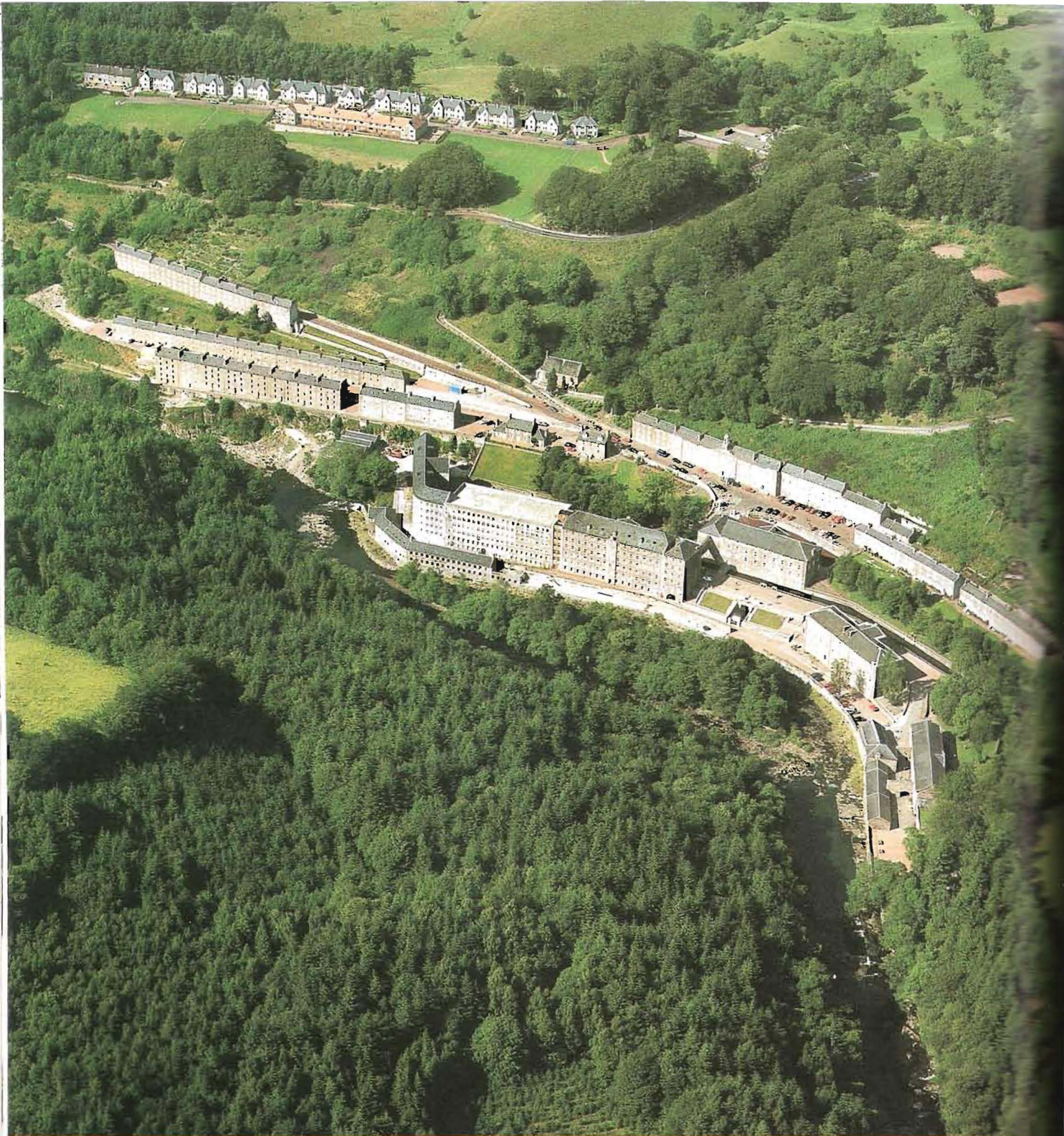
The Nara Document on Authenticity states that authenticity, as a value attributed to cultural property, is a reflection of local culture. In Scotland, the Stirling Charter sets out broad principles for conservation as sustainable management, including presumptions in favour of preservation, reversibility, minimum intervention and guidance through conservation



New Lanark village, key to specimen dwelling surveys by RCAHMS, layout taken from 1st edition O.S. map, surveyed in 1857-8. (RCAHMS)



Ordnance Survey Map of Lanark Parish, surveyed 1857-8
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Aerial view of New Lanark taken 25.7.1995 (RCAHMS)