



A and G Murray's Old Mill, built 1798 — 1802, the oldest extant mill in Manchester. Doubling Mill, added in 1842, is on the right.

THE MILLS OF ANCOATS

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In the first phase of the industrial revolution Manchester developed not only as the chief marketing centre of the new cotton industry but also as the industry's most important manufacturing town. Cotton-spinning mills were built in several areas of Manchester but in no district was their impact, both economic and visual, as great as in Ancoats. Within the space of ten years in the late eighteenth century two of the cotton industry's largest factory complexes were constructed.

The development of the mills paralleled the rise of Ancoats as the first industrial suburb of Manchester. Mill building took place within the original street pattern which was laid out on farmland in the 1780s, and was closely linked to the later development of a local canal system. It took place alongside the construction of a variety of other building types, including those of related industries and the housing of the local community.

The mill complexes in the Ancoats conservation area provide a spectacular illustration of urban industrial architecture in the Georgian period. Two of the sites originated in the late eighteenth century. They were owned and occupied by the successful firms of A and G Murray and McConnel and Kennedy. The owners of these firms migrated to Manchester from Scotland to specialise in the most profitable branch of the cotton industry, fine spinning. Their mills were the largest in Manchester by the early nineteenth century and continued to be extended until the early twentieth century, so that today they include an exceptionally wide chronological

range of surviving structures. The third site, Beehive Mill, dates from the 1820s. It was occupied by a number of smaller firms, as were many other early mills in Manchester, and contains important examples of early fireproof and fire-resistant methods of construction.¹

Ancoats: An Industrial Suburb

Ancoats had been laid out for development for about a decade before the construction of the major mill complexes began in 1797 (Fig 1). The commercial, industrial and demographic growth of Manchester in the mid and late eighteenth century had led to increased demand for building land and increasing land values. This resulted in the sale and subdivision of vacant lands around the town, firstly in Ancoats but soon after in Chorlton on Medlock and several other areas. Maps published in the early 1790s show well over sixty plots laid out in Ancoats separated by a grid pattern of streets.² Most of the area comprised rectangular plots situated parallel to Oldham Road, although at the west end of the area three rows of plots ran parallel with Great Ancoats Street. Development had already begun in the western and northern parts of the area, and these plots probably retain the earliest surviving structures today. Most of the plots in the central, southern and eastern parts of the area were still vacant when the early maps were surveyed. Many of the original streets survive, some later renamed. In a few parts of Ancoats, however, there is some doubt as to whether all the streets shown on the early maps actually existed before

other building work commenced. Although some of the streets in the southern part of the area were 'newly laid out' in 1789, a document of 1827 suggests they were never actually built.³ The extant mill complexes eventually occupied eleven of the original plots, extending across four of the streets marked on Laurent's map of 1793. The size and shape of the plots later influenced the routes of local canal branches and the form of the mills.

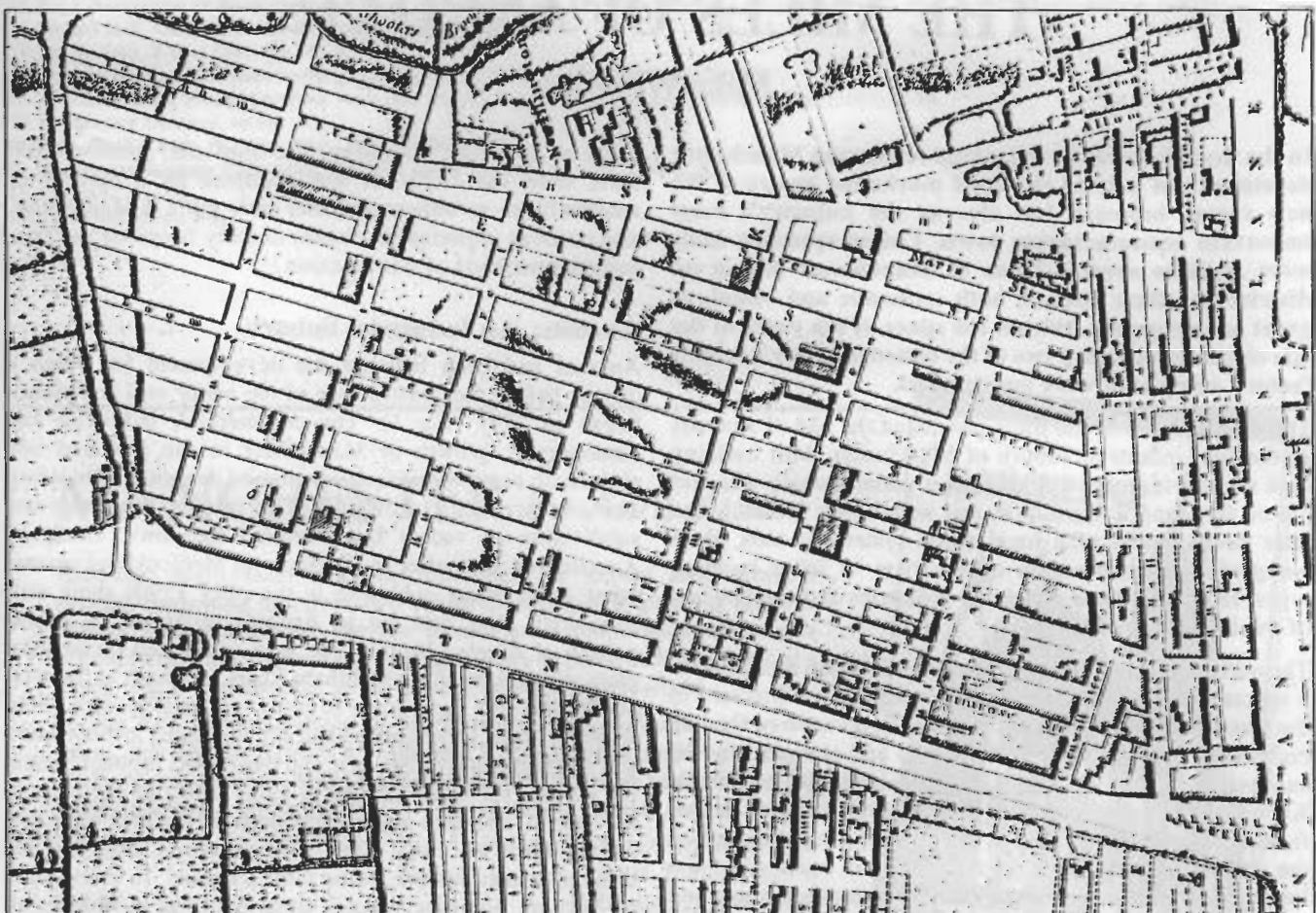
A number of small mills existed in Ancoats before building started on the extant complexes in 1797. At least two small textile mills are shown on the early maps and there is tentative evidence of two more, although none of these mills survive. The first two stood on Redhill Street. One was owned by a Colonel Sedgwick⁴, and was later replaced by Sedgwick Mill, part of McConnell and Kennedy's complex. The other was owned by a Mr Lane⁵ and was later replaced by Doubling Mill, part of Murray's complex. Both were smaller than their later replacements but were steam-powered and for a time occupied by Murray and McConnell and Kennedy themselves. The third mill was on German Street, where Kennedy's brother began business from c1800. Following a fire in 1803 he is said to have built another mill on Gun Street⁶, although the exact location of this fourth mill is unknown.

A major factor in attracting large-scale industry and related development to Ancoats after the mid-1790s was the construction of a local system of canals. The route of a canal from Rochdale to Manchester had been under discussion since 1766, and although the route was not confirmed until 1794⁷, it seems likely that the southern boundary of Ancoats, along Redhill Street, was positioned to run parallel with the future route of the canal. The Rochdale Canal was finally

opened in 1804, with two branches reaching into Ancoats added by 1808⁸. These branch canals, the Prussia Street Arm and the Bengal Street Arm, replaced two of the original streets marked on Laurent's Map of 1793. In addition, Murray's site had been equipped with its own fully enclosed canal basin by 1806 (see below). The growth of manufacturing industry in Manchester was closely linked to the development of the canal network. In the early nineteenth century the majority of the town's textile mills were built on canal-side sites.⁹ Canals not only formed the essential infrastructure used for the transportation of goods and raw materials but also provided water for steam plant. They enabled the construction of the closely-packed groups of large steam-powered mills which soon became a hallmark of Ancoats and other parts of Manchester. The presence of smaller steam-powered mills in Ancoats apparently before the completion of the canals indicates that an alternative water supply must have previously been used, although when the major mill complexes began to be built in 1797, the route of the local section of the canal was known and may indeed have been under construction.

Development of the Murray Mills

Adam and George Murray migrated from southern Scotland to Manchester in the 1780s and began business as textile machinery makers before starting cotton spinning. They occupied parts of at least three other local mills before moving to their main Ancoats site in 1798. By 1806 this site had grown into Manchester's largest mill complex. The first phase of development was the construction of the eight-storeyed Old Mill on Redhill Street (Fig 2). This occupied the western half of a vacant plot between Pit Street and



The newly laid out suburb of Ancoats, surveyed in 1793 before large-scale industrial development started. (from a *Topographical Plan of Manchester and Salford*..., C. Laurent, published 1795. Copyright 1991, Historical Discovery.)



Murray's New Mill, built 1804, with the Murray Street warehouse on the right.

Bengal Street. It was powered by a small Boulton and Watt engine and was probably used for carding and spinning. Murray's specialised in the more profitable fine yarns, using mules which they probably manufactured themselves. In 1802 the mill was doubled in length with an addition to its east end. A more powerful engine was installed at the same time, the completed mill occupying the whole of the Redhill Street plot. Although it was later lowered to seven storeys, this building is today Manchester's oldest extant textile mill.

The expansion of the site continued shortly after 1802. In that year Murray's acquired the two adjoining vacant plots to the north, which were originally intended to be separated by two streets. In a protracted campaign of building over the next four years the site was extended across these plots to form a quadrangular complex enclosing a central yard. On the northern side of the yard, fronting Jersey Street, the six-storeyed New Mill was built by 1804 (Fig 3). This was roughly the same length as the 1798 and 1802 mills, and for about a year was probably Manchester's largest single mill building. It was powered by another Boulton and Watt engine in a detached engine house in the yard, and was also probably used for carding and spinning. Building continued at the site with the completion by 1806 of two narrower blocks forming the east and west sides of the yard. These were not originally powered and were mainly used for warehousing and ancillary processes such as the preparation of raw cotton for carding. The main entrance and the offices were located in the western warehouse block, the adjacent Pit Street being renamed Murray Street.

The construction of Murray's Mills between 1798 and 1806 coincided with the opening of the Rochdale Canal in 1804, and the site was designed to be fully integrated with the canal system. The unusual quadrangular layout enabled a private canal basin to be built in the yard, linked to the main canal by a tunnel. This unique feature of Murray's Mills was later described by an eminent American visitor, who referred to its use by boats 'discharging their freights of raw cotton and coals into the heart of the works'.¹⁰

Murray's Mills were built with wooden floors of standard joisted construction supported by cruciform-section cast-iron columns (Fig 4). Some of the columns were later replaced with improved cylindrical types and the ceilings made fire resistant with the addition of metal sheeting. No part of the complex was of the more advanced fireproof construction, first introduced into the Manchester area in the Salford Twist Mill of c1802. The most distinctive features of

the site are its high level of integration with the early canal system and its great size in comparison with contemporary mills elsewhere. It was valued at £20,456 shortly after completion, increasing to £59,000 by 1818.¹¹ It contained 84,300 spindles on mules of about 342 spindles each, with 1,215 operatives.¹²

In contrast with many contemporary industrial sites in rural areas, only a small proportion of this workforce lived in housing owned by the firm. By 1855, however, Murray's owned three terraces in Ancoats, in Gas Street, Maria Street and Murray Street, although it is not known whether these houses were built by the firm¹³.

By the mid-nineteenth century Murray's Mills had been further expanded to include three additional mills along the east side of Bengal Street. The first, named Little Mill, was built on the corner of Bengal Street and Jersey Street by the 1820s. Ironically, by the end of the nineteenth century this was the tallest mill in the complex, standing nine storeys high. In c1842 two more mills were added to the south, all three buildings being linked to the original complex by tunnels beneath Bengal Street. Doubling Mill stands on the corner with Redhill Street and was built on the site of the small mill which had been occupied by Murray's in the early 1790s. It was powered by a Boulton and Watt beam engine and was probably used to meet the increasing demand for doubled yarns from the lace industry in the Midlands. The third mill, Fireproof Mill, was attached to the north side of Doubling Mill at about the same time. As its name suggests, this was of fireproof construction with brick-vaulted ceilings. Other mid-nineteenth century modifications to Murray's Mills included the widening of the Murray Street warehouse and the replacement of the 1802 engine with the larger detached engine house and chimney which still stand in the yard.

The final additions took place in the early twentieth century. Little Mill was replaced by a concrete-floored mill designed for electrically-powered mule spinning. The centre of the Jersey Street elevation retains the tower which contained the electric motors (Fig 5). At about the same time the lower floors of the 1804 New Mill were strengthened and the mill converted to be rope-driven from a new engine house which was added in the north-east corner of the yard.



The interior of the Murray Street warehouse, complete by 1806, showing the original cruciform cast-iron columns.



New Little Mill, added to Murray's site in 1908 for electrically-powered mule spinning.

Development of McConnel and Kennedy's Mills

James McConnel and John Kennedy were well-acquainted with the Murrays, having migrated to Manchester from the same part of southern Scotland in the 1780s. The two firms had similar early histories. During the early nineteenth century they were both highly successful and dominated Manchester's fine cotton spinning trade from their adjacent sites in Ancoats. McConnel and Kennedy's firm achieved greater success in the mid and later nineteenth century, however, replacing Murray's as the largest cotton spinners in Manchester and becoming one of the best-known firms in the history of the Lancashire cotton industry. Of further interest is the survival of the early records of the firm, including inventories of the machinery installed in the mills.¹⁴

McConnel and Kennedy's complex occupied the five plots to the west of Murray's Mills, between Redhill Street and Murray Street. Their two original mills, built alongside the existing small mill owned by Colonel Sedgwick, were contemporary with Murray's site but do not survive. The first was a seven-storeyed spinning mill built between 1797 and 1801 to the west of Sedgwick's factory. It stood end-on to Redhill Street on one of the plots running parallel with Great Ancoats Street. It was powered by a sixteen horse power Boulton and Watt beam engine and originally



Sedgwick Mill, built 1818 — c1824, was one of the tallest early fireproof mills.

comprised a card room on one floor and spinning rooms containing 48 mules with between 252 and 300 spindles each. McConnel and Kennedy had already made significant improvements to the mule, including the first successful application of steam power to mule spinning, and their Ancoats mills were probably the first example of the machinery layout which later became widespread in the Lancashire cotton industry. Preparation and carding was located at ground level and the mules installed transversely in the upper floors, one to each bay of the building.¹⁵ The second mill, known as Long Mill, was completed in two phases in 1802 and 1805 but was destroyed by fire in the 1960s. It was built parallel to the first mill on the adjacent plot to the west. It was of seven storeys and thirty-one bays, larger than Murray's New Mill of 1804, containing 110 carding engines and 167 mules of three hundred spindles each driven by a forty-five horse power beam engine.

The next phase of building was the construction between 1818 and 1824 of the eight-storeyed Sedgwick Mill, which is today the oldest extant part of the complex (Fig 6). It was built on the site of the small mill owned by Colonel Sedgwick. Sedgwick Mill was distinguished by its fireproof construction, comprising an internal framework of cast-iron beams and columns supporting brick-vaulted ceilings and tiled floors. It was built to a U-shaped plan with north-projecting wings at each end. The internal engine house, containing a fifty-three horse power engine, was in the west end of the front block on Redhill Street, with an internal boiler house in the west wing. Inventories indicate that the five upper floors of the front block and the east wing were equipped with mules of 348 spindles each.

With the completion of Sedgwick Mill McConnel and Kennedy overtook the Murrays as the largest cotton spinning firm in Manchester. Their spindlage had increased from 7,464 in 1797 to 124,848 in 1824, while their number of employees peaked at 1,590 in 1836¹⁶. The firm appear to have owned more housing in Ancoats than Murrays, with tenants located in Great Ancoats Street, Jersey Street, Henry Street, Cotton Street, Maria Street and Union Street. Although these properties could only have accommodated a small proportion of the total workforce, tenancy of at least some of the houses was conditional upon remaining in employment with the firm.¹⁷

Further major extensions to the site were made in the late nineteenth and the early twentieth century. In 1868 the six-storeyed Sedgwick New Mill was added and used for doubling the yarn spun in the firm's earlier mills. It was attached to the west wing of the original Sedgwick Mill and was of similar fireproof construction. In c1911 — c1913 the site reached its maximum size with the addition of two more six-storeyed mills built for electrically-powered mule spinning (Fig 7). Paragon Mill was built on the plot to the north of Sedgwick New Mill, replacing earlier housing on Maria Street and Jersey Street. Royal Mill was a rebuilding of the firm's original 1797 mill on Redhill Street. Both these mills reflected the latest developments in mill building, with concrete floors supported by steel beams, electric motors housed in external towers and typical Edwardian embellishment in red brick, stone and terracotta.

Beehive Mill

Beehive Mill was built by 1824 on a plot on the north side of Jersey Street, opposite Murray's Little Mill (Fig 8). It was served by the Bengal Street Arm of the canal and originally had its own private basin. It had a similar power system to the other mills, with an internal beam engine house in the



Paragon Mill and Royal Mill, added to McConnel and Kennedy's site in c1911 — c1913. In the centre is part of Sedgwick New Mill of 1868.

north end overlooking the canal. In contrast with the two other Ancoats mill complexes, however, this site was not owner-occupied but was built for sub-letting. In the early nineteenth century small firms were far more numerous in Manchester's cotton industry than large firms, and the renting of 'room and power' in part of a mill was widespread.

Another contrast with the larger mills was the method of construction. The original five-storeyed block alongside Radium Street has heavy-timbered floors in which thick boards were laid directly on the floor beams without joists. This floor system provided a degree of fire resistance and was able to withstand the weight and vibration of cast-iron machinery. It later became widespread in the United States of America where it was known as 'slow-burning' construction. American mill builders apparently emulated the technique after the publication of a description of its use in Manchester's textile mills in 1826.¹⁸ The roof of the Radium Street block is also of interest. The trusses comprise curved cast-iron ribs supporting timber principals, providing an unobstructed attic floor (Fig 9).

A fireproof wing had been attached to the Jersey Street end of the mill by 1824. The wing was probably used for warehousing and is again distinguished by its unusual methods of construction. In contrast with the brick-vaulted fireproof construction used in Sedgwick Mill, this building has floors of stone flags laid on a complex grid of interlocking cast-iron beams. Its roof used a combination of carefully designed cast-iron and wrought-iron components in an intricate three-dimensional structure (Fig 10). The use of distinctive and arguably advanced methods of construction in a room and power mill suggests that small firms were still perceived as a thriving sector of Manchester's industrial economy in the 1820s.

Ancoats in a national context

The historical significance of Ancoats can be assessed by making comparisons with early industrial developments in other areas. The conversion of Ancoats from open farmland

to a densely-populated suburb containing some of the largest factories in the country took place between the 1780s and the 1820s. In the mid-eighteenth century factory methods had been successfully introduced in a number of industries, including metal working and the production of glass and pottery.¹⁹ Though individually important, such early factories were still exceptional and few survive intact today. Some were built alongside canals and some with housing for the workforce, but in general they were not immediately associated with planned urban development.

The factory system was most widely adopted in the textile industry, however, in particular with the construction of well over a hundred cotton-spinning mills in different areas by associates of Sir Richard Arkwright.²⁰ These early mills were usually much smaller than those built later in Ancoats, their location being largely governed by the need for water power. Suitable sites were rarely found in towns, so a new textile enterprise required the construction of a whole community of buildings in addition to the mills themselves. Thus although the textile industry saw important early developments in



Beehive Mill, with the 1824 fireproof warehouse on the left.



The main attic of Beehive Mill, showing the unusual cast-iron and timber truss construction.

mechanisation, factory construction and industrial organisation, these often took place in rural areas, notable examples being at Cromford and Belper in Derbyshire and at New Lanark in Scotland. A small number of existing towns were suitable for the growth of water-powered industry, among them Leeds and Stockport. These towns also saw a significant increase in mill building by the end of the century, although their industrial development was still constrained by the topographical requirements of water power systems.

From the late eighteenth century Manchester was distinguished by the construction of many large factories in a town which had few water power sites but which possessed other commercial advantages for the textile industry. A marked increase in mill building from the late 1790s was made possible by the development of the canal system and by the improvement in the technology of the steam engine. The importance of canals in particular has probably been underestimated. From the mid-eighteenth century the construction of the national canal network — beginning with the Bridgewater Canal — stimulated urban growth in many parts of the country. In Manchester canals led to more factory building and consequently a demand for new areas for industrial development, the first of which was Ancoats.

The nature of the development which took place in Ancoats differed considerably from that which had taken place earlier in rural areas, signifying the urbanisation of the factory system. From the start, the mills were associated with a range of other new buildings and structures, notably the system of roads and canals, the buildings of the industrial community and sites used by related industries. A particularly distinctive feature was the creation of areas of laid-out streets and plots for urban expansion. The planning of a whole suburb of streets in advance of factory building and related development did not occur in the late eighteenth century in towns where industry was dependent on water power.²¹ The scale of mill building in Ancoats was also exceptional, and all three extant complexes can be said to illustrate some of the limits reached by mill builders in the early nineteenth century. In spite of their individual significance, however, the mills of Ancoats should not be considered in isolation, but as the largest and most technically-advanced components of an urban industrial landscape.



Combined cast-iron and wrought-iron truss construction in Beehive Mill's 1824 warehouse.

NOTES

1. This article gives brief summaries of the history of the Ancoats mills. Detailed reports, including full references to documentary sources, were produced by the Greater Manchester Textile Mill Survey. The project archive can be consulted at the Greater Manchester Archaeological Unit and the John Rylands University Library, Deansgate, Manchester.
2. C. Laurent, *A Topographical Plan of Manchester and Salford*, first published 1793; also *Green's Map of Manchester . . . , 1794*.
3. Indenture of Lease and Release, 23 & 24 June, 1789; Appointment and Release, 24 March 1827. Both concern parts of Murray's site and McConnell and Kennedy's site. Inspected courtesy of Leslie Fink Ltd., 121 Princess Street, Manchester.
4. J.W. M'Connel, *A Century of Fine Cotton Spinning*, (1906), p10.
5. Illustrated in the engraving of the Ancoats mills in c1830: E. Baines, 1835, *History of the Cotton Manufacture in Great Britain*, Plate 17; *Plans of all the Spinning Factories within the Township of Manchester . . . , c1822*, John Rylands University Library, Deansgate, Manchester.
6. R.S. Fitton, *The Arkwrights, Spinners of Fortune*, (1989), 150.
7. C. Hadfield, and G. Biddle, *The Canals of North West England*, 1970, Vol II, p263, p269.
8. Pigot, 1808, *Plan of Manchester and Salford*, Manchester Central Library.
9. M. Williams, with D.A. Farnie, *Cotton Mills in Greater Manchester*, (1992), pp 53-5.
10. The visitor was Zachariah Allen, who played an important role in the development of the textile industry in the USA. Z. Allen, *The Practical Tourist, or Sketches of the Useful Arts and Society of Great Britain, France and Holland*, 1832 (2 vols), Vol I pp 128-131.
11. G.W. Daniels, 'Valuation of Manchester Cotton Factories in the Early Years of the Nineteenth Century', *Economic Journal*, 25, (1915), pp625-6. C.H. Lee, *A Cotton Enterprise*, (1972), p104.
12. Crompton Statistics Obtained in 1811, Manchester Central Reference Library; P.P. (H.C.) 1833 [450] XX; R. Lloyd-Jones, and A.A. le Roux, 'The Size of Firms in the Cotton Industry: Manchester 1815-41' *Economic History Review*, 33, (1980) pp72-82.
13. The housing was included in the Conveyance of the site, 1st August 1855. Inspected courtesy of Leslie Fink Ltd., 121 Princess Street, Manchester.
14. McConnell and Kennedy Papers, John Rylands University Library, Deansgate, Manchester. On the economic history of the firm see Lee, op cit.
15. Williams, op cit., pp65-66.
16. Lee, op cit., p162, p173.
17. Rent Book, 1815-c1840, McConnell and Kennedy Papers.
18. R.M. Candee, *The Allendale Mill and Slow-Burning Construction: A Case Study in the Transmission of an Architectural Technology. I.A.: The Journal of the Society for Industrial Archaeology*, 15, (1989), pp21-34.
19. Notable examples were the iron industry at Coalbrookdale from 1709, Mathew Boulton's Soho Manufactory near Birmingham of 1764-6, Josiah Wedgwood's Etruria works in the Potteries of 1767-73 and the Ravenhead glass works near St Helens of 1773-6.
20. S.D. Chapman, *The Arkwright Mills — Colquhoun's Census of 1788 and Archaeological Evidence. Industrial Archaeology Review*, 6, (1981-2), pp5-27.
21. Comparison can be made between Ancoats and the eighteenth century urban growth of major ports, such as Liverpool, in which the construction of docks was accompanied by various types of warehousing and residential development.