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TEXTILE FACTORY SETTLEMENTS IN THE EARLY INDUSTRIAL REVOLUTION

with particular reference to housing
owned by cotton spinners
in the water power phase of industrial production

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SUMMARY

Textile Factory Settlements in the Early Industrial Revolution, with particular reference to housing owned by cotton spinners in the water power phase of industrial production.

L. D. W. Smith

This thesis considers the contribution to working class housing by millowners in the early cotton industry. In order to investigate the process of decisionmaking leading to housing development it is necessary to give a central position to the resources and the investment and managerial calculations of the cottage landlord.

Chapter 1 examines the recent and contemporary literature on early industrial housing in the cotton industry. Chapter 2 seeks to clarify the extent to which masters were involved in the development of workpeople's housing, and considers whether or not the main periods of their housing investment coincided with the main periods of mill establishment or enlargement. Statistical evidence on the extent and composition of rural millowners' property leads to a consideration of the principles governing the planning of development. Particular attention is paid to the exceptionally fully documented early history of the Quarry Bank Mill estate at Styal.

Chapter 3 investigates housing costs. The conflicting empirical evidence on building costs is considered. An

attempt is made to find a basis for comparison, and to trace the trend of housing construction costs over the period from the 1780s to the 1830s. The Chapter also investigates the management of design and building, and the terms in which housing improvement were understood.

The participation of tenants in their masters' property is considered in Chapters 4 and 5. Tenants may have been subject to sanitary control in a manner which could add to the burdens of cottage management. Their tenancies may also have been tied to mill employment. Consideration is also given to the manner in which tenants occupied land as well as housing under industrial landlords.

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CHAPTER 1.

FACTORY SETTLEMENTS AND HOUSING IN THE COTTON INDUSTRY
DURING THE INDUSTRIAL REVOLUTION

Part 1. Historical research on industrial proprietors' housing.

The objective of this research is to examine the creation and management of working class housing in the early cotton industry, as a contribution to the growing body of research on early industrial housing. Evidence on industrial housing, including that of larger textile companies, has already been used in a leading study of the rôle of the factory village in industrial management by Prof. Pollard. This work has been carried further by Dr. S. M. Gaskell as part of a study of mid- and late-nineteenth century estate development, in which he gives considerable weight to non-managerial objectives in the provision of industrial housing.¹ Many company histories have also been produced, dealing with the larger industrial enterprises and their masters, many of whom

1. S. Pollard, "The Factory Village in the Industrial Revolution" E. H. R., LXXIX (1964); also "Factory Discipline in the Industrial Revolution" Econ. H. R., ii ser., XVI (1963); The Genesis of Modern Management (1965, republished 1968); Of particular importance is also N. Smelser, Social Change in the Industrial Revolution (1969), dealing with industrial relations in the early cotton industry. For industrial housing in the wider picture of estate development, see S. M. Gaskell, "Housing Estate Development, 1840-1918" Ph.D., Sheffield (1974), esp. Chapter 2.

were the proprietors of closely governed industrial communities.¹

Much of the discussion of industrial proprietors' housing has concentrated on "factory villages", but this is a loose term not synonymous with factory owned housing in general. Contemporary apologists for the manufacturing interest discussing millowners' housing, notably Andrew Ure in 1835 and William Cooke Taylor in 1842,² were very selective in their choice of evidence and tended to portray only the larger mill villages in which sufficient people were amassed for a commercial and social community life to appear. There is also a tendency for historical researchers to concentrate on the work of the more successful masters with larger enterprises and substantial village communities under their control. In any general consideration of industrial housing, on the other hand, it is difficult to accept Prof. Pollard's decision to dismiss the smaller cottage estates on the grounds that "if small firms provided a row or two of cottages they had no further social significance"³ and to concentrate therefore on the "giants of the industrial revolution."⁴

The term "factory village" implies a distinction, which

1. Leading studies of industrial communities include G. Unwin, Samuel Oldknow and the Arkwrights (1924), on Mellor and Marple; G. Lazenby, "The Social and Economic History of Styal" M.A., Manchester, (1949); J. Forrest, "The Darley Abbey Cotton Spinning and Paper Mills, 1783-1810" M.Sc.Econ., London, (1957); R. S. Fitton and A. P. Wadsworth, The Strutts and the Arkwrights (1958), on Belper and Cromford; O. Ashmore, "Low Moor, Clitheroe, a nineteenth Century Factory Community" Trans. L. and C. Antiqu. Soc., LXXIII-LXXIV (1966); P. P. Hall, "Dolphinholme - A History of the Dolphinholme Worsted Mill, 1784-1867" Trans. Fylde Hist. Soc. III (1969); R. Boyson, The Ashworth Cotton Enterprise (1970), on Egerton and New Eagley.

2. A. Ure, Philosophy of Manufactures (1835); W. Cooke Taylor, Notes of a Tour in the Manufacturing Districts of Lancashire (1842).

3. Pollard, op. cit., (1968 edn.), 235

4. Ibid., 234.

might be questioned, between the housing of factory owners and that of other employers. One might ask whether other proprietors' villages or housing, accomodating employees in quarries, ports, agricultural estates, etcetera, were different from "factory villages" in any essential respect. Although it is convenient in research to concentrate on one class of proprietor's housing, the limits of the subject need not be drawn too narrowly. What is true, in the present case, of millowners' housing may have some bearing on proprietors' housing in general. Conversely, in cases where the evidence on narrowly defined industrial housing is inadequate, it may be useful to consider what may be learnt from other closely related types of housing.

One would not wish to beg or avoid questions on the process of decisionmaking bringing industrial housing into existence and determining its form. It will be useful therefore to place the rôle of the proprietor at the centre of consideration, as his capital was employed and his requirements governed the timing and form of the investment in housing. As investment and planning decisions were necessarily taken by a proprietor in the context of his resources of real property, these too call for particular emphasis.

Two very basic quantitative questions which arise immediately are to determine what proportion of cotton mill owners were also the prorieters of cottage property, and how extensive this property usually was. Dr. Marshall's view, based largely on a study of Bury, was that early millowners were very important in the establishment of rural industrial

communities.¹ This view has more recently been challenged by Dr. Gaskell, arguing that a different picture of development emerges in other places, for instance in the vicinity of Rochdale. Despite local differences, the latter concludes that "only a small minority of industrialists participated in the provision of houses," and that there was, furthermore, "no clearly defined contrast in the degree of involvement between factory owners in urban and rural areas."² The tendency of urban millowners not to own cottages was a matter of contemporary comment, and is not in dispute;³ but the facts regarding rural cottage ownership are far from clear. Dr. Gaskell concedes that although "in the large manufacturing towns ... the nature and extent of managerial involvement in housing can be most clearly traced, the picture is less clear for the small towns and rural areas of the [Pennine] region."⁴ It is hoped to show, in the present study, that rural industrial housing was not unimportant. If any information can also be found on the chronology of early industrial cottage building, it may be possible to determine whether the peak of millowners' cottage construction coincided with, or occurred later than, the peak of prosperity in the rural sector of the cotton

1. J. D. Marshall, "Colonisation as a factor in the Planting of Towns in North West England" in H. J. Dyos (ed.), The Study of Urban History (1968).

2. S. M. Gaskell, op. cit., 43.

3. "The workpeople do not usually live in the houses of their employers in Manchester." Hugh Beaver, an employer of 525 hands in his mill in New Cannon Street, in Answers of Manufacturers to Queries, (P. P. 1834, XX). Friedrich Engels appears to have been alone in thinking that urban millowners were frequently their employees' landlords: see Selected Writings (ed. Henderson, 1967), 45.

industry.¹ A pointer already exists in Dr. Gaskell's conclusion that, in his predominantly post-1840 evidence, "frequently the management only began to build houses some time after the building of its enterprise."² Something might also be inferred on whether industrial masters' building activity agreed with the building cycle.³ Evidence on the chronology of housing development may cast light on the motives for building. Here it is necessary to examine the financial and employment problems which might influence a millowner's decision, most particularly the cost of building and the probable rent return to be expected from cottage property.

Following the decision of an industrial master to invest in cottages, a second stage of decisionmaking was the planning of his housing. Basic evidence is required on the choice of sites. It might be shown that rural millowners generally possessed so little land that they required to purchase building plots or even cottages already built, or they might have possessed sufficient land, even agricultural smallholdings or farms, to be able to find building land from their own resources without difficulty. In the latter case it might

1. In this connection, see the "Index of Business Activity" and "Business Cycle Pattern" produced by Gayer, Rostow and Schwartz, Growth and Fluctuation of the British Economy, 1790-1850 I (1950), 354-6. Cf. E. Baines, History of the Cotton Manufacture (1835), especially, regarding the state of trade, the statistics of raw cotton imports retained, p. 347.

2. Gaskell, op. cit., 53.

3. Indicators of the level of building activity generally include brick production: Shannon, "Bricks, a trade Index, 1785-1849" Economica, (1934); crown and german sheet glass: Porter, Progress of the Nation (1847), 257; softwood imports: Gayer et. al., op. cit.; summarised in A. K. Cairncross and B. Weber, "Fluctuations in Building in Great Britain, 1785-1849" Econ. H. R., 11 ser., IX (1956).

be possible to see what considerations of land value, security of tenure, etcetera, influenced their planning. At the more detailed level of the design of cottages, the requirements of the cottage tenant also arise indirectly.

A subsequent stage of decisionmaking concerned the management of cottage property. Evidence here must be treated with the greatest caution, as managerial policies might change from phase to phase of the business cycle. The question of sanitary management may not raise great problems, but on the question of occupancy it may be necessary to rely on the regrettably late evidence, in this context, of the 1841 census. Evidence from the latter source on the employment of cottage tenants may be distorted by the trade depression of that year. Finally, a managerial question of particular importance for the working class standard of living was the extent of provision of gardens with industrial cottages.

In collecting quantitative evidence of early rural mill estates from later sources it will be useful to base the selection of specimens on the criterion of water power. If only estates associated with water powered mills are considered this will tend to emphasise the longer established mill estates and the rural or country town districts in which contemporaries recognised that industrial housing associated with cotton mills was predominantly to be found. The alternative would be to propose precise, mutually exclusive, definitions of "rural" and "urban", though in the rapidly urbanising condition of some parts of the manufacturing districts this would be exceedingly difficult. It will

also be useful to concentrate on the cotton spinning and manufacturing counties of Lancashire, Cheshire, Flint, Derbyshire, Staffordshire and Nottinghamshire, not merely in the collection of quantitative evidence but also in the collection of non-quantitative supporting evidence.

*

Much valuable research on industrial housing has been contained in work not centred upon the development of property. Much of the early research concentrating on New Lanark, for example, was biographical or political in character. Prof. Harrison's study shows that interest in the political lessons of Owen's experiments was heightened by one political faction at the turn of the present century searching for early forms of Socialism.¹ Another theme was brought forward by Prof. Unwin in the early 1920s, placing great emphasis on "community building" as a process in history. Unwin had Robert Owen and New Lanark firmly in mind when writing that "The workers drawn together in the earliest factories set up in country districts had at first no organised or community life of their own, and were thus thrown into great dependance on the social initiative of their employer, who, if he responded to the call upon his leadership, might become in a very real sense a founder of a community."²

1. J. F. C. Harrison, Robert Owen and the Owenites in Britain and America (1969) reviews early historians of Owenism.

2. Unwin, op. cit., 159.

Perhaps this assumes too much about industrial housing in general. Unwin's subject, Samuel Oldknow, was arguably like Owen in responding to the call upon his leadership, but not every industrial proprietor would have the philosophical vision to consider responding in this way. It is interesting to compare Unwin's essentially proprietor- and community-centred presentation of his subject with the more restrained interpretation used by his colleague, Frances Collier.¹ Miss Collier's tenant-centred approach to the industrial community was particularly apposite as economic historians in the 1930s opened the debate on the important question of the standard of living during the Industrial Revolution.² Miss Collier concentrated on the living conditions of the urban workers of McConnell and Kennedy as tenants of non-industrial landlords and the conditions of the rural workers housed by their employers at Burrs Mill near Bury and at Quarry Bank Mill at Styal near Wilmslow. Although her work was completed too early to include reference to the newly discovered archive evidence of Samuel Oldknow's community at Mellor Mill, it may present a fairer idea of the range of mill workers' living conditions than one would gain by concentrating on the probably exceptional communities under Owen or Oldknow.

A bleak picture of rural housing in general was drawn by

1. F. Collier, "The Family Economy of the Working Classes" M.A., Manchester, (1921) also published edn., ed. Fitton (1965).
2. The standard of living controversy may be said to have commenced with the contributions of Sir John Clapham, Economic History of Modern Britain (1926) and J. L. Hammond, "The Industrial Revolution and Discontent" Econ. H. R. II (1930), 215-28. This controversy tended to centre more upon the basic questions of wages and purchasing power than on the rôle of housing in working class living conditions.

Fussell and Goodman in 1930, reviewing the random comments on cottages made by reporters to the Board of Agriculture,¹ in which proprietors' housing, in this case generally that of improving landlords, appears constructionally in a good light, though not usually set against any worthy standard of comparison. T. S. Ashton also contributed evidence on housing to the standard of living controversy in 1955,² concentrating particularly on family economy and the resources of the cottage kitchen, and showing the advantage enjoyed by many industrial cottage tenants in the availability of coal. Complaint has been raised that recent research on industrial housing has made little or no contribution to furthering discussion of the working class standard of living.³ This area requires caution. Even contemporaries were sometimes reticent to see housing in terms of a contribution to the working class standard of living. There was an awareness that the standard of comfort, at least, in a cottage depended very largely on the habits and abilities of the housewife.⁴ There are not infrequent references in contemporary sources to the ignorance of ex-mill girls compared to those brought up in domestic service. It may be better not to expect the study of housing

1. G. E. Fussell and C. Goodman, "Housing of the Rural Population in the Eighteenth Century" Econ. Review, (Hist. Suppt.) (1930), 63-90.

2. T. S. Ashton, "Changes in Standards of Comfort in Eighteenth Century England" in Proceedings of the British Academy XVI (1955).

3. A. Sutcliffe, "Working Class Housing in Nineteenth Century Britain: a Review of Recent Research" Bulletin of the Society for the Study of Labour History XXIV (1972), 40.

4. See for instance the evidence of the Rev. G. S. Bull before the Select Committee on the Labour of Children in the Mills and Factories of the United Kingdom (P. P. 1831-2, XV), particularly Questions 9339 et seq.

to contribute unequivocal evidence, taken in isolation, to the standard of living debate. A more valuable contribution might be in terms of the part played by the cottage garden in supplementing the earnings of the cottager and freeing him from total dependance on the truck shop. Particular caution is needed, furthermore, in any discussion of what is meant by "good housing". Three viewpoints are involved; that of the proprietor or developer, that of the tenant or purchaser, and that of the public interest interfering in the private contract to which it is not a party. There is no guarantee that any two of these viewpoints will coincide.

New ground was opened in 1951 and 1954 by Prof. Ashworth in a reinterpretation of the creation of new model industrial communities in the period of the Industrial Revolution as the first steps in a Town Planning tradition.¹ In this, Ashworth leant heavily on the available research on New Lanark and Mellor. He followed the contemporary sanitary school of thought² by considering some early industrialists to have reacted, for motives of humanity, against the squalor of urban conditions in their decision to found improved rural colonies. He pointed to the "body of thought, writing and practice, which makes a clear and unbroken, though tenuous, chain linking the new towns begun after the Second World War with some of the small, carefully regulated settlements of the early factory

1. W. Ashworth, "British Industrial Villages in the Nineteenth Century" Econ.H. R., ii ser., III (1951); The Genesis of Modern British Town Planning (1954).

2. Particularly the work of the Manchester Board of Health under the leadership of Dr. J. P. Kay, and the work of Edwin Chadwick.

system."¹ Not every historian might be keen to interpret even the exceptional communities at New Lanark and Mellor in terms of future developments, or even to admit any link with the literary tradition Ashworth describes, especially for communities long predating the rise of sanitary concern in the wake of the cholera scares of the early 1830s. It is nonetheless worth remembering that if the guidance of Léon Faucher in 1844 is reliable,² the leading rural industrial communities were viewed in the mid-nineteenth century in distinctly forward looking terms, and the relevance of such experiments in the search for a possible alternative to urban squalor well recognised. Prof. Pollard has since undermined public-spirited interpretations of industrial housing provision by pointing out that in the cotton industry, it was only a minority of masters in fine spinning, where profits turned out to be comparatively secure, who gained a reputation for paternalism after the development of the market had placed them in favourable circumstances.³ More recently, Dr. Gaskell presents his research on industrial housing in the light of "the contribution ... towards the developing pattern of housing reform and planning practice,"⁴ though leading largely to a negative conclusion.

Although not everyone would place such themes as sanitary reform or working class living standards at the centre of a study of industrial housing, these and other possible themes must arise as important incidental questions. The work of

1. Ashworth, op. cit., (1954), 119
2. L. Faucher, Manchester in 1844 (1844).
3. Pollard, op. cit. (1968 edn.) 112
4. Gaskell, op. cit., 40.

Prof. Pollard has done much to place the business problems and calculations of the industrial proprietor at the centre of economic historians' consideration, though he presents his researches on industrial villages in a context which excludes their interpretation as anything other than weapons of workforce management. Pollard's view of factory villages is that "we have to see them not in terms of social conscience but in terms of managerial necessity."¹ Are these the only alternatives? How great was this necessity? Cottages might be shown to have been adequately profitable on their own account without reference to the parallel industrial enterprise. Pollard necessarily makes a strict distinction between the strategy of entrepreneurship and the tactics of management in early manufacturing organisation,² as he sets out to deal in his work with problems "on the management side of the divide," and with the achievements of the "creative manager," and does not aim to discuss problems on the entrepreneurial side. He takes as his starting point the working definition that entrepreneurs have the "task of determining the kind of business to be operated, the kinds of goods and services to be offered, the amounts of these to be supplied, and the clientèle to be served."³ But an industrial master might decide to enter the business of being a cottage landlord, to supply cottage tenancies and the service of cottage maintenance. He might be motivated by calculations of rent returns in deciding how many cottages to

1. Pollard, op. cit. (1968 edn.), 231.

2. Ibid., 12 ff.

3. Ibid., 13, quoting definitions proposed by G. H. Evans jnr., as "most appropriate for the period studied here."

supply and the extent to which he would wish to serve his own employees preferentially. The point here is not to prove that industrial housing belongs to entrepreneurship, as its managerial usefulness need not be doubted, but to show that it might have features both of entrepreneurship and of management, and that to place it exclusively in either category at the commencement of discussion is unhelpful.

The assumption that a millowner's housing cannot have been a self-justifying enterprise parallel to his manufacturing objectives (and possibly tending to increase in importance as manufacturing prosperity in the rural sector tended to stagnate) has led Dr. Chapman, discussing cotton industry villages, to the view that "The factory colony reached its meridian by the turn of the century, and at the end of the French wars the urban spinning mills had become the predominant form of enterprise."¹ The architectural appearance of much mill colony housing indeed suggests a zenith date considerably later than the turn of the century.

A critic of industrial housing concentrating on parallels with the truck system would perhaps prefer to stress its interpretation as a rent-seeking investment only casually related to a proprietor's industrial interests because of the comparative simplicity of securing rent payments out of wages. The view of cottage provision in this context implies the reluctant acceptance by workpeople of imposed tenancies at times of superfluity of labour. Truck might be expected to

1. S. D. Chapman, The Cotton Industry in the Industrial Revolution (1972), 57.

thrive at times of trade depression. The managerial theory of cottage provision conflicts with this by implying that the provision of superior-seeming cottages served as an attraction to labour and to increase tenants' dependance and fears of eviction. In the latter case one might expect masters to be most tempted to provide cottages at times of shortage of labour. It may thus be difficult to reconcile the idea of profiteering in cottage lettings with the idea of workforce management. Peter Gaskell attempts a reconciliation in his work on the "truck and cottage systems" in 1833 and 1836.¹ He held that rural manufacturers were originally forced to build cottages for managerial reasons, as their employees needed cottages and the speculative building trade was preoccupied with the higher returns to be obtained in the towns. Nonetheless, as industrial masters turned to cottage ownership they soon discovered that they, as employers, possessed a unique ability to make rural housing particularly profitable, and learned to impose extortionate rents on what became a captive workforce.

Attention has long been given to the problems of rural masters in finding labour. Emphasis on housing as an instrument of labour policy serving both recruitment and discipline accords well with the literature on labour in the early factory system, which Dr. Chapman has described as "very largely an examination of the techniques that were used to recruit and retain a workforce, and the varying responses to them."² The Gregs of Styal thus had to send to distant

1. P. Gaskell, The Manufacturing Population of England (1833); Artisans and Machinery (1836).

2. Chapman, op. cit., 54-5.

workhouses for labour, and they retained the apprenticeship system into the late 1840s.¹ R. H. Greg was at the forefront of the Migration Agency, by which it was hoped to bring labour in from the depressed agricultural counties.² The contrast between urban and rural locations in the difficulty of obtaining labour has been shown by Dr. Chapman to have been as acute in the Nottingham and Glasgow regions as in that of Manchester.³ He maintains that many of the rural poor throughout the manufacturing districts regarded mills as akin to workhouses.⁴ If urban workers viewed matters differently, it might be due to their higher wages and comparatively free status, and not least their domestic independence of their employers. There is some paradox therefore in the idea of using 'attractive housing' as an inducement to recruitment. If housing could be an inducement, there is also difficulty in determining what qualities workpeople would appreciate. It may be quite false to assume that they would value privacy and cleanliness like their social betters.

1. Collier, op. cit., (1965 edn.), 14; Lazenby, op. cit.

2. J. Fielden, The Curse of the Factory System (1836).

3. Chapman, op. cit., 53.

4. Ibid., 54.

Part 2. Contemporary views of industrial proprietors' housing.

Plans to relieve distress by the establishment of rural industrial colonies were familiar long before the Industrial Revolution, and these may have helped to prepare the influential public to respond favourably to the early spinning mills. Social improvers had long proposed to set up pauper colonies in many ways similar to the early mill communities. In 1610 Rowland Vaughan proposed to relieve the poor of a part of Herefordshire by establishing an industrial community beside the river Wye, using water powered machinery for spinning and weaving various textiles.¹ A feature of Vaughan's scheme which looks back to yet earlier notions of social organisation and relief was that his community was to live in buildings on a collegiate plan with houses and workshops arranged in a square. Similar proposals were made by Andrew Yarranton in 1677.² Many later schemes of a similar nature followed, particularly in the years after 1790 and well into the nineteenth century, under the generic name of Home Colonies.³ Vaughan's scheme depended on a continuing exercise of charity by a number of gentlemen patrons, but later schemes more clearly recognised the

1. R. Vaughan, His Booke (1610, republished by E. B. Wood, 1897); see also, J. E. Thorold Rogers, Six Centuries of Work and Wages (1884), 454.

2. A. Yarranton, England's Improvement by Sea and Land (1677); see also J. Tann, The Development of the Factory (1971), 1.

3. J. F. C. Harrison, Robert Owen and the Owenites in Britain and America (1969), 23.

principle of self-sufficiency. They were thus influenced by, and might be thought to have provided a more workable model for, actual rural industrial enterprises. Strained as it may appear to represent millowners and other industrial masters as surrogate guardians, the optimistic expectations of managers of foundling hospitals and others responsible for putting paupers to work were easily raised. There is evidence of a very real concern on the part of some parish guardians to protect the interests of the poor children they were sending to the new industrial colonies; this is illustrated by the careful inquiries of the Birmingham guardians into conditions in the various mills, factories and mines to which they supplied large numbers of apprentices. They inspected the receiving mills carefully, and urged the masters to employ the children on weaving as well as spinning, in order that they might have a useful trade in later years.¹

Home Colonies tended to exist more on paper than on the ground, but persons wishing to see a practical demonstration of an ideally disciplined colony at work might turn to the Moravian Communities. An important Moravian Community was available for study in each of the two principal centres of the early cotton industry. One was at Ockbrook between Derby and Nottingham. The other was the Fairfield Community near Manchester, established in about 1775. This succeeded a former establishment at Dukinfield. It was a community of spinners and weavers occupying buildings arranged around a large square,

1. Board of Guardians' Minutes (Birmingham Reference Library). I am indebted to Dr. Tann for this reference.

on a conspicuous site at two fields' distance from the Manchester to Ashton Turnpike. Dr. Aikin in 1795 described the buildings as "laid out with great taste and judgement. At the front of the square were a chapel and some large dwelling houses, "well built with brick. In front of these were the gardens and the burying ground. The sides of the square were occupied by "two deep rows of dwelling houses", and the rear by "elegant large houses". Other buildings stood outside the perimeter streets on three sides. One of the houses was "a convenient inn with stabling for those who frequent the place".¹ This example could well have suggested that architectural refinements were not out of place in an industrial community. The influence of this community on the ideas of the young Robert Owen is strangely omitted from Prof. Harrison's exhaustive history of Owen and the Owenites.² It also perhaps influenced Samuel Oldknow in planning his market hall and housing at Mellor on three sides of a square. Its influence at another level, as an example of a quiet, temperate and disciplined community of workers, irrespective of the form of the buildings, may have been more widely felt.

The sanitary aspects of a small number of industrial colonies also came under contemporary consideration, particularly as a contrast to the urban squalor of Manchester.³ Dr. J. P.

1. J. Aikin, Description of the Country from Thirty to Forty Miles around Manchester (1795), 232.

2. Harrison, op. cit. It should be noted that in his own writings Owen appears never to have acknowledged the sources of his own ideas.

3. Little popular attention was paid to the sanitary condition of housing before about 1830. Prof. Redford has remarked that, in Manchester, sanitary reform was not a live issue politically until the new Statutory Improvement Committee was set up under the Police Commissioners' Act of 1828, and even then there was at first no sense of urgency. Matters changed with

Kay, secretary to the Manchester Board of Health, wrote in 1832 that "the enlightened manufacturers of the country, acutely sensible of the miseries of large masses of the operative body, are to be ranked amongst the foremost advocates of every measure which can remove the pressure of the public burdens from the people, and the most active promoters of every plan which can conduce to their physical improvement or moral elevation," and concluded his account of Manchester conditions with remarks on the contrasting good conditions to be seen in the industrial community at Hyde, under the benevolent capitalist Thomas Ashton.¹ Kay has been criticised for giving "undue prominence" to factory colonies,² although he only gave details of the single instance of Hyde as an afterthought to his work, which is otherwise exclusively concerned with urban conditions. Kay considered the intervention of benevolent masters to be necessary because of the inability of the poor to correct conditions arising essentially out of their own lack of sanitary knowledge. He considered intervention

1. J. P. Kay, The Moral and Physical Condition of the Working Classes (1832), 10, 100-4.

2. S. D. Chapman, The Cotton Industry in the Industrial Revolution (1972), 57.

the outbreak of cholera in 1831. See A. Redford, History of Local Government in Manchester (1939) I, 235 ff. The names of both urban and rural manufacturers figured largely amongst the members and supporters of the Manchester Board of Health, as also in the field of local improvement under the Police Commissioners' Acts. During his period in Manchester before the turn of the century, Robert Owen had been a prominent member of the Board. In later years Samuel Greg junior, William Rathbone Greg, and members of the engineering family of W. and C. Mather played leading parts. See B. Rogers, "Some Social Pioneers" in Manchester and its Region (Brit. Assn., 1962), 234 ff. W. R. Greg was also a leading member of the Manchester Statistical Society, founded by Kay in 1833, the aims of which were closely linked to sanitary reform.

desirable whether or not employers were, strictly speaking, their employees' landlords, and noted that Manchester employers had started to inspect their operatives' housing since the outbreak of cholera in 1831.¹ It was left to later writers to draw attention to what were considered to be model factory villages.

Dr Andrew Ure's account of a number of factory villages sought to illustrate the benefits of the factory system on the working population.² His specimen model villages were therefore chosen to contrast with the socially depressed and insanitary condition of the agricultural population. It is noteworthy that he turned to the villages and not to the towns for his illustration of the best conditions. His picture of prosperity in manufacturing villages was drawn at a time of particularly good trade. He accused the members of Sadler's Committee³ of lacking "a philosophical spirit" in criticising industrial conditions, and invited them to compare "Goldsmith's Auburn or Crabbe's village" with "a prosperous factory village" before deciding whether the "town was staining the country or the country the town."⁴ Villages selected by Ure in support of his case were Belper and Milford, Styal, Hyde, Egerton, and Ramsbottom and Nutthall. At Belper he noted the regular appearance of the cottages; at Styal, the superior health and behaviour of the apprentice girls compared with the young of the agricultural population; at Hyde, the superior domestic comforts of the working people;

1. Kay, op. cit., 11.

2. A. Ure, Philosophy of Manufactures (1835), 342.

3. See P. P. 1831-2, XV.

4. Ure, op. cit., 354.

and at Egerton, the lack of signs of fatigue in the factory hands after work. Whatever the merits of his case, a more partisan selection of evidence can hardly be imagined.

In similar vein, but in a contrasting period of trade depression, in 1842, William Cooke Taylor published his observations of a tour in the manufacturing districts, from which he sought to draw conclusions favourable to the views of the Anti-Corn-Law League, though omitting to mention the League's sponsorship of his book. Taylor's enumeration of model industrial villages is surprisingly small. Turton (New Eagley) and Egerton are described in detail in letter II, and Holymount (in Rawtenstall) in letter IV, but apart from these he was only able to mention Hyde by name. Thus, in praising the social harmony of the factory villages, he gave the instances of "Turton, Egerton, Hyde, and most indeed of the country mills that I have visited."¹ On the subject of their superior morality, his list names "Turton, Egerton, Hyde, Holymount, and many others."² A further list of those renowned for a low incidence of crime names "Hyde, Turton, Holymount, and other manufacturing villages."³ This, one feels, is not a deeply researched study of rural manufacturing industry and its housing. One of Cooke Taylor's difficulties was that of trying to depict rural industrial workers as glowingly benefitting from the philanthropy and enlightened self interest of their masters and at the same time to explain the recent worsening of the condition of industrial labour

1. W. Cooke Taylor, Notes of a Tour in the Manufacturing Districts of Lancashire (1842), 165.

2. *Ibid*, 288

3. *Ibid*, 292-3.

as due to the foolish legislative interference of a landed interest which also cruelly exploited the agricultural workers. His picture of immigrant mill workers submitting to "hunger and all its attendant sufferings with an iron endurance which nothing can bend, rather than be carried back to an agricultural district"¹ does not help to put his case in the best possible light.

Both Ure and Cooke Taylor presented their observations on the manufacturing districts as those of disinterested outsiders;² but a more critical outside observer was found in Léon Faucher, who visited Manchester and its surrounding districts in 1844. Faucher criticised Ure for representing manufactures as the "arcadia of civilisation and the palladium of the labourer."³ The recent high level of activity in the promotion of railways misled Faucher into thinking that rural industrial communities were to be a major development in the future.⁴ There was, he observed, a new tendency for the great towns to disperse their population: the "merchants and manufacturers" had already abandoned them,⁵ and in time he considered the working population would also leave to join them in rural manufacturing colonies. The first generation of these colonies already existed under the patronage of benevolent millowners. "Although the examples which may be cited are imperfect, yet they contain the germ of a better

1. Ibid., 9

2. Ure spent "several months wandering through the factory districts of Lancashire, Cheshire, Derbyshire, etc." for the benefit to his health of "travelling with light intellectual exercise." op. cit., 9; Taylor toured as an Irish visitor.

3. L. Faucher, Manchester in 1844 (1844), 87.

4. Ibid., 6.

5. Ibid., 93.

state of society for the labouring classes." In years to come, "the rural manufacture ... ought to be a veritable industrial community, an association both close and permanent between the masters and the workmen."¹

Faucher may have been right to feel that there was some evidence of disinterested social experiment. From 1832, Samuel Greg junior had been establishing a model community at Bollington, with the idea that his work was a forward looking experiment. Greg wrote, "I was obliged to feel my way cautiously, that I might not throw my labour away, or run the risk of doing harm instead of good by what I undertook ... as I have better understood the character of those I have had to work upon, and succeeded in developing their capabilities, the more I have been convinced how much both may yet be elevated and improved."² In the words of a later writer, Greg considered that "no work could be more interesting than the creation of such a little kingdom of his own, beginning afresh as it were in a retired valley, shut out from the rest of the busy world, where he could organise things as he liked." Greg founded a Sunday-school, which was managed by a superintendant and teachers drawn from the mill. There were organised games and gymnastics for the workers, and a playing field on land not required for gardens. There were drawing and singing classes, warm baths, a library, a band, and flower shows. In addition, Greg conducted Divine Service and preached to his people in the community's Unitarian Chapel.³

1. Ibid., 123.

2. S.Greg, Two Letters to Leonard Horner (1835), Letter I.

3. H. A. Page, "A Hidden Life" in Good Words (1877).

The well-known description of Trafford's factory community in Disraeli's *Sybil*, published in 1845, need not have appeared unreal to anyone aware of Greg's work at Bollington, or accepting the view of a number of other manufacturing villages portrayed by Ure or Cooke Taylor.

Later references to mill communities under strict control by their masters suggest that the optimistic view had gained general favour. A contributor to ephemeral literature at the time of the cotton famine praised the Evanses of Darley Abbey for keeping their workers on in employment, though the reduction of wages must have been acute to inspire her "feelings of the most sorrowful sympathy at the sight of their uncomplaining misery, the destitution being the more touching because borne with so much silent fortitude."¹ Another ephemeral contributor, writing in Macmillan's Magazine of the Greg community at Styal, felt impelled to praise "the harmony of wise and gentle rule for the young, along with dutifully adjusted demand and compliance between the older hands and their employers, which ended in the transformation of the thin, starved, half dazed creatures ... into the best type of workpeople to be found in the district. ... There is a touch of grace about the picture of the pleasant house with its old beech trees and its steep grassy lawns sloping to the river, with the rhythmic hum of the mill, the loud factory bell marking the hours like the voice of time itself, the workers pouring through the garden on a summer morning on their way to Wilmslow Church, and receiving flowers and

1. Anon., "Messrs. Walter Evans and Company's 'Boar's Head' Cotton Mills, near Derby" The Lady's Newspaper, Aug. 16, 1862.

friendly salutations from the group at the open door of the great house."¹

*

Two clerical gentlemen disinclined to share the optimism of those who chose only to observe specimens of rural industrial communities supposedly strongly marked by philanthropy were Peter Gaskell, writing in 1833 and 1836, and the American C. E. Lester, writing in 1842. Lester's condemnation of manufacturers as worse than slaveowners might be thought excessive from one only briefly acquainted with the manufacturing districts, and relying too heavily on the evidence collected by Sadler's Committee.² Gaskell, by contrast, appears to have been careful to obtain accurate information. Although Gaskell conceded that conditions in rural mill villages were physically superior to those familiar to urban mill workers, and the cottages better than those in the urban slums, he could not support the idea of manufacturing colonies because he found the cottages were always tied to employment and managed on the lines of the truck system.³ Other evidence would suggest that the truck system was less universal in Lancashire than in other places before the Industrial Revolution, supporting Gaskell's sense of alarm

1. J. Morley, in Macmillan's Magazine XLVIII (1883).

2. C. E. Lester, The Glory and Shame of England (1842).

3. Gaskell, The Manufacturing Population of England (1833), 347-8.

at its increased prevalence.¹ He observed that the truck-cottage system was a rural phenomenon: "the extension and influence of this system may be very distinctly seen in the now populous townships of Hyde and Newton, Duckinfield, etc." It was, he maintained, because of its handsome rent returns that the truck-cottage system was being taken up in situations closer to the towns.² He gave evidence to illustrate the financial returns possible from cottage property. Rents of three shillings per week were normal for cottages hardly worth £50 each. Experiencing almost no risk of rent defaulting or other drawbacks, a master could realise $13\frac{1}{2}\%$ return on his capital, though similar cottages owned by landlords lacking their peculiar advantages would not gain half as much.³ It may be doubted whether Gaskell's figures are entirely correct, but they are detailed evidence from one "connected in no way with manufactures."⁴ In a revision and enlargement of his earlier work, in 1836, Gaskell extended his list of factory villages serving cotton mills to include "Belper, Cromford, Hyde, Duckinfield, Stayleybridge, the villages and hamlets around Oldham, Bolton, Manchester, Stockport, Preston, Glasgow, etc." The cottages in these places were "generally the property of the millowner, and the occupants universally his dependants."⁵ These important views ought not to be rejected without clear opposing evidence.

1. A. P. Wadsworth and J. de L. Mann, The Cotton Trade and Industrial Lancashire (1931), 400

2. Gaskell, op. cit. (1833), 347-8.

3. Ibid., 353.

4. Ibid., 2.

5. P. Gaskell, Artisans and Machinery (1836), 294.

It was possible to agree with Gaskell on the prevalence of the truck system in industrial housing without admitting it to be a social evil.¹ Prof. von Raumer in 1835 observed that in theory the truck system added to the manufacturer's profit by enabling him to give reduced value in the housing or other goods or services involved. Perhaps because he visited the manufacturing districts in a period of thriving trade, von Raumer commented that operatives were perfectly free to move to alternative employment and nullify any pejorative effect the system might have. It was, he felt, quite unnecessary to seek to control such a harmless commercial arrangement between master and workman.² Workers in more outlying manufacturing areas may not have had as much opportunity to take alternative employment as those studied by von Raumer.

1. F. von Raumer, England in 1835 (Trans. S. Austin, 1836) II, 186.

2. William Cobbett did not oppose the truck system, and noted that the deduction of rent from wages prevented the father of a family from spending it on drink. Rural Rides, (Penguin edn., 1967), 500.

CHAPTER 2.

RURAL COTTON MILL ESTATES AND HOUSING

Part 1. Quantitative evidence on mill housing.

(1) Insurance evidence.

Evidence by which to estimate the proportion of country mill estates wholly or partially developed with housing and by which to estimate the average number of cottages included in developed estates is far from plentiful, and when the evidence from available sources is compared some inconsistency appears. It is not until the time of the Tithe Survey in about 1840 that widespread evidence for cottage ownership, carefully compiled on an estates basis, becomes available.

The closing decade of the eighteenth century is the earliest period for which evidence exists from which to quantify cottage property in conjunction with rural cotton mills. This was a period in which the larger London insurance offices took a very large share in new industrial business. An index of cotton millowners' policies over £5000 entered in the registers of the Sun and Royal Exchange offices has been published by Dr. Chapman.¹ It was said in 1797 that these two major offices were together responsible for 58% of insurance business in Great Britain, and probably a much higher proportion of provincial insurance.²

1. S. D. Chapman, "Fixed Capital Formation in the British Cotton Industry, 1770-1850" Econ. H. R., ii ser., XXIII (1970).
 2. Communication of Hugh Watts to William Pitt, Chatham Papers (Public Record Office, P.R.O. 30/8/187, item 230).

Early insurance policies do not provide widespread evidence of cottages owned by mill proprietors, but this aspect of this class of evidence ought to be treated with caution.¹ In an analysis of 90 policies for country cotton mills with insured property valued at £5000 or more, negotiated with the Sun, Royal Exchange or Phoenix offices in about 1795,² only 42% (38) covered domestic property of any description, whether proprietors' mansions, apprentice houses, cottages or other dwellings, and only 24% (22) covered what appear specifically to have been workpeople's cottages. The true proportion of country mill estates at that period including domestic property, and the proportion including cottages in particular, are likely to have been higher than suggested by this evidence. In some instances cottages may have been the subject of separate policies, perhaps together with the entrepreneur's own house and personal effects. They may, alternatively, have been uninsured.

Arkwright did not include cottages in his mill insurance, and his example may have established a normal practice amongst some millowners. In 1775 the only domestic building covered by his Cromford and Bakewell insurance policy was the half-built Greyhound Inn,³ although by that date Arkwright already owned 28 cottages in North Street in Cromford,⁴ some old buildings being converted into cottages in Gell Court in

1. Chapman, op. cit., discusses the reliability of early insurance evidence. See also Capital Formation in Britain, 1750-1850 (S. S. R. C. Colloquium, Sheffield Univ., 1969).

2. Non-Manchester water frame or mule spinners.

3. R.E. 4/75060 (1779).

4. North Street is marked on a "Plan of Cromford Moor Long Sough" dated 1777, in Bagshawe MSS, 180. (Sheffield C. Lib.).

Bakewell,¹ and probably 23 cottages under construction in New Street in Bakewell.² Other early mill insurance policies which failed to cover known cottage property may be cited. Evans and Company at Darley Abbey did not include cottages in their 1795 policy, although their rental lists in 1796 show that by that date they already owned 88 cottages.³ Atherton and Hodgson at Mold also omitted cottages from their 1795 policy, although they owned 16 near their mill at Rhyd y Goleu.⁴ Parker and Parker at Low Moor near Clitheroe in their 1796 policy included no cottages, although some years earlier they had built 28 in a group close to the mill gates.⁵

As it is difficult to estimate the prevalence of the practice of not including cottage property in related mill insurance policies, insurance evidence can only give a minimum estimate of the proportion of country mill estates including housing. The evidence may, on the other hand, cast light on the related question of the mean number of cottages included in estates in the category known to have been developed in this way, however minimally.

1. Gell Court, Bakewell, was leased by Philip Gell to Richard Arkwright for 21 years in 1778. Arkwright converted the buildings into ten or eleven dwellings. The freehold was conveyed to Richard Arkwright jnr in 1796. Arkwright MSS (Chatsworth Muniments, ARK/44, 46, 47, 61, 69, 84.).

2. New Street, Bakewell, was built on Lady Croft, acquired by Arkwright from Thomas Marsden in 1779. *Ibid.*, (ARK/23v, 23vi, 24, 33, 36, 61, 69, 84.).

3. Sun CS 9/641460 (1795); Evans Papers, "D" Ledger, folios 23 etc., 66 etc. (Derby B. Lib., 162-2-70.).

4. Sun CS 9/644220 (1795); E. J. Foulkes, "The Cotton Spinning Factories of Flintshire" Flints. Hist. Soc. Publns., XXI (1964).

5. Sun CS 11/651450 (1796); Langshawe, Some Vanished Homesteads of Clitheroe (1955), 1; O. Ashmore, "Low Moor, Clitheroe, a Nineteenth Century Factory Community" Trans. L. and C. Antiq. Soc. LXXIII-LXXIV (1966).

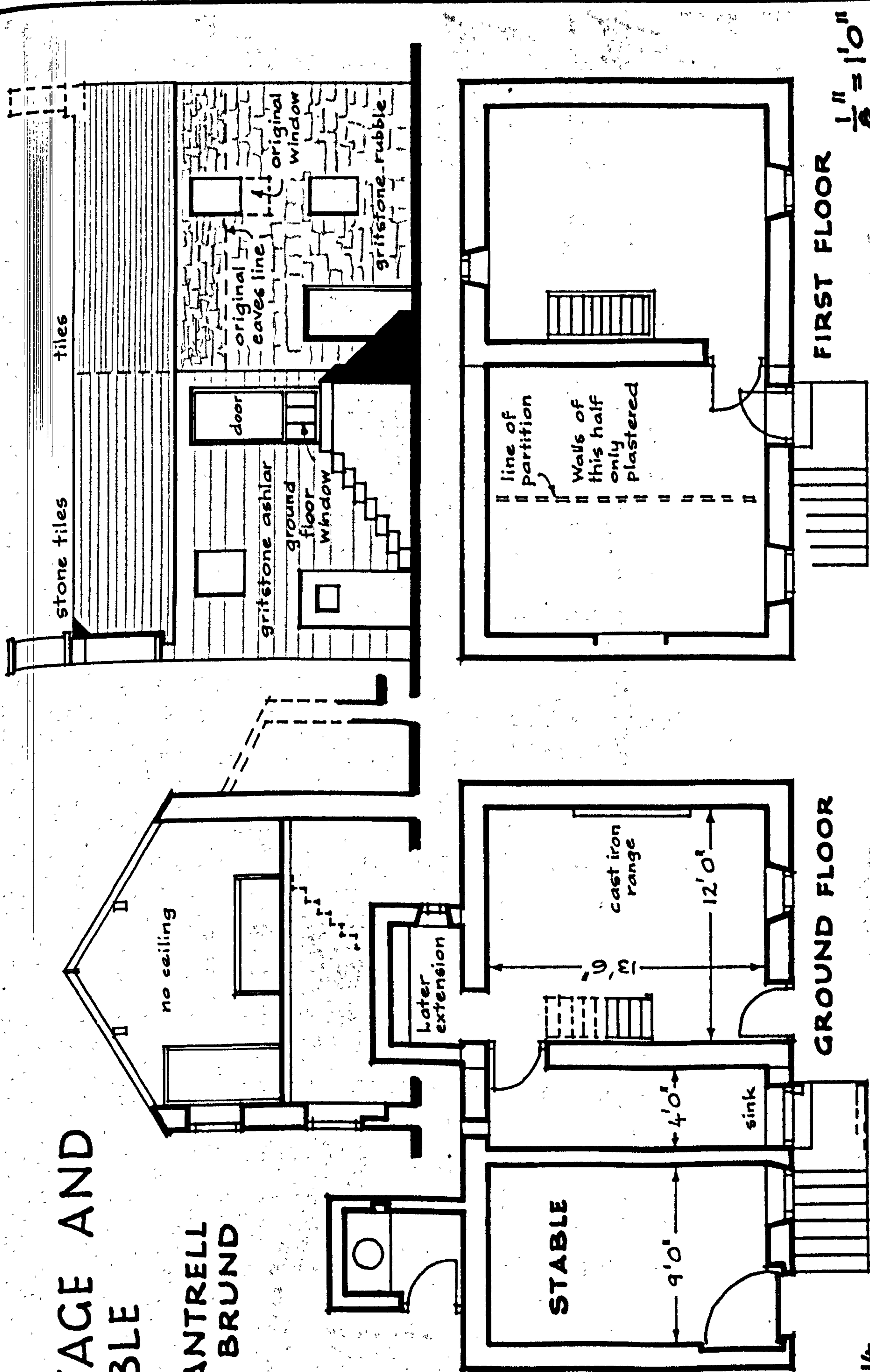
Of 38 policies covering domestic property of any description, in conjunction with a country cotton mill, 58% (22) specifically included cottages. Insurance policies covering cottages normally stated the total number and gave a separate valuation, though a minority of policies merely indicated the presence of cottage property without stating the number of dwellings. In some instances, cottages are found to have been included in one item together with stables or other minor buildings in such a way that their separate insurance valuation is concealed. This may reflect the fact that cottages were occasionally united with other types of premises in one structure, as in a surviving example at Brund (fig. 1, p. 32).

The impression gained from examination of a group of insurance policies which have the appearance of reasonable completeness (table 1) is that by the 1790s a considerable proportion of rural firms active in the cotton spinning industry were already in possession of small numbers of cottages, but that the mean number of cottages likely to have been associated with individual mills was as yet small. There seems no good reason to suppose that owners, having decided to include cottages in their mill insurance policies, would insure only a part of their property. Moreover, many cottages included were valued for as little as £20, at a time when other evidence would suggest a valuation for small cottages over twice that sum; it therefore appears evident that coverage was not confined to valuable newly constructed cottages. Valuations will be discussed in Chapter 3.

Table 1 sets out evidence drawn from a range of early

COTTAGE AND STABLE

AT CANTRELL MILL, BRUND



SK 099614

Fig. 1.

insurance policies of about 1795 indicating the numbers of cottages included in 20 rural cotton mill estates. In all, 210 cottages were associated with these 20 mills drawn from all parts of the English cotton spinning areas. Perhaps this selection is biased to some extent in favour of larger mills, but fuller information or a better balanced range of examples is unlikely to emerge from other eighteenth century sources. There may also have been local variations, but it appears that in the last decade of the century the mean number of cottages included in English cotton mill estates outside Manchester was about ten.

Table 1.

SOME INSURANCE EVIDENCE OF COTTAGE PROPERTY OWNED IN CONJUNCTION WITH COUNTRY COTTON MILLS, c.1795.

Firm, location and policy reference	Cottage property insured		Sum insured per cottage £
	Total number	Description	
Thackeray, Stockdale (Cark) Sun CS 10/641765 (1795)	48	6 E. of mill	60?
		20 W. of mill	70?
		16 N. of mill	40?
		6 others	80?
Oldknow (Mellor, Marple) Sun CS 8/640361 (1794)	28	7 near mill	79
		18, Marple	61
		3. Marple	100
Pedder (Aighton) Sun CS 8/638928 (1795)	25	10 thatched	20
		3	20
		5, Bunker Hill thatched	20
		5	20
		2 thatched	20
Robinson (Papplewick) R.E. 32a/154792 (1795)	22	12 tenements	29
		10 tenements	30
Sir R. Peel (Hinds) Sun CS 7/640035 (1795)	13	7 adjoining mill	40
		6 adjoining mill	40

Walker (Hunslett) Sun OS 343/530727 (1787)	12	7 adjoining mill 5 adjoining mill	29 40
Robinson (Bulwell) RE 4/74349 (1778)	10	10 in one bldg.	40
Cowpe (Pleasley) Sun CS 11/648272 (1795)	10	10 in tenure of their workmen	60?
Horrocks (Preston) Sun CS 12/651301 (1796)	8	1 under packing rms., Friday St. 7 adjoining mill, Dale St.	? 50
Hodgson (Caton) Phoenix 155008 (1798)	8	2 adjoining mill 6 50 yds away	25 33
Kirkman (Birkacre) Sun CS 4/629341 (1794)	6	2 4	40 30
Harrison (Portwood) Sun OS 370/572667 (1790)	5	3 near Crow Park mill 1 house, shippon and stable 1 house & stable	100 ? 100
Lodge (Rochdale) Sun CS 1/629367 (1794)	4	4 in Millers Meadow	100
Watson (Preston) Sun CS 8/638760 (1796)	3	2 under factory 1 small house and stable	25 50
Willoughby (Nottingham) RE 25/135163 (1793)	4	1 House 1 House 2 tenements	? 100 100
Caunt (Maythorn) Sun CS 10/646166 (1795)	3	3 in tenure of servants	100
Green (Nottingham) Sun CS 9/641089 (1795)	3	1 adjng. warehse. 2 and stable	? ?
Bleazard, Arthington (Leeds) Sun CS 12/648558 (1795)	3	2 tenements 1, end of mill	50 50
Milne (Crompton) Sun CS 9/640813 (1795)	2	2 in tenure of no hazardous trades	50
Parker (Ashton under Lyne) Sun CS 8/640366 (1795)	1	1 near mill	25

Blezard, Arthington (Nidderdale) R.E. 32a/154777 (1795)	1	1 tenement	25
Oldknow (Stockport) Sun OS 333/512654 (1785)	?	cottages and loomhouses	?
Dickinson (Claypool) R.E. 130776 (1792)	?	Range of tenements near mill. £100.	?

(ii) Mid-nineteenth century evidence

It might have been hoped that the evidence of Land Tax assessments would bridge the gap between the early evidence for mill-owned housing in the 1790s and the good statistical evidence available for the period after 1830, but they are uniformly disappointing and can only be used as minor supplementary evidence on a few cases. The principal later sources are the returns to the Factory Commissioners in 1833 and the Tithe Survey, the compiling of which commenced in 1836.¹ As the evidence of the latter on the subject of housing is by far the more extensive and reliable, it will be useful to consider it first before turning to the returns to the Factory Commissioners.

Details of a selection of rural cotton mill estates, drawn from Tithe Surveys in the counties of Lancashire, Cheshire, Flint, Derbyshire, Staffordshire and Nottinghamshire, are summarised in Appendix A (p.337 ff). The process of study has been to commence with secondary historical work on early, water-powered cotton (or worsted) mill sites, particularly the invaluable gazetteers of early industrial sites published in the Industrial Archaeology series² and the work of Dr. Chapman on the location of eighteenth century mills;³ to consult the Tithe Surveys of townships indicated; and to extract the statistical evidence of estates which appear

1. Tithe Commutation Act, 6 & 7 Wm. 4. c. 71; footnote references to individual township surveys hereafter are those of Plans and Apportionments in the Public Record Office.

2. The Industrial Archaeology of the British Isles (General editor E. R. R. Green), particularly vols. on Derbyshire (F. Nixon), Lancashire (O. Ashmore), The East Midlands (D. M. Smith), and The Peak (H. Harris).

3. S. D. Chapman, "Fixed Capital Formation in the British Cotton Industry" Econ. H. R., ii ser., XXIII (1970)

fully and satisfactorily covered by the Tithe Survey, the search being extended across township boundaries where necessary. A few additional specimen estates coming to light at this stage are included. By selecting estates for study on the basis of the mill use of water power, any reference to the possession or non-possession of housing is avoided, as it is evidently essential not to beg this question. This has produced a selection of 96 satisfactory specimen estates; half, at least, were associated with mills known to have been established before 1803, and a quarter with mills known to have been established before 1789. In many cases the precise date of establishment of the mill is unclear, but its size and use of water power would not suggest a recent origin. In some instances cotton spinning had ceased by the date of the Tithe Survey, but the supporting evidence of earlier directories, sale advertisements, etcetera, confirms the former involvement in cotton spinning. In many cases the mills had been converted to steam power. It would be possible in theory to obtain evidence from the Tithe Survey for perhaps ten times this number of estates based on originally water powered mills, but for present purposes it may be better not to press the collection of specimen estates beyond this point because of the danger of introducing a disproportionate number of larger and more recently established estates.

It has been necessary in some cases to take the evidence of the Tithe Survey in conjunction with that of the 25" Ordnance Survey, particularly where the precise enumeration of cottages or parcelling of land is not perfectly clear. Of 96 examples of rural cotton mill estates in this Tithe Survey evidence, 72

possessed cottages; the latter 72 estates included 2,983 cottages in total, giving an average of 42 cottages per estate. Table 2 gives a further breakdown of numbers of cottages per estate:

Table 2.

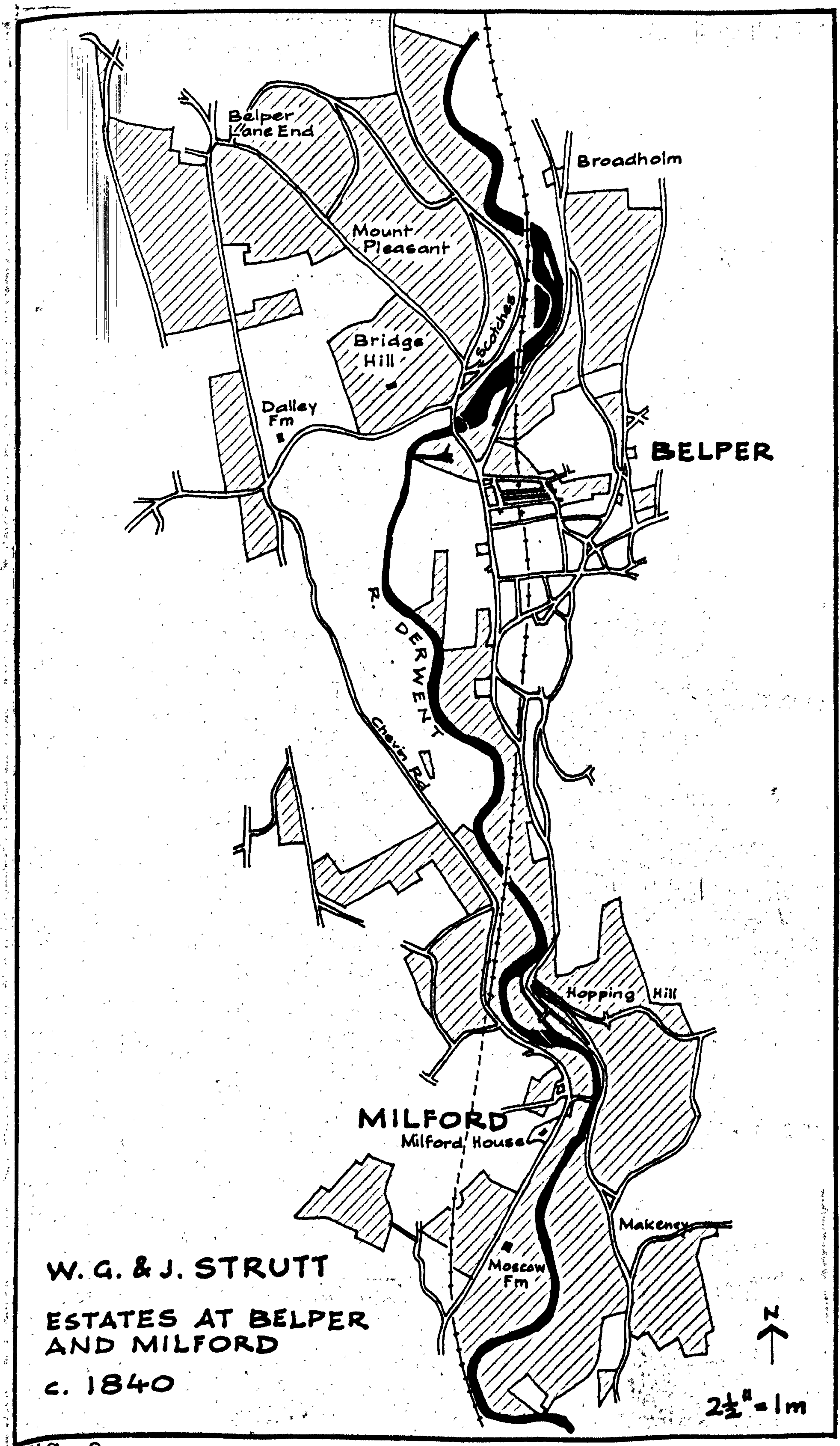
FREQUENCY DISTRIBUTION OF 96 MILL ESTATES, c.1840, BY
NUMBER OF COTTAGES:

Number of cottages	Number of estates
100 or more	7
90 - 99	1
80 - 89	1
70 - 79	1
60 - 69	3
50 - 59	2
40 - 49	3
30 - 39	5
20 - 29	6
10 - 19	21
under 10	22
none	24

The list of those possessing 100 or more cottages amongst those here considered is headed by that of W. G. and J. Strutt at Belper and Milford, whose firm was originally established in 1778 (fig. 2, p. 39). In the early 1840s they possessed 609 cottages on land of 1,233 acres.¹ Next came that of Richard Arkwright jnr. at Cromford and Matlock, the Cromford mills having been established in 1771. The Arkwright estate included 263 cottages and extended to 2,022 acres (fig. 3, p.40).²

1. T. S. of Belper (8/23); T. S. of Duffield (8/78).

2. T. S. of Bonsall (8/29); Cromford (8/66); Matlock (8/142); Wirksworth (8/235)



W.G. & J. STRUTT
ESTATES AT BELPER
AND MILFORD
c. 1840

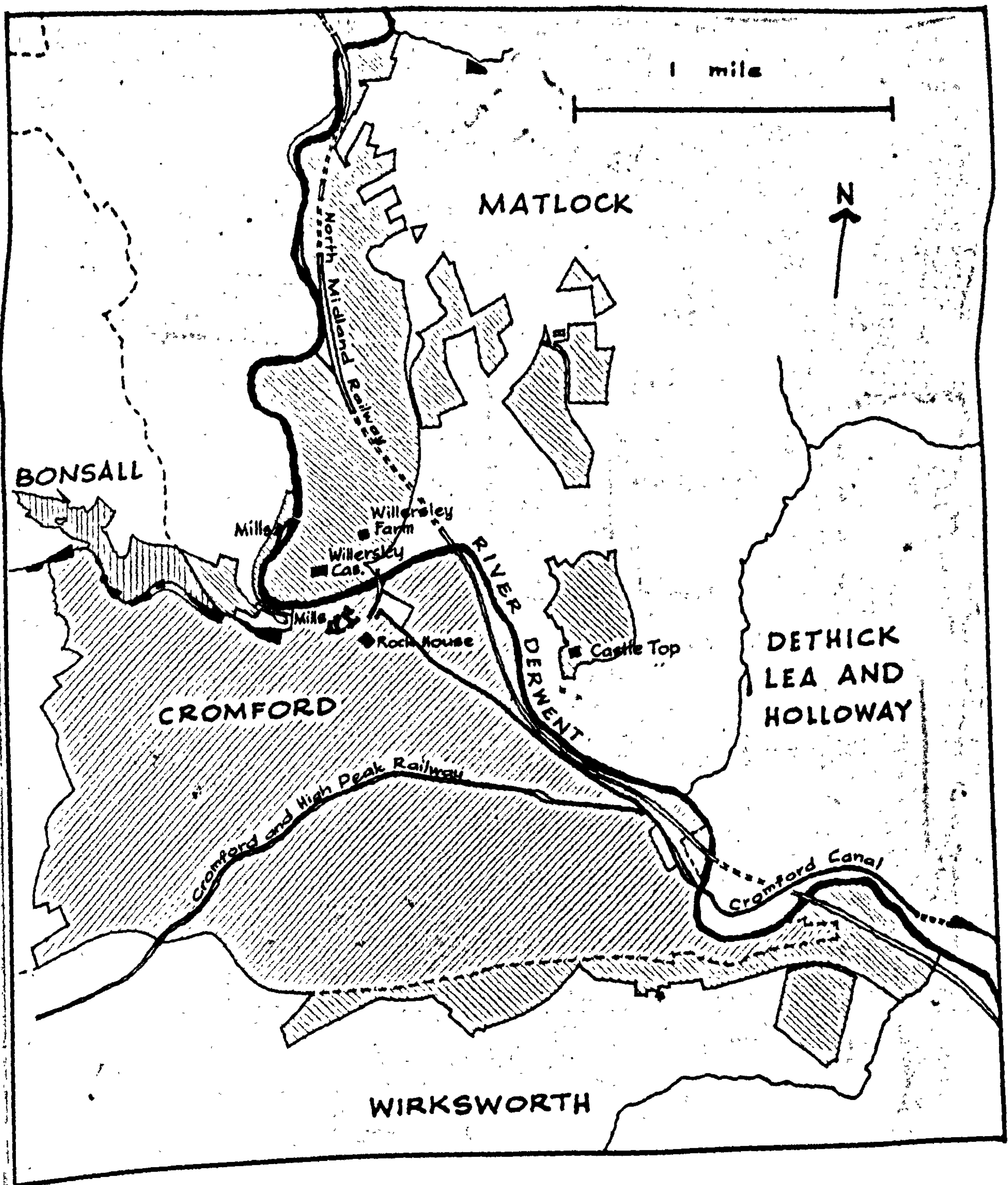


Fig. 3.

Arkwright estate in Cromford and adjacent townships, c.1841

Garnett and Horsfall, at Low Moor, Clitheroe, whose predecessors commenced spinning in 1782, owned 235 cottages and 75 acres.¹ George Andrew of Compstall Bridge mills, founded in 1802, owned 184 cottages and 186 acres.² Joe Sidebottom of Broadbottom mills, on a site where cotton spinning commenced before 1795, owned 108 cottages and 55 acres.³ John Dugdale and Brothers of Lower House mills near Burnley, founded by Peel, Yates and Company in the early 1790s, owned 107 cottages and 314 acres.⁴ Hinde and Derham of Dolphinholme worsted mills, founded by Edmundson and Company in 1784, owned 106 cottages or tenements and 97 acres.⁵

Of the range of estates at present under review, approximately a half, 41 out of 96, are taken from townships in close proximity to the ring of towns ^{around} Manchester which includes Bury, Oldham, Stayley Bridge, Hadfield, Marple and Wilmslow, the mills being less than 15 miles from Manchester. The remaining 55 specimen estates are from the more outlying districts of north and mid-Lancashire, Derbyshire, Nottinghamshire, etc. Table 3 gives the breakdown of numbers of cottages per estate comparing the inner group with the remainder:

1. T. S. of Clitheroe (18/80)
2. T. S. of Romiley (5/337); Werneth (5/418)
3. T. S. of Mottram (5/277)
4. T. S. of Habergham Eaves (18/140); Padiham (18/238)
5. T. S. of Dolphinholme (18/103); Ellel (18/115)

Table 3.

FREQUENCY DISTRIBUTION OF 41 MILL ESTATES WITHIN 15 MILES OF THE CENTRE OF MANCHESTER AND 55 OUTLYING MILL ESTATES, BY NUMBER OF COTTAGES.

Number of cottages	Number of estates	
	Near Manchester	Outlying
100 or more	2 (4%)	5 (9%)
90 - 99	1 (2%)	0
80 - 89	0	1 (2%)
70 - 79	1 (2%)	0
60 - 69	2 (4%)	1 (2%)
50 - 59	1 (2%)	1 (2%)
40 - 49	2 (4%)	1 (2%)
30 - 39	1 (2%)	4 (7%)
20 - 29	3 (7%)	3 (6%)
10 - 19	5 (12%)	16 (29%)
under 10	8 (20%)	13 (24%)
none	15 (37%)	10 (18%)
Total	41 (100 %)	55 (100 %)

It thus appears the outlying estates more often possessed cottages than those closer to Manchester, but in both instances a majority of estates possessed them. The outlying estates possessed a greater proportion of the very large and very small accumulations of cottage property.

Very little difference appears in the numbers of cottages associated with mills in the two principal regions of the cotton industry, centred on Manchester and Nottingham, taking the Manchester region to consist of Lancashire, Cheshire, Flint and the High Peak Hundred of Derbyshire, and the Nottingham region to consist of the remainder of Derbyshire, Nottinghamshire and the eastern parts of Staffordshire. In

both regions the number of estates without housing was about a quarter, 19 out of 75 in the Manchester region, and 6 out of 21 in the Nottingham region.

Table 4.

FREQUENCY DISTRIBUTION OF 75 MANCHESTER REGION MILL ESTATES AND 21 NOTTINGHAM REGION MILL ESTATES, BY NUMBER OF COTTAGES.

Number of cottages	Number of estates	
	Manchester region	Nottingham region
100 or more	5 (7%)	2 (10%)
90 - 99	1 (1%)	0
80 - 89	1 (1%)	0
70 - 79	1 (1%)	0
60 - 69	3 (4%)	0
50 - 59	2 (3%)	0
40 - 49	2 (3%)	1 (5%)
30 - 39	3 (4%)	2 (10%)
20 - 29	6 (8%)	0
10 - 19	15 (20%)	6 (29%)
under 10	17 (23%)	4 (19%)
none	19 (25%)	6 (29%)
Total	75 (100%)	21 (100%)

The high standard of much of the technical survey work performed for the Tithe Survey may give an optimistic impression of its value as the basis of statistical research in property holdings. The most important detracting consideration is that the Tithe Survey is not a survey of uniform coverage. This has two repercussions. Firstly, mill estates occasionally, though seldom, extended into more than one township, and part of an estate may be missing in the Tithe Survey. The Arkwright estate (fig. 3, p. 40)

based on Cromford even extended into four townships, Cromford, Matlock, Wirksworth and Bonsall. If, as in this case, all the townships involved were surveyed, this naturally causes no difficulty. Occasionally, as in the case of Bakewell, part of the mill estate has to be reconstructed from other evidence, such as deeds or property advertisements. This danger of incomplete evidence only arises in a small number of cases; one gains the impression that the great majority of mill estates and other small property units did not cross township boundaries. Small, detached portions of mill property units which might be missed due to incompleteness of the Tithe Survey coverage are more likely to consist of pockets of housing in nearby villages or towns than anything else; consequently, use of Tithe Survey evidence may lead to a slight underestimate of the quantity of cottage property in mill ownership.

The second problem stemming from incompleteness in the Tithe Survey coverage is more important. Every township in the country was considered by the Tithe Commissioners, but surveys were only carried out in those townships where they were not satisfied that tithes were already completely commuted into rentcharges. Voluntary commutation before 1836 had proceeded most readily in townships where the landed property was in a very small number of hands. Tithe Surveys therefore under-represent the great-estate townships and over-represent the small freeholders' townships or those where very substantial leases were granted to small tenants. The danger is illustrated by comparing the Bury townships with

those in the vicinity of Bolton. The Bury townships, except the built up part of the town of Bury, consisted largely of substantial tenancies under the Earl of Derby, and were minutely covered by the Tithe Survey. In the vicinity of Bolton, by contrast, the landowners' influence on the management of great estates was more closely felt, and these townships were a great blank in the Tithe Survey coverage, tithes having been commuted in all cases. In a study of later developments, Dr. Gaskell shows that "Bury ... contained, by the third quarter of the nineteenth century, a large number of mills with associated housing, and was also surrounded by numerous industrial settlements" whereas landowners' closer involvement in the Bolton townships caused the industrial development there to be much less intense.¹ Whether the concentration of the Tithe Survey on townships of small property and easier development is fatal to its statistical value, must be a matter of judgement. To alleviate the objection, it may be pointed out that country mills in townships not covered by the Tithe Survey were also not infrequently accompanied by housing development. Lancashire examples of early mills with housing the study of which is hindered by the lack of Tithe Survey coverage include Thackeray and Company's mill and housing in Cark in Cartmel; the Backbarrow mill and community; Clowbridge mill and community in Rawtenstall; Lower Mill, Rawtenstall, including the Whitehead Brothers' Hollymount community, with Hollymount House and school; Hope Mill, Rawtenstall, with the Goodshaw

1. S. M. Gaskell, "Housing Estate Development, 1840 - 1918" Ph.D., Sheffield, (1974), 45

Fold village; the Dean Mills community at Barrowbridge near Bolton; the Ashworth Brothers' mill housing at New Eagley and Egerton; mill workers' housing in Carlton Street, Rochdale; the Ashworth mill and housing north of Heywood; Rydings mill and cottages in Wardle; and the Facit mill and community in Whitworth.¹

It is very occasionally possible to use the evidence of the 1841 Census as a check on the reliability of the enumeration of cottages in the Tithe Survey. In a few cases where comparison has been found possible,² the Census evidence confirms that, in the manufacturing districts at least, the Tithe Survey is of a high order of accuracy. Amongst places where a very large majority of cottages in mill ownership may readily be identified in both the Tithe Survey and the Census are Cromford, Belper, Styal, Milford, Cressbrook, Rocester, Scorton and Tansley. In the minority of cottages in these places where tenant families had changed in the interval between the two official visitations, the household listed in the Census may usually be assigned to its correct place because most enumerators appear to have worked in a systematic order. Occasionally a person listed as tenant in the Tithe Survey was not entered in the Census as the head of his household, presumably because instructions required enumerators to enter the oldest member of a household as the head. These discrepancies rarely prevent the identification of cottages in both sources. In some other cases, as at Marple or Tutbury,

1. O. Ashmore, Industrial Archaeology of Lancashire (1969) gives brief details of these mills and communities.

2. See p.286 below for 1841 Census references used.

terraces of cottages may be fully equated in both sources, without it being clear in what sequence the cottages or households occurred within the terraces.

To a limited extent Tithe Survey evidence may also be checked against that of the replies to the 1833 Factories Inquiry.¹ Most of the evidence in this source refers to large urban steam powered mills, including those of many Manchester firms, which is evidently the reason why, superficially, this source suggests cottage ownership to have been negligible. It includes many mills engaged in spinning and weaving textiles other than cotton or worsted. Nevertheless, from the replies received, it is possible to extract information on a number of country mills spinning cotton by water power or having formerly done so. This selection (see Appendix C, p. 426) is chosen for comparability with the class of evidence drawn from the Tithe Survey, and may be thought to concentrate on rural mills and to include a more balanced range of mill sizes than would emerge from a study of the Inquiry replies considered as a whole. The selection includes mills in the counties from which the Tithe Survey evidence has been taken (see p.36) with the addition of a small number of West Riding cotton mills. Of 43 mills, 88% (38) included one or more cottages in mill ownership, compared with 75% according to the Tithe Survey evidence. The Inquiry evidence is not subject to the same criticism of geographically incomplete coverage as the Tithe Survey, apart from the different treatment of West Riding evidence.

1. P. P. 1834, XX

The difference in the purposes for which the Tithe Survey and the Factories Inquiry were drawn up helps to account for some discrepancy between results. The Factories Inquiry sought amongst other things to investigate to what extent cottage property was utilised for purposes of workforce training. This is clearly apparent in the wording of Question 65: "Do the workpeople live in the houses of their employers; and if so, is any control or superintendence exercised for their moral or social improvement, or are any arrangements made to enforce domestic cleanliness; if so, specify their nature?" It would probably follow from this wording of the question that in cases where an entrepreneur was in business as a cottage landlord independantly of his industrial interests he would not necessarily feel called upon to answer the first part of the query in the affirmative. In an opposite case, where cottages administered as tied cottages happened to be owned by a relative of a millowner, or formed part of the private estate of a partner, or belonged to an entrepreneur's landlord, an answer would naturally be returned in the affirmative, although Tithe Survey evidence would tend to contradict it. The Tithe Survey and the Factories Inquiry thus use slightly different definitions of "company owned housing" and exact agreement on its extent would not be expected.

Although the Factories Inquiry appears to offer a reasonable confirmation that in about 1840 three quarters of country mills were accompanied by cottages, it is less helpful in dealing with the related problem of the number of cottages included in mill estates in the "developed" category. Of 38 owners of water powered cotton mills replying in 1833 that they

housed workpeople only five indicated a precise number of families or cottages, the numbers in these cases being very small. Henry Barlow at Brinnington near Stockport replied that he accomodated "only two as tenants." Levers and Greenhalgh, lace yarn manufacturers, of Field Mill, Mansfield, replied, "only two families; no control." Another millowner near Mansfield, Richard Hardwick, housed only "two small families." J. B. Sidgwick of Skipton, cotton spinner on throstles and power loom weaver, reported, "five families live in cottages belonging to me in the town of Skipton." John Jellicorse of Sowerby, who had only spun cotton since 1830, replied that there were "eight cottages in which my workpeople reside." No other millowners replied with precise numbers. Owners of larger numbers of cottages would presumably have had to make a time-consuming study of their rent lists, and as precise numbers were not asked for, they perhaps declined to do this. In many replies to Question 65 the only indication of quantity was the remark that "some," "part" or "a few" of their employees were tenants:

Table 5

FREQUENCY DISTRIBUTION OF REPLIES ON COTTAGE OWNERSHIP BY
43 PROPRIETORS OF COUNTRY COTTON MILLS, 1833

Quantity of cottage property	Number thus replying
Probably majority of employees housed	12
"Nearly half" housed	1
"Part" of the workforce housed	6
"Some" families housed	12
Families housed "in a few instances"	1
"Very few" families housed	1
Eight cottages	1
Five families housed	1
Two families housed	3
None	5
Total replies	43
(Factories Inquiry, P. P. 1834, XX)	

It thus appears that the general evidence which may be derived from the Factories Inquiry and the comparisons possible in particular cases with Census evidence provide no grounds for disagreement with the conclusions drawn from analysis of the Tithe Survey for cottage property associated with country mills. It may be concluded that by about 1840 country mill estates falling within the "developed" category included a mean of about 40 cottages per estate. This was a considerable advance on the numbers per estate in 1795, and probably a far greater proportion of mill estates were involved in cottage ownership at the later date:

Table 6.

COUNTRY COTTON MILLS AND HOUSING, 1795-1840.

Date	Proportion of estates including one or more cottages	Mean number of cottages
c.1795 (a)	At least 24%	10
1833 (b)	88% owning or controlling cottages	
c.1840 (c)	75% owning cottages	40

((a) Insurance evidence; (b) Factories Inquiry, P. P. 1834, XX); (c) Tithe Survey and other contemporary evidence.)

Part 2. Chronology of housing construction

(1) Dateable examples of new construction work.

Considerable variations are found in the evidence for the chronology of new cottage building activity in various mill estates. In some cases mills and cottages were built within a few years. At Low Moor near Clitheroe J. and J. Parker built 28 cottages at the same time as their mill.¹ The same proprietors built 11 cottages at an early date at another, smaller, mill in Clitheroe.² Arkwright in Cromford and Bakewell built a total of 62 cottages within several years of establishing mills in these places,³ though further extensive developments also took place in Cromford in the late 1780s.⁴ He also owned cottages in Chorley by 1777,⁵ but no uniform policy of cottage ownership is apparent in his numerous mill properties. At Marple, Samuel Oldknow completed Stone Rows and Brick Row (also known as Long Row), providing 76 dwellings, within four years of building his mill.⁶ Jedediah Strutt spent over £3000 on cottages at Hopping Hill near Milford three years after the construction of the Milford Bleaching Mill and at the same time as the Milford warehouse.⁷

1. O. Ashmore, "Low Moor, Clitheroe, a Nineteenth Century Factory Community" Trans. L. and C. Antiqu. Soc., LXXIII-LXXIV (1966).

2. Langshaw, A Child's Guide to Clitheroe

3. See p. 30, footnotes 1 and 2.

4. Bray, Tour into Derbyshire and Yorkshire (2nd edn., 1783), 119.

5. R. S. Fitton and A. P. Wadsworth, The Strutts and the Arkwrights (1958), 78.

6. G. Unwin, Samuel Oldknow and the Arkwrights (1924), Ch. 11

7. Fitton and Wadsworth, op. cit.

More commonly, there appears to have been a long pause before a start was made on building cottages.¹ Oldknow, Cowpe and Company built mills at Pleasley in 1784, but six years elapsed before they commenced building cottages in 1790.² In some instances delay is clearly due to the ready supply of juvenile pauper labour, which is likely to have made any early consideration of the building of cottages superfluous. Thus Samuel Greg at Styal built his mill in 1782-4,³ and an apprentice house shortly after 1786,⁴ but built no new cottages until 20 years later.⁵ Another large-scale user of apprentices, Peel at Fazeley in Staffordshire, built mills and other works for the manufacture of cotton in about 1790,⁶ but did not build cottages until probably ten or more years later.⁷ It is striking that the 25 small cottages in Mill Lane which were the first to be built were not constructed until a date well into the period of contraction of his business interests at Fazeley.⁸ The forty cottages of three stories on either side of Colehill Street were not

1. F. M. Eden, The State of the Poor (1796), 71, comments on the general reluctance of the building trade to construct cottages, despite high activity in other types of building.

2. F. A. Wells, Hollins and Viyella (1968), 66.

3. Greg Papers, "Mill and Quarry Bank Memoranda." A note inside the front cover reads, "Quarry Bank Mill built in 1782 as per a memorandum on old paper." (Manchester Reference Lib., C5/3/1).

4. Described in 1790 as a "dwelling house lately erected by Samuel Greg and used as an habitation for his apprentices." (John Rylands Library, J. R. Charter 4253.) See also Suit Roll of Manor of Bollen cum Norcliffe (J. R. Charter 4312).

5. Greg Papers, "S. Greg and Company, Partnership Book 1796-1810" p.26 (C5/1/2/2).

6. S. D. Chapman, "The Peels in the early English Cotton Industry" Business History II (1969)

7. J. Tann and L. D. W. Smith, "Early Fireproof Housing in a Staffordshire Factory Village" Post-medieval Archaeology VII (1972)

8. Chapman, op. cit.

built until about 1816.¹

The 1841 Census also occasionally indicates continuing building activity in mill villages, but as it is rare to find enumeration districts equated with mill villages it is difficult to extract much evidence from this source. In 1841 eight cottages were under construction in Cromford,² and 15 in Low Moor, Clitheroe.³ By contrast, despite a very active history of cottage construction, none were then being built in Darley Abbey.⁴

The view that it was more usual for a long delay to elapse between the construction of a mill and its associated housing was voiced by Edmund Ashworth in 1839: "Families were attracted from all parts for the benefit of employment, and obliged as a temporary resort to crowd together into such dwellings as the neighbourhood afforded; often two families into one house; others into cellars or very small dwellings; eventually, as the works became established, either the proprietor or some neighbour would probably see it advantageous to build a few cottages."⁵

Darley Abbey provides an example of continuous cottage building on a modest scale, resulting after a number of years in the accumulation of a sizeable village. In 1783 Thomas Evans and Sons built cotton mills there.⁶ They took possession of an old village which by 1789 they had partly improved,

1. The date of the Coleshill Street housing is given by a brick inscribed "M. Long, Sept 3 1816" in the front wall of No. 51.

2. Eight three storey cottages immediately north of North St. Census of Cromford (P. R. O., H.O. 107/198 (14)).

3. A terrace of 14 back to back cottages plus one end-cottage between Eastford Place and Cross Street, with an adjacent similar terrace. Census of Low Moor (H. O. 107/507 (5))

4. Census of Darley Abbey (H.O. 107/188 (2))

5. Sanitary Inquiry: Local Reports, E. and W. (P.P.1842 XXVII), 337.

6. J. Forrest, "The Darley Abbey Cotton Spinning and Paper Mills" M.Sc.Econ., London (1957)

and in which they built an unusually large apprentice house.¹ In 1791 they added most of the Square, consisting of 20 cottages.² They then added the Four Houses in 1792,³ twelve cottages in Mile Ash Lane in 1796,⁴ thirteen known as Brick Row in two stages in 1798 and 1800,⁵ and a number of new cottages in 1803 to 1806.⁶ In 1818 a church was built. A burst of activity in the early 1820s produced new schools,⁷ six new cottages in the coalyard and five at "the waterside", probably Poplar Row,⁸ and probably eight "cluster" cottages in New Road. The number of cottages in Darley Abbey rose from 47 in 1788⁹ to 76 in 1796¹⁰ and well over 150 in 1841.¹¹

It appears in much of the available evidence that a phase of cottage construction activity was not infrequently associated with either a change of proprietor or the recruitment of a new manager. Clear examples of this include Mold cotton mills in Flintshire and Barrow Bridge in Lancashire. The first new cottages at Mold were built between 1827 and 1832, about 40 years after the construction of the mill, by the new

1. The old village of Darley Abbey is the part now known as Darley Street. Hill Square was the former Priory graveyard. A surviving chapel in Darley Street was described as "converted into a dwelling house" in 1789. See V. C. H. Derbyshire I (1973), 46 ff; S. Glover, History and Gazetteer of Derbyshire II (1829), 350; Forrest, op. cit.; Pilkington, Derbyshire II (1789), 166.

2. Evans Papers: Letter Book: Wm Evans & Co. to John Heywood, 4 Oct. 1791. The Square was occupied by 1786: see "D" Ledger, folio 66 (Derby B. Lib., 162-1-70; 162-2-70).

3. "D" Ledger, f. 78.

4. loc. cit.

5. Ibid., f. 91 etc; f. 207 etc.

6. Ibid., f. 98 etc; "E" Ledger, f. 4 etc.

7. Glover, op. cit.

8. Partnership Accounts (162-4-70).

9. Pilkington, op. cit., 197.

10. "D" Ledger, ff. 23 etc., 66 etc. This excludes 12 at Ales-tree.

11. Census of Darley Abbey (H.O. 107/188 (2)).

owners Knight and Company.¹ At Barrow Bridge the mills were built in the 1790s and the village in the 1830s, also following in the wake of a change of ownership.² Other examples might include Hollingworth, where cottages were built at the start of Dalton's managership or proprietorship in about 1803;³ Dolphinholme, where a large number of cottages were built by new owners, Hindes, in the late 1790s;⁴ a considerable increase of building by Garnett and Horsfall, the new owners of Low Moor, Clitheroe, from 1799;⁵ the purchase of Birkett's Square, later known as Arkwright Square, by Peter Arkwright, the new manager of Bakewell mills in 1811;⁶ Broadbottom, where much of the new village is attributed to the period of Joseph Sidebottom's commencement as managing partner;⁷ Cressbrook, where the majority of the village is associated with William Newton's proprietorship from 1829;⁸ Buglawton, under the managership of John Vaudrey's sons in the years before his death;⁹ and a late instance appears at Church Mayfield, where almost all the entire surviving housing is probably due to new owners, the Simpson brothers, from 1868.¹⁰

The possibility might be raised that industrial housing development could be divided into two separate phases, firstly

1. E. J. Foulkes, "The Cotton Spinning Factories of Flintshire" *Flints. Hist. Soc. Publns.*, XXI (1964), 96.

2. P. N. Grimshaw, "The Changed Function of Planned Industrial Villages" *Housing and Planning Review* (Aug. 1972).

3. See Appendix A, No. 49

4. loc. cit., 35

5. loc. cit., 27

6. loc. cit., 4

7. loc. cit., 59

8. loc. cit., 32

9. loc. cit., 8

10. loc. cit., 24

development belonging to the initial stage of industrialisation, including for instance some of the housing at Belper, Cromford, Low Moor near Clitheroe and Dolphinholme, and a second phase in which long established mills turned to cottages as a self-justifying and essentially independent investment. Dr. Gaskell makes a distinction on these lines in his discussion of the early stages of development of the Derbyshire coal and iron industries in the mid-nineteenth century.¹ A similar distinction might be found in evidence for the housing of the early cotton industry, but it is difficult to insist on it. The picture appears to be rather one of a small number of spectacular early developments merging gradually into a policy of possibly rent-motivated cottage investment, with no clear boundary between the two phases. It will be useful to proceed to an examination of the investment circumstances of early mill housing without prejudging investment motives.

1. S. M. Gaskell, op. cit., Ch. 2

(ii) Prewar investment in cottages.

In Henry Ashworth's words, "On the early introduction of the cotton manufacture the parties who entered into it were men of limited capital, and anxious to invest the whole of it in mills and machinery, and therefore too much absorbed with the doubtful success of their own affairs to look after the necessities of their workpeople."¹

Managing partners may not generally have been men of large resources, but despite the imperfect development of the capital market, there was no lack of outsiders willing to support them.² Although, at least for larger concerns, the borrowing of capital or its recruitment from sleeping partners appears to have presented few problems, no rush to construct cottages resulted in the early years. Although a flood of capital entered the new industry in the boom period before 1793, it tended to be capital tied to a specific purpose by investors probably unwilling to see it diverted to subsidiary uses not obviously promising the highest returns.

The limiting influence exerted by sleeping partners on the wishes of a managing partner to introduce innovations or in the slightest to forgo immediate profits, even for

1. Sanitary Report (P. P. 1842, XXVI).

2. B. L. Anderson, "The Attorney and the early Capital Market in Lancashire" in J. R. Harris (ed.), Liverpool and Merseyside: Essays in the Economic and Social History of the Port and its Hinterland (1969), considers methods used to overcome imperfections in the capital market. E. Baines, History of the Cotton Manufacture (1835), 214, considers the eagerness to invest in the earliest mills. S. D. Chapman, The Early Factory Masters (1965), 78, Table 3, analyses the origins of entrepreneurs and their own capital contribution in early Midlands mills. On the wider question of availability of investors' capital, the yield on 3% Consols is frequently regarded as an index; see T. S. Ashton, Economic History of England, 18th Century (1955), 251; Warren and Pearson, Gold and Prices (1935), 403; Shapiro, Capital and the cotton Industry in the Industrial Revolution (1967), 250-1.

humanitarian reasons, should not be underestimated. Even Robert Owen, in partnership with a group of gentlemen of unequalled philanthropic reputation, felt this hindrance.¹ Had the works been entirely his own, he said, he could have managed as he saw fit; "but being connected with other gentlemen, I deem it necessary in practice not to deviate so much from the common regulations."² Country mills were frequently controlled by large co-partnerships, up to the limit of eight persons permitted by the Bubble Act, only one or two of whom would usually be managers. Sleeping partners tended to retain a strong influence over the uses to which their contributions of capital were applied. Schemes for building cottages, which might appear to the resident partner to offer practical advantages in the management of a concern, would be difficult to justify in terms of immediate return on capital compared with that expected from the mill itself.

Not all financial backers of early cotton mills became partners; but lenders of capital in the early period were often personally known to mill entrepreneurs for long before deciding to support them. Thus Thomas Cantrell and Sons in 1792 borrowed £500 from a local clergyman for a mill they were establishing but which they were obliged to sell within two years.³ Investors personally known to entrepreneurs in local communities probably exerted as much restraint as if they had

1. Owen's partners included Jeremy Bentham, William Allen and Michael Gibbs. Owen, Life, written by Himself (1957), 89.

2. Owen's remark was in reply to a question why he did not act upon his belief that it would be beneficial to reduce working hours. Select Committee on the State of the Children employed in the Manufactory of the United Kingdom (P. P. 1816, III).

3. Chapman, op. cit., 58.

been partners by deed.

Although a sleeping partner's capital contribution must be regarded as available for long term use, the strength of the partner's influence would depend upon his ability to carry out a threat of removing support at short notice. An investment in buildings beyond what was necessary for the conduct of the business would cause sleeping partners to lose their manoeuvrability.

Great risk resulted in cases where, as an alternative, a millowner turned to renewable short-term loans for purposes of estate improvement or housing development. Some firms were doubtless enticed into this by the ease with which they found such loans tended to be renewed. It is said that reliance on renewed short term loans was very prevalent,¹ but that "while the use of short term credit to supplement a firm's capital was very widespread, the ability to dispense with such practices was regarded by entrepreneurs like Robert Owen and McConnell and Kennedy as a criterion of the stability of a firm."² Samuel Oldknow made this mistake, and his, certainly, was the most spectacular resulting failure, precipitated by the recall of his bankers' loan in 1792.³

Even if a millowner was not fettered in the way he chose to make use of available long-term capital, his managerial judgement in the period before 1793 is also likely to have been opposed to anything more than a minimum expenditure on operatives' cottages. Aikin illustrated this in 1795 in his

1. P. Mathias, The First Industrial Nation (1969), 176

2. Shapiro, op. cit., 60

3. Unwin, op. cit., 155-6

description of the building priorities of Haslingden millowners: "Trade is now supported by Capitals acquired on the spot by the industry and enterprising spirit of the manufacturers, who have erected inns for the entertainment of travellers, shops, and handsome houses for their own residence."¹ Having capital to spare, their choice did not apparently include workpeople's cottages. Generally, building for the accommodation of workpeople appears to have been confined to the construction of apprentice houses and, in the case of more isolated mills, a few cottages or overseers' houses.

*

The problems of retaining a volatile workforce of free labourers in a period of high wages and desperate competition for labour are sometimes regarded as motives for investing in cottages.² During the years of "extraordinary impetus" following 1785 free employees "received extravagantly high wages, such as were necessary to draw from other trades the amount of labour for which the cotton trade afforded profitable employment but such as it was impossible to maintain for any lengthened period."³ It might be argued that this

1. J. Aikin, A Description of the Country from 30 to 40 Miles around Manchester (1795), 276-7

2. S. Pollard, "The Factory Village in the Industrial Revolution" E. H. R., LXXIX (1964) 513 ff.

3. Baines, op. cit., 214

was a reason why managers should wish to avoid the use of free labour altogether, and to reject the idea of building cottages as tending to reinforce their dependance on it; and to rely instead on the labour of paupers, particularly juvenile paupers, for whom cottages would not be required.

Accommodation for pauper children could be provided very economically. "Two commodious houses" for a total of 600 children at Holywell mills were valued in 1795 for insurance purposes at £700;¹ in other words, £1 3s 2d per operative housed. Supposing small cottages to have been provided as an alternative, and even supposing the improbably high total of five operatives to have been housed in each,² the expense in building would have been over eight times as much per operative; although in the long term rents would have recovered the latter expenditure. In terms of floor area or building volume, a house for about thirty children was, in one instance, the equivalent of about four normal cottages: Arkwright's apprentice house at Cressbrook mill (fig. 4, p. 62) had a floor area of about 3000 square feet on two floors, with perhaps also some attic accomodation. When it ceased to be required for apprentices it was converted into three large cottages.

The use of pauper labour, which readily arose from the

1. Sun Insurance CS 7/638223 (1795). The boys' house was probably the one near the lower mill, valued at £300; the girls' house was a mile distant at Mount Pleasant, and valued at £400. See also Pennant, History of Whiteford and Holywell (1796), 210-3; Select Committee on the Labour of Children in the Mills and Factories of the United Kingdom (P. P. 1831-2, XV), Questions 9546-7.

2. Aikin, op. cit., 343, estimate 5.3 persons per dwelling in Liverpool in 1773; Pilkington, op. cit. II, 49, estimates 4.93 for Derbyshire in 1785.

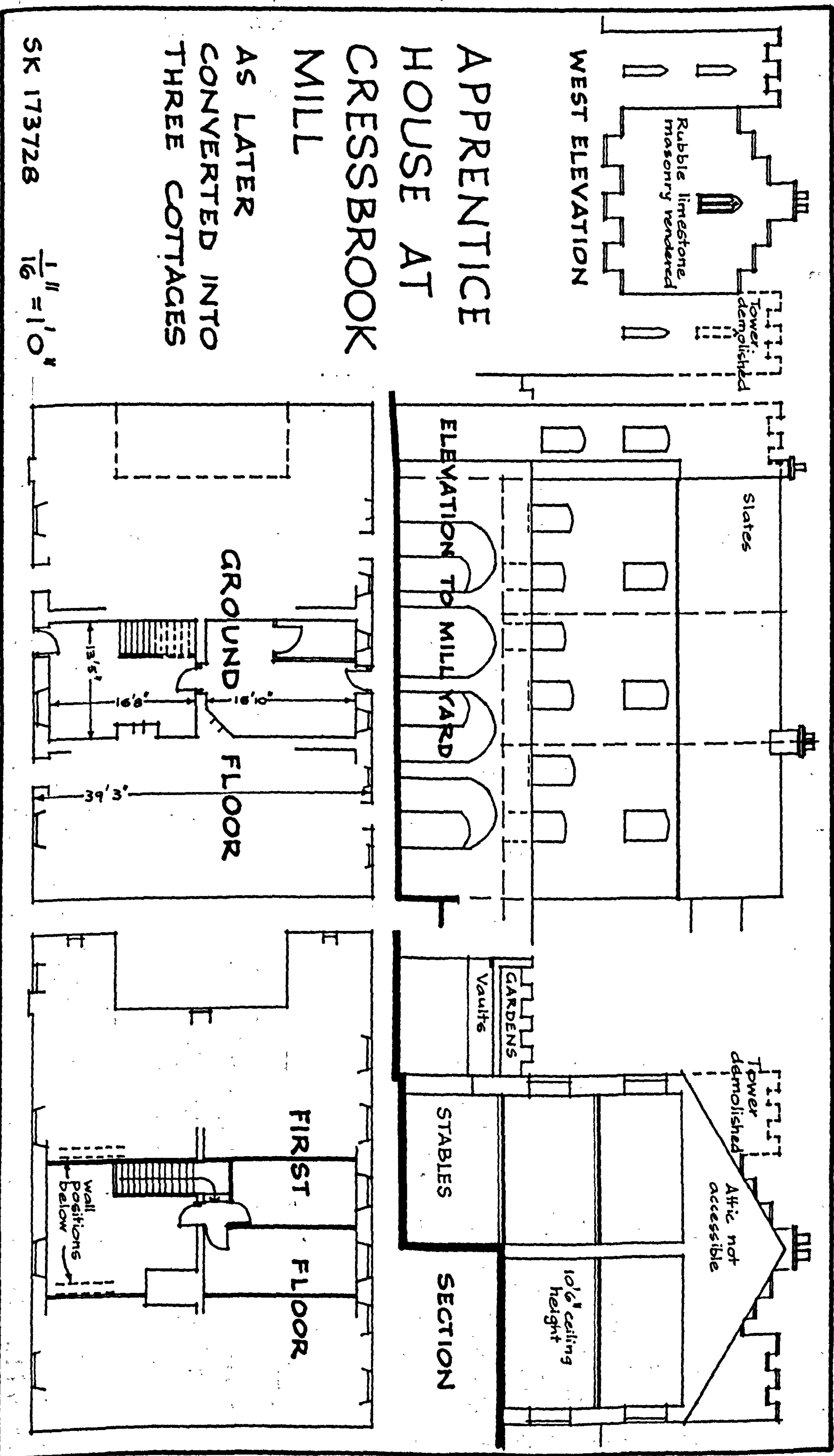


Fig. 4.

well established practice of farming out the inmates of workhouses, enabled some early millowners to effect considerable savings both in housing costs and in competitive wages. In 1788 Patrick Colquhoun gave detailed evidence to the Board of Trade of the "great body of men, women and children, trained at much expense to this business, many of whom without any other resource but to return to the parishes and hospitals from whence this useful branch of industry had drawn them."¹ A generation later, by which time reliance on pauper labour had been very much reduced, Baines wrote that it had been found unsatisfactory, and that "free hands are now generally preferred,"² though this might be no more than a rationalisation in the face of a diminishing supply of such labour. John Kennedy also provided evidence that in the earliest years of the cotton industry small masters tended to rely on pauper labour even more heavily than the leading millowners, although unlike larger employers they tended to take pauper families rather than only children. In the 1780s, according to Kennedy, "the little manufacturers who had remained in their cottages and villages, did not abandon their exertions, but, making the most of the means they had, by employing the power of the lame and the blind in turning their machinery, they also found the advantage of the division of labour. Being supplied in this way with power to a limited extent, they found that children could perform some of the more delicate parts of their operations. These were the children of

1. (P. Colquhoun,) An Important Crisis in the Callico and Muslin Manufactory in Great Britain, Explained (1788), 21.

2. E. Baines, Directory of the County of Lancaster II (1825), 30.

indigent people (already employed in a similar way) who had already moved from different parts of the kingdom, often at the expense of their respective parishes, who were thus relieved of the charge of supporting them."¹

1. J. Kennedy, "Rise and Progress of the Cotton Trade" Manchester Lit. and Phil. Soc. (1819), 122-3.

(iii) Investment in cottages in the war period.

During the years of severe financial depression from 1793 to 1797 in which in the words of a contemporary, "terror created distrust, distrust impeded circulation,"¹ any progress in the construction of cottages is likely to have been slow and confined to larger firms able to find capital without requiring loans. As in the prewar period, cotton spinners' employment policy did not as yet provide any strong motive for the construction of cottages, and few millowners are likely to have had spare capital awaiting a tempting investment. As millowners saw that the crisis was becoming prolonged, and as the economy moved towards the second serious slump of 1797, many are likely to have doubted whether the windfall profits of the early years were ever likely to occur again. There were too many mills. In 1798 Richard Arkwright expressed the view that if profitability were to be restored under war conditions it would be essential for "half, or two thirds, or perhaps even three quarters of the mills" to close.² The crisis years of the close of the eighteenth century are likely to have been the first period in which a millowner might have started to consider the advantages of a non-competitive, and possibly complementary investment in cottages.

The closing years of the eighteenth century were also ones in which magistrates' suspicions of mill conditions appear

1. Chalmers, Estimate of the Comparative strength of Britain (1804), 295.

2. Letter from Richard Arkwright to Samuel Oldknow, quoted in M. M. Edwards, The Growth of the British Cotton Trade 1780-1815 (1967), 13.

first to have been aroused. Some became unwilling to commit pauper children to hours of labour which free hands generally refused to tolerate. Even as early as 1784 the Lancashire magistrates unanimously resolved to "refuse their allowance of indentures of parish apprentices whereby they shall be bound to owners of cotton mills and other works in which children are obliged to work in the night, or more than ten hours in the day."¹ The West Riding magistrates followed suit in 1800,² and in the same year the Birmingham guardians resolved "that children may in future be sent to such mills where there is reason to believe they will be well treated."³ The anxiety of millowners to continue to employ paupers is evident from the tendency to turn to London and the South of England for a supply as local magistrates tended to become unco-operative. A further hindrance to the use of pauper labour was created by the Apprentices Act of 1802, which prohibited the night employment of unfree labour and effectively terminated night shift employment altogether. This law became effective for small mills on the 25th of December 1803 and for larger mills on the 25th of June 1804.⁴ Before these dates the 23-hour working of English cotton mills had been not uncommon.

1. Resolution of the Manchester Michaelmas Quarter Sessions, Reports to the Society for Bettering the Condition of the Poor, IV (1805), Appendix p. 11.

2. Ibid., 21

3. Minutes of the Board of Guardians of the Birmingham Workhouse, 23 July 1800 (Birmingham Ref. Lib.): information kindly communicated by Dr. Tann

4. 43 Geo. 3 c. 46, section 4 forbade the night employment of apprentices. For evidence of earlier nocturnal working see Select Committee on the State of the Children employed in the Manufactory of the United Kingdom (P. P. 1816, III), 8, 115, 143.

The return of business confidence in 1802 with the peace and the conclusion of a commercial treaty with France created the conditions in which one might have expected new investment to proceed. "Fresh vigour to commerce in general" was expected.¹ Before cottages were considered, however, the first demand on millowners' long term capital resources in this period appears to have been for a burst of new mill construction. The anticipated effects of the 1802 Apprentices Act, furthermore, probably encouraged some millowners to expand their mills in order to accommodate their entire workforce on day shifts. In 1804 it was said of this Act that "in large mills ... two years are allowed ... to prepare for the cessation of night work. So that either the hiring of a few free labourers, or the addition in the course of these two years of a little more building (equal to an eighth part of their existing workrooms) will enable them to continue their present amount of work."²

Progress with the construction of cottages would probably be a longer term consequence of the same changes in labour availability, but perhaps the period of business confidence was too brief for this to happen to any marked extent. Optimism was destroyed by the return of crisis in 1803 and the resumption of the war with France. During the early years of the Napoleonic War the pace of activity in the construction of industrial premises appears to have subsided to a very modest level. By 1808 mill construction came to an end in

1. Oldknow Papers: Letter from John Sawyer to Samuel Oldknow. 9th Sept. 1802 (John Rylands Lib., Engl. MSS 751).

2. Reports to the Society for Bettering the Condition of the Poor IV (1805), Appendix, p. 3.

a further economic crisis.¹

Restrictions in the availability of capital also are likely to have hindered industrial investment, whether in manufacturing premises or in cottages. Prevailing rates of interest were high, as illustrated by the rise of the yield on Consols past 5% as early as 1797 and its tendency to maintain this high level. It is said that the device of using mortgages to raise capital, formerly of some importance to industrial proprietors, became impossible for six or seven years later in the war period.²

*

As a small start in cottage construction is likely to have been made during the wars period, it may be useful briefly to consider the attractiveness of cottages as an investment at this stage, although fuller discussion of expected rent returns must be deferred to Chapter 3. In the free market in housing, high returns were sometimes possible. Builders of cottages in Manchester in the 1790s were said to gain returns on their outlay of between 10 and 20 per cent;³ but the problems of defaulting may have prevented high nominal rents from being realised. In later years the collecting of

1. Edwards, op. cit., 185

2. Mathias, op. cit., 150; S. C. on the Usury Laws (1818).

3. Aikin, op. cit..

cottage rents might become less problematical, but even in 1842 Edwin Chadwick drew attention to the practical impossibility of collecting more than a fraction of the rents due from flitting tenants with little or no personal property.¹ Other landlords perhaps envied the ability of an employer-landlord to withhold rent from wages.

In the mid-1790s Evans and Company of Darley Abbey were charging rents which would give a nominal income of about 6% on their expenditure, their highest cottage rents being fixed at 1s 6d per week. Deduction of expenses would reduce these rents to a level of about 5.2%.² At later dates, weekly rents charged by other proprietors were generally at much higher levels, probably reflecting the increased cost of building during the war years and during the post-war building booms. In the period from 1806 to 1830, Samuel Greg at Styal received 7½% from cottages which, like those at Darley Abbey, were part of the master's personal property, though managed by the company. A valuation of some of his cottages suggests returns of up to 10%.³

1. Sanitary Report, ed. Flinn (1964), 299

2. Evans Papers, "D" Ledger, folios 23, 27. For example, 44 new cottages cost £2786; nominal rent £166 p. a., subject to shortfalls of 12½%; probable income £145 p. a. (Derby B. Lib., 162-2-70).

3. Greg Papers: Valuation by John Clarke (Manchester Ref. Lib., C5/6/1)

(iv) Post-war investment in cottages.

In the closing years of the war and during the post-war period the economic conditions influencing country millowners considering whether or not to build cottages changed radically. With the exception of a few years, the competition they faced in seeking long-term loans of capital became less severe than it had been throughout most of the war period. Interest rates, taking the yield on Consols as a convenient index, fell;¹ the exceptional years of high yield were 1811, at an average of 5.1%; 1813 and 1814, when it averaged 4.9%; and 1816, when it averaged 5.0%.² Yields fell thereafter, and from 1822 remained below 4% for the remainder of the century.

Surviving country millowners in the post-war period thus found themselves in a favourable position when considering building or re-equipping their mills. Former investors in the Funds were returning to the private market, as the increasing price of Consols made selling attractive for the first time for many years. Prevailing low interest rates also revived the possibility of mortgaging land or other real property to raise capital at interest rates within the limits prescribed by the Usury Laws. Millowners were naturally not the only beneficiaries of the new era of cheap money; the

1. J. Parry Lewis, Building Cycles and Britain's Growth (1965), 13, discusses the close inverse relationship between building activity and the yield of Consols.

2. High levels of interest in 1812 and 1816 raised the complaint that shortage of long term capital would "deprive commerce of every kind of support further than actual necessity required." Manchester Magazine II 5 (May 1816), 238-9, quoted by Shapiro, op. cit., 58.

evidence of brick production in this period¹ reveals the enormous impetus to building speculation and investment that occurred in the early 1820s and the mid-1830s. The majority of millowners' investment in cottages in the early nineteenth century can probably be assigned to these periods of boom in the building trades.

The new, plentiful supply of capital commencing approximately with the termination of the war was not taken up for a number of years by any pressing need for the reconstruction of mills. Growth in the number of country mills had come to a stop in the crises of 1808 and 1811. Although the optimism with which the approaching end of the war was foreseen occasioned a temporary increase in the demand for textiles,² it was met by mills not previously worked to capacity. An opinion by G. W. Daniels has recently been reiterated that "the demand occasioned by the coming of the peace could be met without any extraordinary activity being manifested, much less a growth of the industry being required. The situation which called for expansion apparently did not arise until some years after the termination of the war."³ The expansion which followed appears to have consisted of a considerable, but localised, investment in new factories for

1. Shannon, op. cit.

2. One mill partner wrote in 1813, "The late good and most important news from the Continent has already begun to affect the demand for twist;" and in 1814, "I could hardly believe my eyes when I saw your magnificent sum totals ... I thought it must be an account of stock you had sent me, and not one of profits." Nightingale Papers: Letters from William Shore to John Alsop, his fellow trustee and manager, Nov. 1813 and March 1814 (Derby B. Lib., 092127).

3. Edwards, op. cit.

power-loom weaving in the early 1820s.¹ Activity was particularly high in the country districts of the cotton industry which were then fast becoming urbanised, such as the fringes of Bury, Bolton, Stockport or Ashton. Following a temporary slackening of pace in the late 1820s activity was resumed in the 1830s. In 1833 W. R. Greg of Bury commented on the pace of work in these newer centres of the industry, remarking that all the new mills were then being constructed with additional accomodation for power-looms. A great part of the post-war activity in the construction of cottages on millowners' estates in these districts would appear to have followed on the heels of mill construction or enlargement. Butterworth's description of the Stockport district in 1827² contains reference to numerous flourishing mill communities not mentioned in Aikin's description of the region in 1795.³ Some were specifically associated with mills of recent establishment, such as the "considerable range of stone built cottages" adjoining Stayley New Mills, though the evidence would not necessarily point to the development of millowners' estates as such. Nonetheless, Peter Gaskell in 1836 was of the opinion that new cottages in these places generally belonged to the millowners.⁴ Capital created in the local mills must, directly or indirectly, have supported virtually all the building effort in new towns like Stayleybridge, in which "nearly a thousand houses" appeared in the years from

1. Baines, op. cit. (1835), 182, describes the years 1824 and 1825 as "years of speculation."

2. E. Butterworth, History and description of Stockport (1827).

3. Aikin, op. cit.

4. P. Gaskell, Artisans and Machinery (1836), 294.

1824 to 1827.

The process of increasing cottage property on millowners' estates continued in the more isolated parts of the country surrounding Manchester, Stockport and their satellite towns, as at New Eagley and Egerton near Bolton under the Ashworths, at Andrew's mills at Compstall Bridge, or on Joseph Sidebottom's estate at Broadbottom near Mottram. The attractions of cottage property may also have appealed to millowners outside the districts involved in the rush into power-loom weaving. At Mold in Flintshire there was "considerable building" in the years 1827 to 1832. In this case Foulkes gives evidence of a late immigration of mill hands from Lancashire, whose distinctive non-Welsh names stand out in the 1841 Census. Mold might be a late example of cottages built to cope with a problem of housing labour rather than as primarily a rent earning investment.¹

1. Foulkes, op. cit.

Part 3. Availability of land for building purposes on millowners' estates.

Evidence drawn from the Tithe Survey and other sources indicates that although few millowners would be regarded as substantial landowners, few are likely to have experienced any difficulty in finding suitable land for the purpose of building cottages. Fig. 5 (p. 75) indicates the extent of land in the possession of a number of millowners and the numbers of cottages on their estates. The area occupied by cottages and gardens was clearly no more than a trifling fraction of that available in most millowners' landholdings. In some cases land for building purposes was readily available though not formally included in the property of a mill company. At Darley Abbey and Styal, cottages serving as dwellings for company employees remained in the private ownership of individual partners.

In cases where the mill was in the ownership of a sole proprietor, there appears to have been little basis for any distinction between private and business property. The Factories Acts of the mid-nineteenth century and the innovation of limited liability later made an absolute distinction possible between business and private property, but in the early years no such distinction existed.¹ As an

1. It may not have been unknown, in cases of insolvency, for these two species of property to have been regarded as distinct. Thus Walter Evans, a creditor, wrote to Ashburner and Walmsley in 1788 on the subject of Drinkwater's insolvency, complaining of his "claiming so much of the remainder as private property." Evans Papers: letter, 18 Aug. 1788 (Derby B. Lib., 162-1-70).

SURVEY OF A SELECTION OF RURAL COTTON MILL ESTATES circa 1840

Estate Acreages and Numbers of Cottages

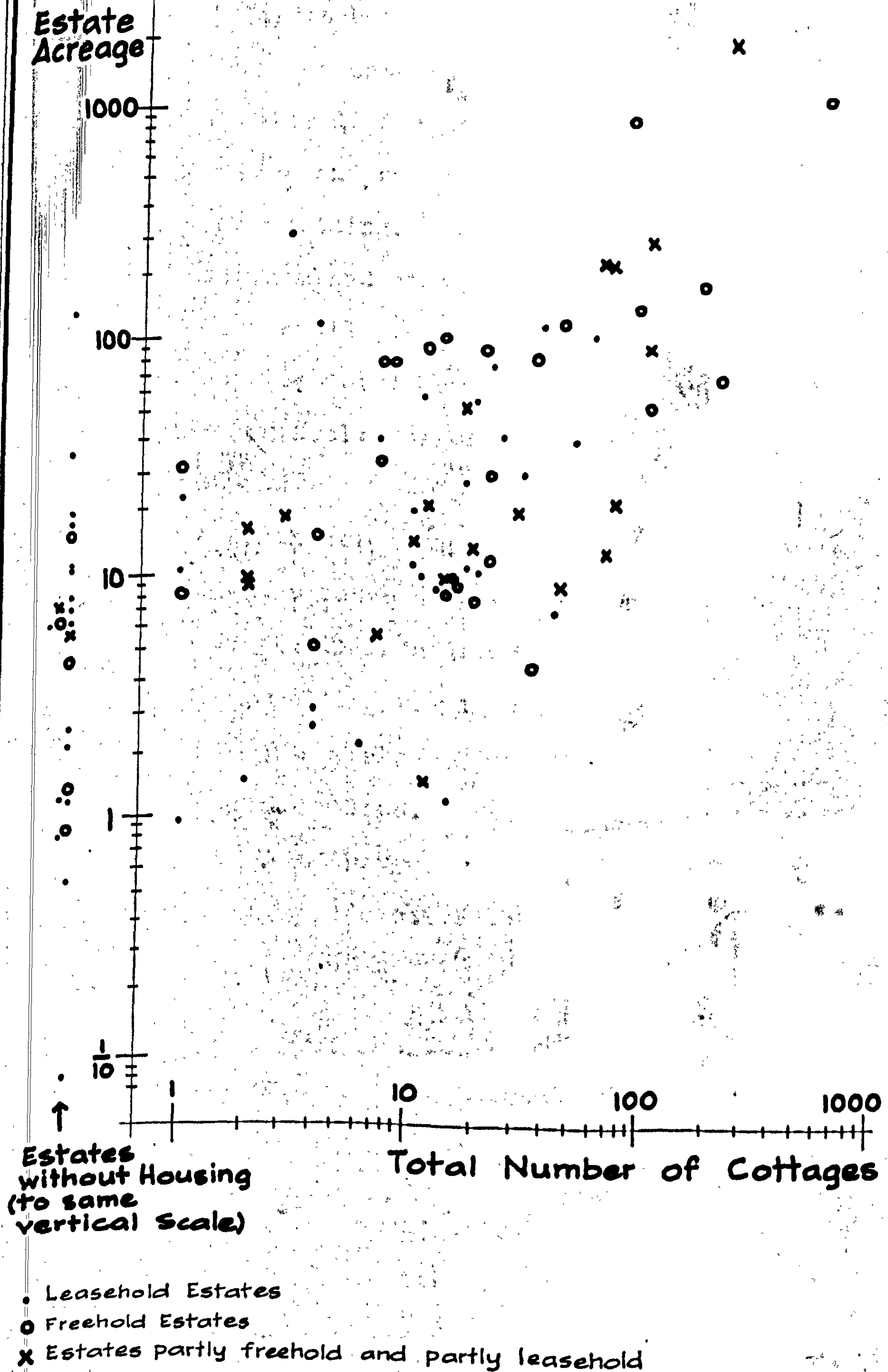


Fig. 5.

element of private property and personal inheritance cannot be eliminated from industrial property in this period, it becomes difficult to insist on anything more than a most tenuous relationship between statistics of industrial cottage ownership and landed estate. Each must have been influenced by a range of quite different personal and business motives.

The large area and agricultural character of many country mill estates is striking. In a survey of 96 estates,¹ only 17 included no farmland at all. Land in industrial use was generally only a small proportion of the total, amounting to half or more of the total acreage in only 23 cases. In 63 cases, land in agricultural or woodland use exceeded all other categories of land.

Taking an arithmetical mean of the percentages of land in various uses in the range of examples considered, the mean composition was 32% in industrial use, 58% in agricultural or woodland use, and the remaining 10% was divided^{between} the master's private grounds, the workpeople's cottages and gardens, and roads, waste or other land. These figures conceal a very wide variation. The proportion of an "average" estate occupied by workpeople's cottages and gardens amounted to 4%.

*

The agricultural element in mill estates appears to have provided much of the potential building land. Much of the

1. Appendix A, p. 337.

period of the Industrial Revolution was a time of agricultural improvement, and both enclosures and the improvements to farm holdings appear to have released suitable land. The use of both these sources of building land for industrial cottages is illustrated in the case of the Strutt estates at Belper and Milford. At Belper, much of the housing built by Jedediah Strutt in the 1790s occupies elongated strips of land running from Bridge Street uphill towards Field Head. The date of enclosure of this land is unclear, but it was evidently carried out with a minimum of disturbance to old boundaries. A plan of the Strutt estates as they existed in about 1840 (Fig. 2, p. 39) shows them to have grown in an extremely fragmentary manner. Although Jedediah Strutt did not have a large allotment of land under the 1786 Duffield, Belper, Hazlewood and Mackeney enclosure (only 52 acres),¹ the enclosure was probably the starting signal for a considerable traffic in land and a spate of improvements in the following years,² from which Strutt evidently profited. By the 1840s, Strutt company property in the vicinity of Belper and Milford included numerous groups of cottages in the outlying districts in addition to the better known settlements in proximity to their factories. There were cottages at Belper Lane End, Mount Pleasant, and Scotches; in Dalley Lane and Chevin Road; at Broadholm; and near Milford at Bank Buildings, Sunny Hill, Forge Hill, Mackeney

1. Duffield, Belper, Hazlewood and Mackeney Inclosure Act, 1786; award 1791; enrolled 1793 (Derbyshire R. O., 176 A/P21).

2. P. Mantoux, The Industrial Revolution in the Eighteenth Century (Trans. Vernon, new edn., 1961), 172, comments on the brisk trade in newly enclosed lands.

and small numbers at other places.¹

*

It is not, perhaps, surprising that in a period of widespread agricultural improvement numerous decayed building sites became available for redevelopment with groups of cottages. Even more usual than the taking of redundant farmsteads for this purpose was the re-occupation of village 'tofts and crofts'. A well documented example of this process is to be seen at Rocester in Staffordshire, developed under the partnership of Arkwright and Bridden at Rocester Mills. In this instance a parcel of land in Mill Lane in the village, originally known as Orpe's Croft, was gradually developed as a site for 23 cottages with about an acre of allotment gardens at the rear. The start of the change of use of the croft predated its absorption into the mill estate. In the eighteenth century, the croft had served as a little farmstead, and in 1778 was described as "a house at the Cross in Rocester with a barn, lately converted into two dwellings, and two acres of land."² In the period between 1778 and 1790 the housing on Orpe's Croft increased to nine dwellings. It was then described as "a messuage with a barn, stables,

1. T. S. of Belper (8/23); T. S. of Duffield (8/78).

2. Rocester Mill Deeds: Indentures of Mortgage, 6th June 1778, recited in indentures of Lease and Release, 15th Aug. 1790 (Staffs. C. R. O., D 624/6/6). See also fig. 35, p.315.

shop and other outbuildings, the same being divided and converted into eight several dwelling houses, with folds, yards, orchards, and gardens belonging thereto, and a meadow or pasture adjoining containing $2\frac{1}{2}$ acres."¹

In 1790, nine years after Arkwright converted the old Rocester corn and fulling mills to the spinning of cotton, his successors Richard Arkwright junior and Richard Bridden purchased the croft and the old converted buildings from William Orpe, a small farmer in straitened circumstances. In the period from 1803 to 1826 they increased the number of dwellings to 23. Development continued also after the disposal of part of the site in 1833; the mill estate was then conveyed to Thomas Houldsworth, but Bridden's heirs, relinquishing their interest in the business, retained a small part of the original croft, and added a further terrace of nine cottages.²

Other examples of the re-use of decayed village messuages for cottage development may be found; at Cromford and Bakewell Arkwright built parallel terraces at right-angles to the street line in order to make the maximum use of narrow-frontage parcels of land; others followed a similar plan with single terraces, for instance Oldknow's cottages behind the Navigation Inn at Marple or Webb and Company's cottages in Tutbury. In many isolated villages, crofts included in the estate of a

1. Ibid.

2. Rocester Mill Deeds: Indentures of 12th July 1803, recited in Abstract of Title (D 624/3/11); Indenture of 19th March, 1822 (D 624/2/13); Indentures of 16th Jan. 1833, recited in Indentures of Mortgage, 22nd April 1848 (D 624/7/2); see also T. S. of Rocester (32/180).

nearby cotton mill proprietor appear to have been redeveloped with densely packed little groups of cottages. The village of Bamford in the High Peak of Derbyshire consisted in about 1840 of about 20 homesteads; the millowner William Cameron Moore owned two of these; one was occupied by the farmhouse of Robert Turner, the tenant of 93 acres of Moore's land, and the other croft had been re-used as the site of a group of ten cottages.¹

Mills were also not infrequently established in folds in Lancashire, a type of settlement particularly commonly found in south east Lancashire and the Pennine foothills. In Holden Fold, in Royton, the Holden brothers established Shilo Mill and Strange Mill, but the Tithe Survey indicates that the surrounding cottage property was not theirs.² Perhaps the effect of establishing mills was to enhance the value of the cottages, not to bring about their decay, purchase and more closely packed redevelopment. Nonetheless, folds elsewhere may have provided nuclei of industrial housing enclaves.³

1. T. S. of Bamford (8/17).

2. T. S. of Royton (18/273).

3. Prof. Beresford has drawn attention to the importance of folds in the early expansion of Leeds in the late eighteenth century: M. W. Beresford, "The Back-to-Back House in Leeds, 1787-1937" in S. D. Chapman (ed.), The History of Working Class Housing (1971).

Part 4. Statistical evidence on the selection of building land

The clearest distinction which stands out in the choice of sites for mill-owned cottages is between (A) those instances in which mill and cottages occupied separate sites and (B) those in which they were planned in close proximity to each other. Amongst larger estates, a particularly good example of the former type is Cromford, where in 1841 about 200 cottages were to be seen in the old village on either side of the Wirksworth Road at some little distance from the mills. An exactly opposite example appears at Low Moor near Clitheroe, where 233 cottages formed a dense group at the mill gates. A further distinction may be made amongst cottages in the first-mentioned category, particularly in the case of smaller estates: (i) some cottages were attached to pre-existing host-settlements of various sizes, and (ii) others, singly or in groups, stood on sites in isolation both from previous development and from the mills. It will be convenient to refer to these three resulting categories of site as (Ai), (Aii) and (B) respectively. In the case of larger accumulations of mill-owned housing these categories tend to be blurred.

A majority, 56%, of the cottages in the evidence set out in Appendix A (p.337) occupied sites at a distance from their related mills. Categories (Ai) and (Aii) together included 1,657 out of the total of 2,983 cottages. It was nonetheless usual in most individual estates for cottages in immediate

proximity to mills to outnumber those sites elsewhere; the discrepancy is due to the dominating effect of a handful of larger estates included in the survey.

In the categories of cottages not adjacent to their related mills, only 19% (567) appear to have been built on new sites, as far as can be judged, generally corners of fields or road verges. Twice as many (37%, 1,090) were clearly attached to some pre-existing settlement. Such pre-existing settlements range from old farmsteads, folds and hamlets, to well established villages and the outskirts of towns. Fig. 6 (p. 83) sets out the analysis of sites of cottages into these three categories in a survey of 72 country mill estates based on evidence drawn principally from the Tithe Survey, in about 1840.

Groups of cottages sited in isolation from other settlements are more likely to have evolved an element of self-administration, or a commercial or social identity which would encourage people to regard them as "communities." It would be desirable to examine the distribution of "communities" according to type of location, but the most that can be done in this context without question begging is to examine the distribution of groups of cottages of some predetermined number. It would not be entirely safe, using Tithe Survey evidence, to define "communities" in terms of their possessing retail shops or public houses, as these are unlikely to be distinguished from mere dwellings in every case. Where "shops" in particular are referred to, it is rarely clear whether a workshop or a retail shop are referred to. If a settlement

ANALYSIS OF HOUSING LOCATION
ON 72 RURAL COTTON MILL ESTATES
circa 1840

A i
Housing in
pre-existing
Settlement

A ii
Isolated
Housing

B
Housing
at Mill Site
Estate number in
Appendix A

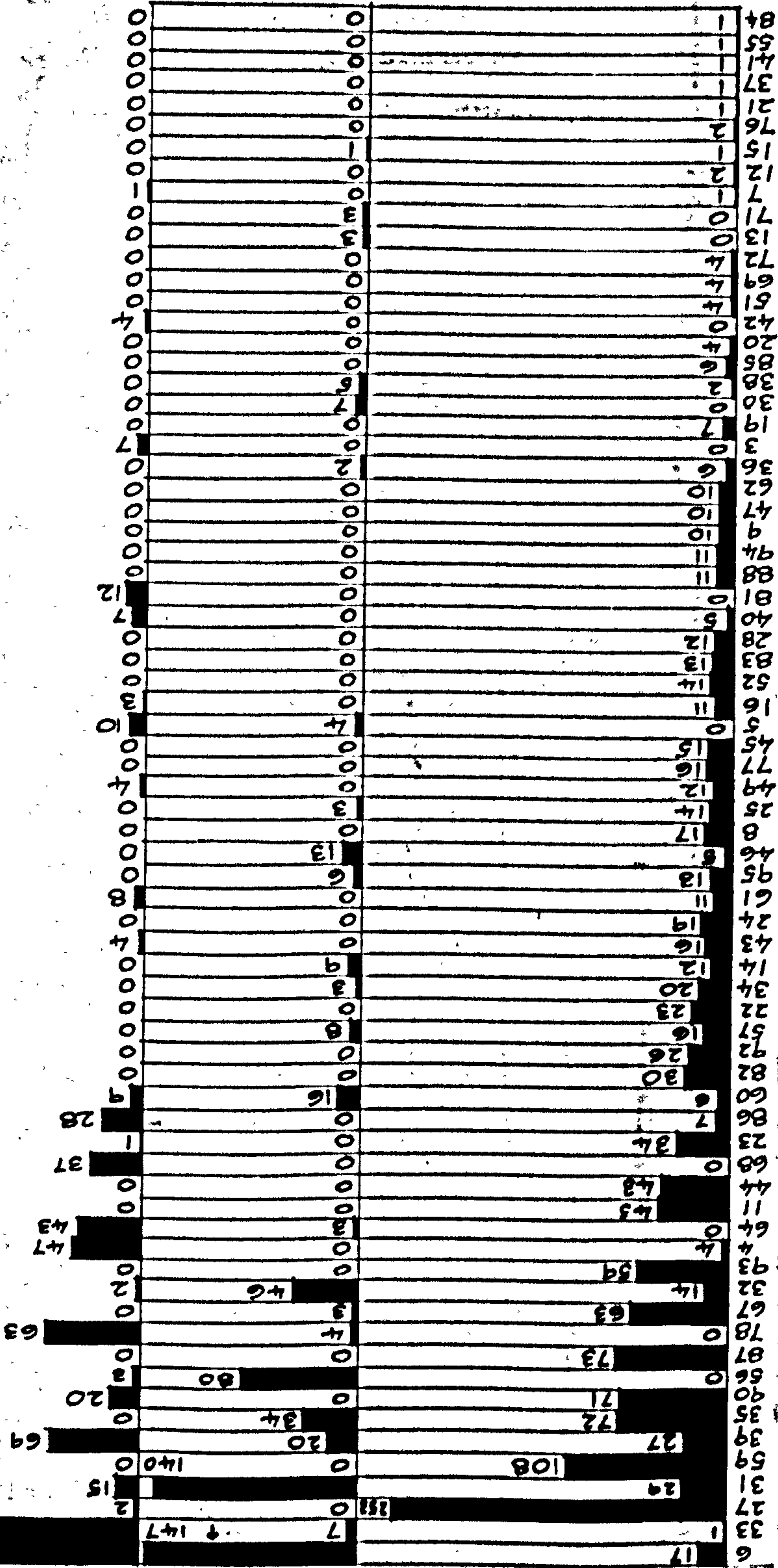


Fig. 6.

size of ten cottages is taken as a convenient substitute for a "community", for present purposes, it is found that in this evidence there were 26 such settlements attached to pre-existing host-settlements of various types, in category (Ai); eight in isolation, in category (Aii); and 37 attached to mill sites, in category (B). The distribution between the three types of site, therefore, is not widely different to that of the cottages as a whole.

Table 7.

HOUSING LOCATION ON 72 COUNTRY MILL ESTATES, c.1840:

Type of Location	Number of cottages		Number of settlements, defined as 10 or more in one group	
	Total	%	Total	%
(Ai): Sites attached to a pre-existing host-settlement	1,090	(37%)	26	(37%)
(Aii): New sites in isolation	567	(19%)	8	(11%)
(B): Sites attached to mill grounds	1,326	(44%)	37	(52%)
Totals	2,983	(100%)	71	(100%)

Any error in evidence drawn from the Tithe Survey is likely to tend to underestimate the amount of mill-related development in situations at a distance from the mills in question. The evidence here placed in category (B) is unlikely to be seriously in error.

Part 5. Motives governing building site selection.

(1) Some possible motives.

Some millowners, like Arkwright at Bakewell, were prepared to buy old buildings for conversion into makeshift dwellings.¹ Others took an interest in the appearance of their cottages and may have preferred to build new cottages on sites in public view. At a late period, one instance may be given in which a millowner planned his cottages as a picturesque enhancement of the landscape seen from the windows of his mansion: this was William Newton of Cressbrook mill, whose cottages date from the 1830s (fig. 7, p. 86). Newton was probably influenced by the example of his neighbour, the Duke of Devonshire, at Chatsworth, who was at that time planning a model village nearby at Edensor.² Something of the more usual range of possibilities in building site selection is seen in a comparison of the siting of Sidebottom's cottages at Broadbottom mill (fig. 8, p. 87), or those of Andrew at Compstall Bridge mills (fig. 9, p. 88) with the less systematic planning of Hinde and Derham's housing at Dolphinhholme (fig. 10, p. 89) or Fishwick's infill housing in the village of Scorton (fig. 11, p. 90). The common principles in these specimens of village planning and cottage site selection are not immediately obvious, except that in no case does potential industrial land appear to have been used. Smaller estates,

1. See p. 30, footnote 1.

2. Built in 1839 by the sixth Duke for his Chatsworth estate workers.

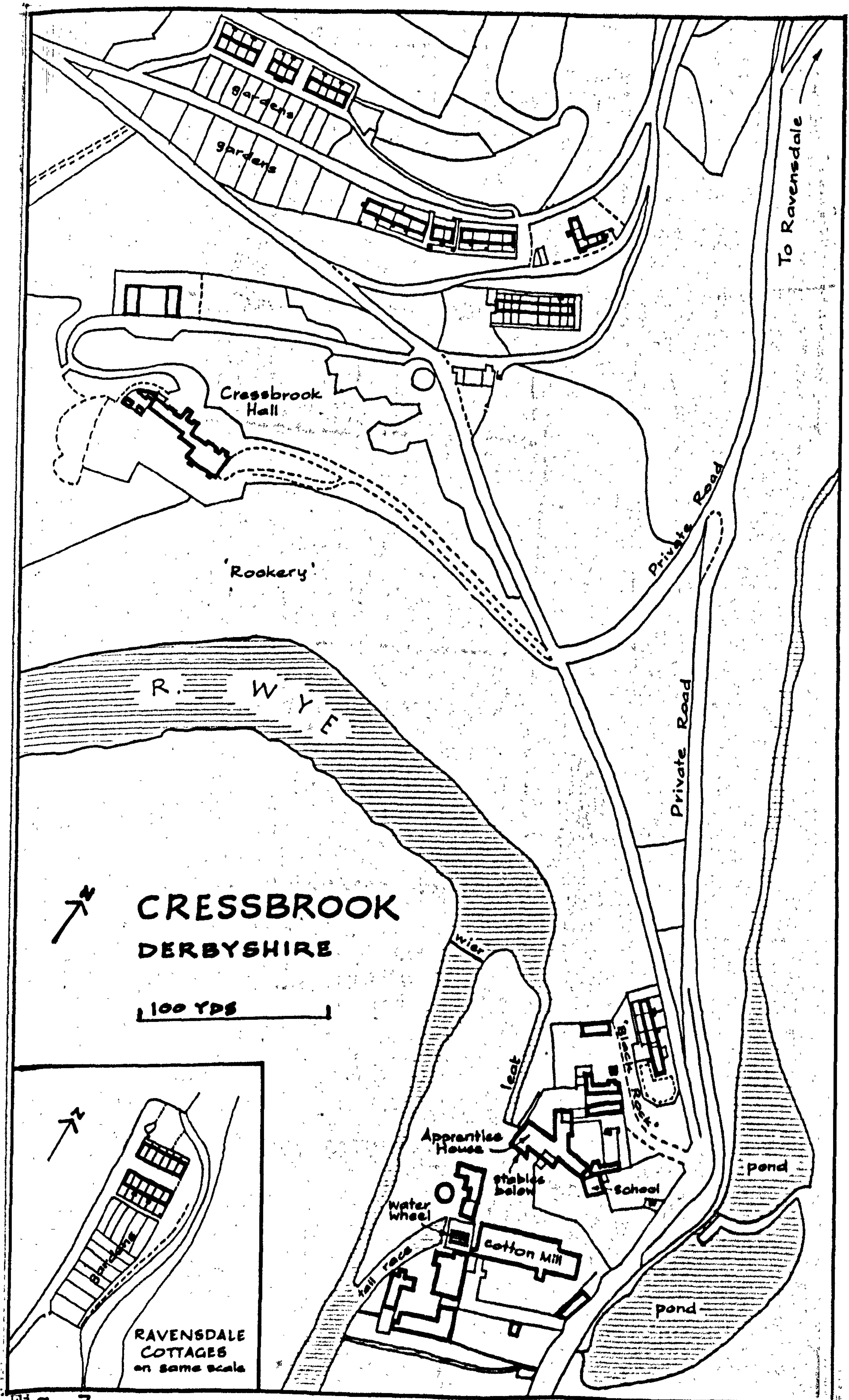


Fig. 7

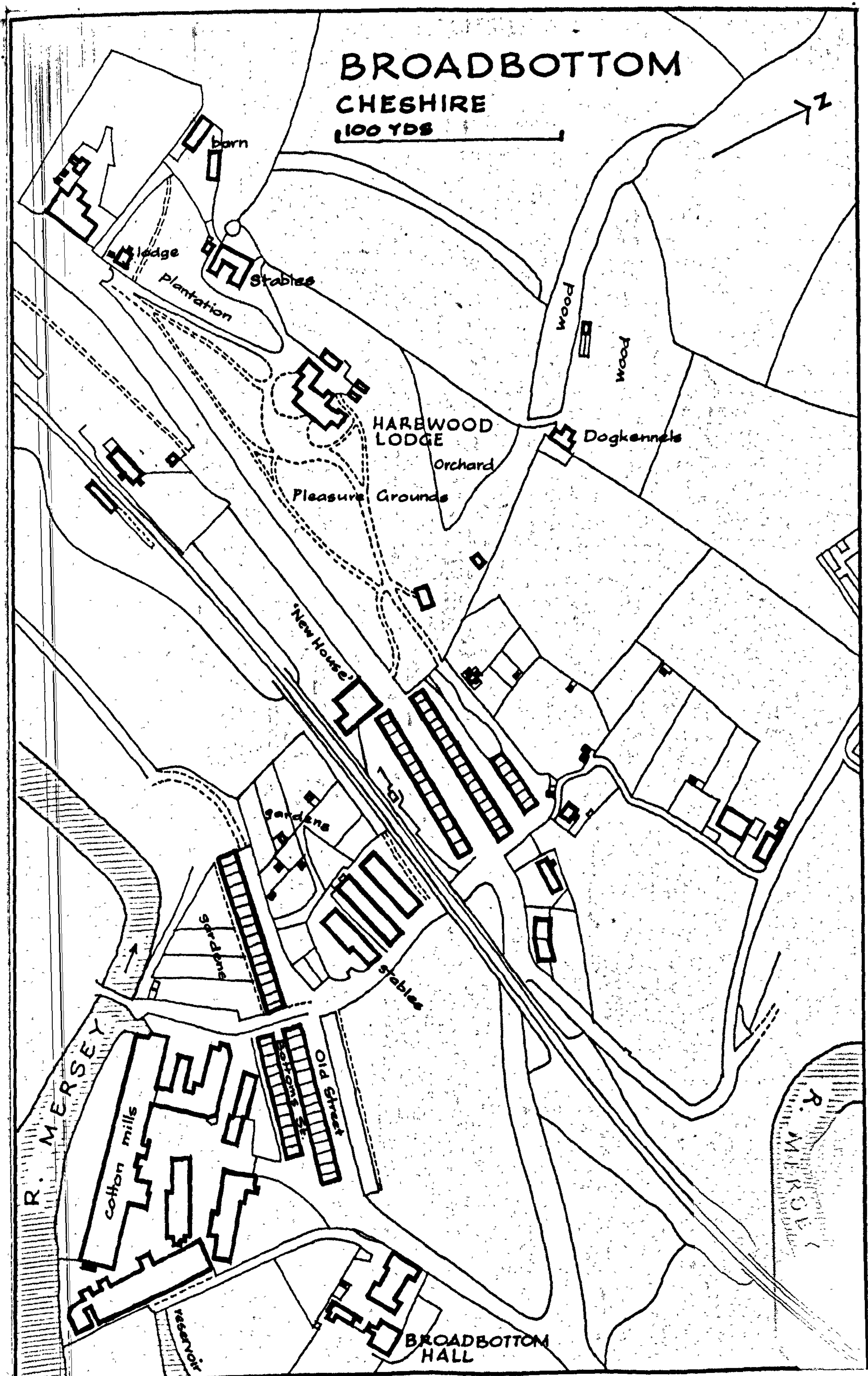


Fig. 8.

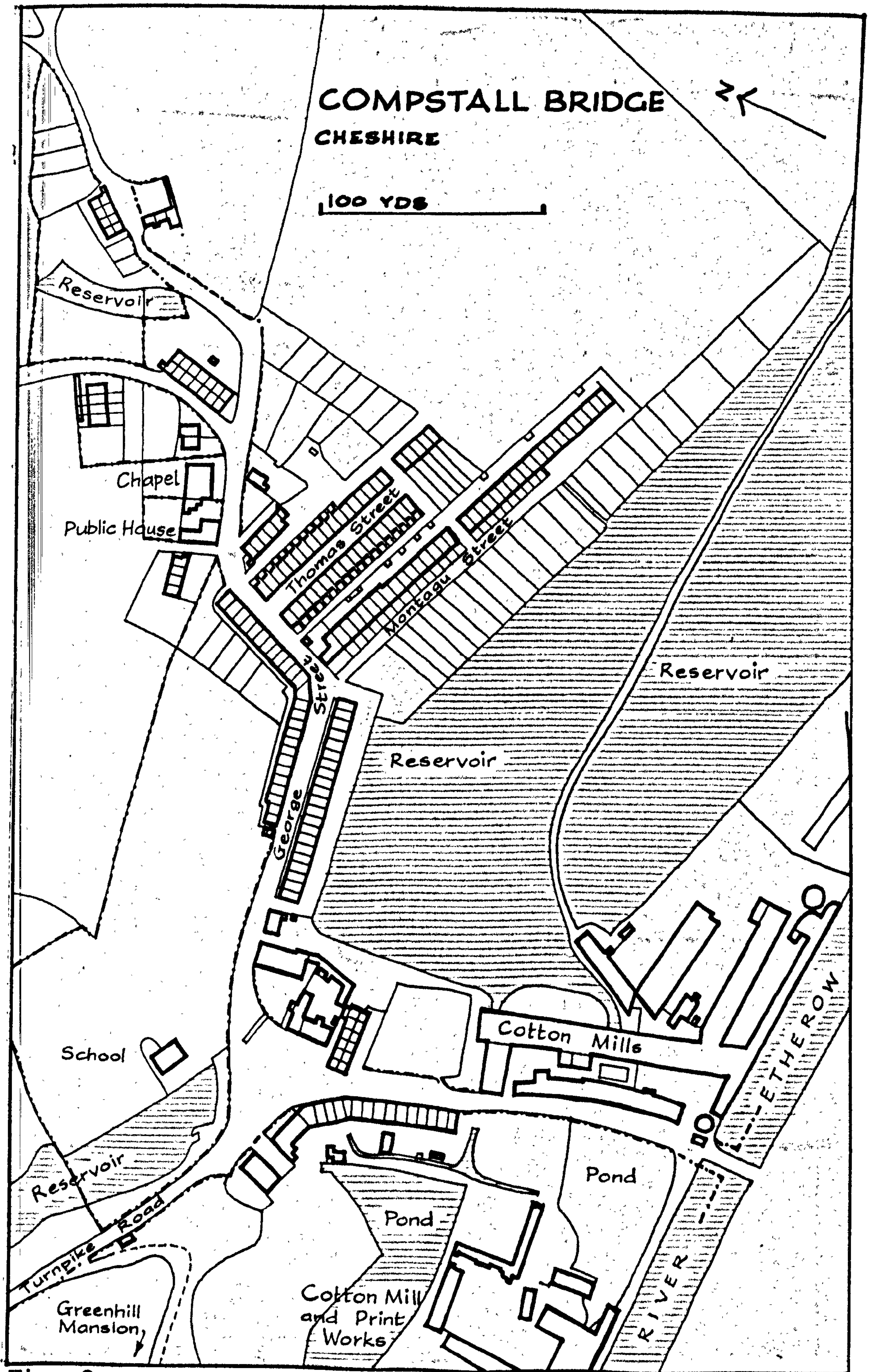


Fig. 9.

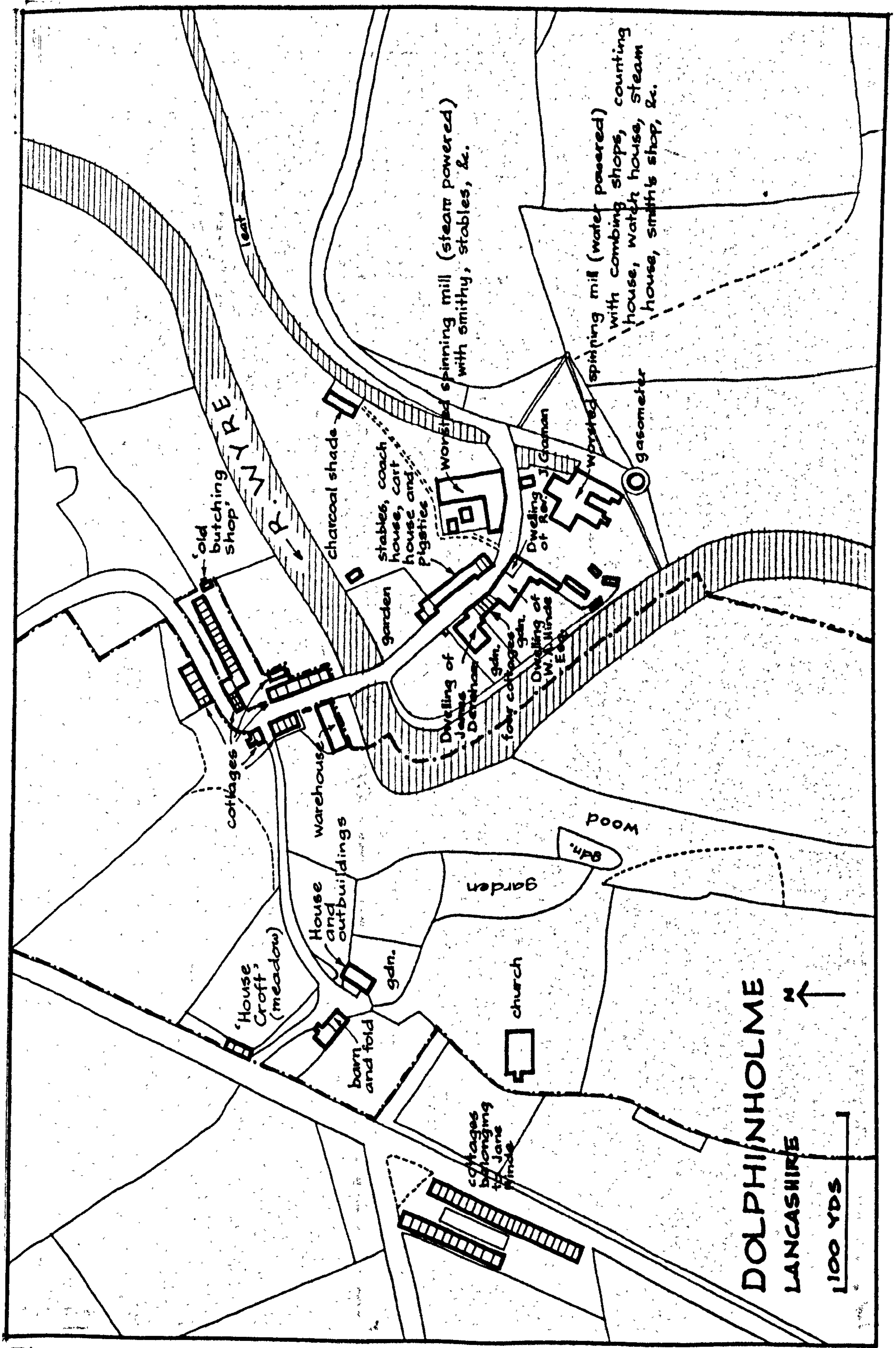


Fig. 10.

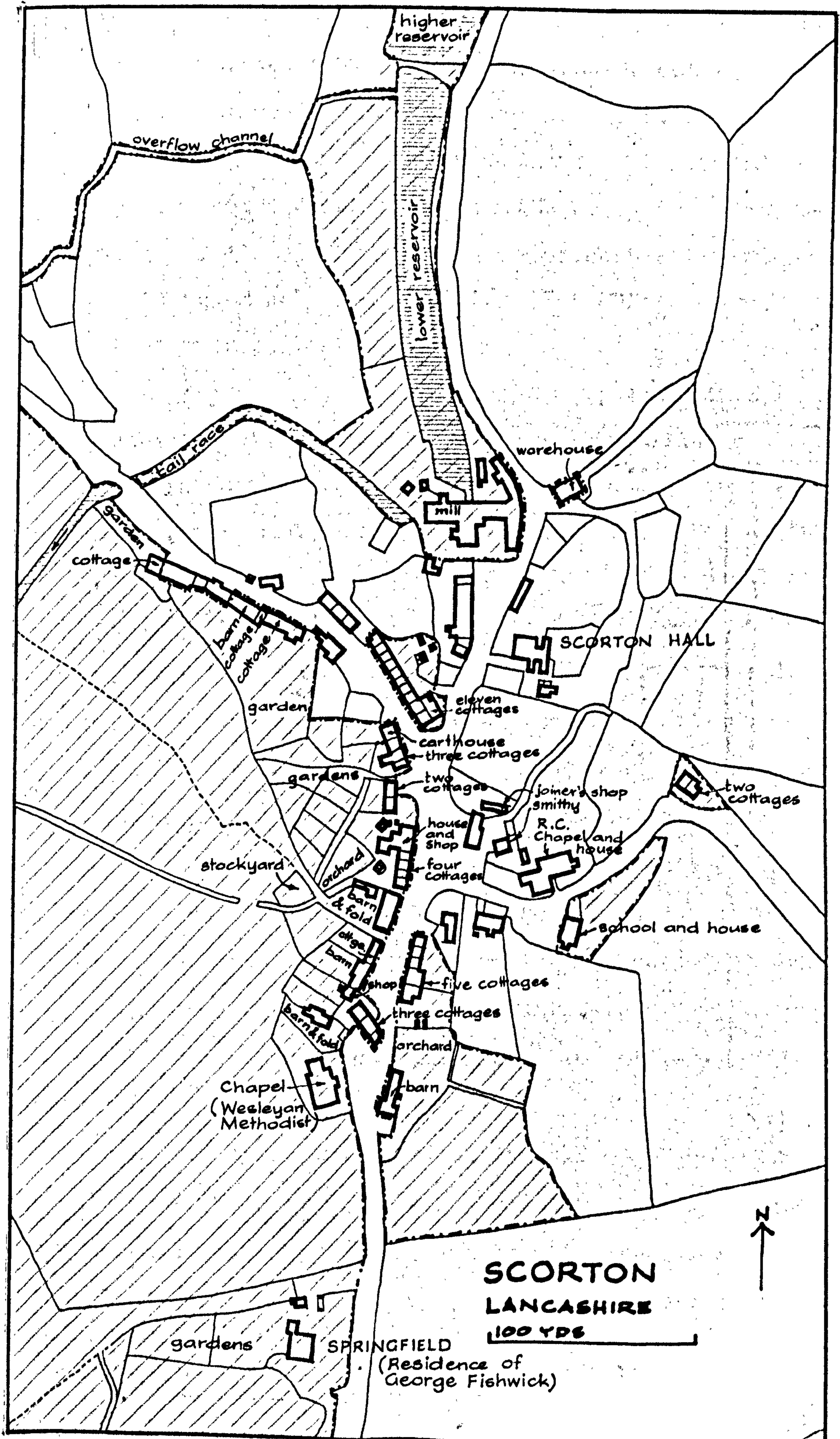


Fig. 11.

too, show a perplexing variety; Cartledge's cottages at Bulwell were crowded in the mill grounds (fig. 12, p. 91a), and at Chipping the cottages belonging to Walmsley of Chipping Factory were crowded beside the neighbouring Saunder Rake Factory (fig. 13, p. 92). No clear principle is evident in the siting of cottages belonging to the former cotton mill at Fiskerton (fig. 14, p. 93).

Considerations of workforce management would induce millowners to build cottages close to their mills; considerations of economy would induce them to choose cheap but easily accessible land; and legal considerations would induce them to choose land to which their title would not be challenged.

Quite apart from the strong connection between factory discipline and the regulation of cottage tenancy, the desire of a millowner to ensure regular and punctual attendance at work by those of his tenants who were also employees must have been a motive for building cottages close to the mills. If that were not possible, ease of supervision would at least be a motive for building cottages together in one group. This may be illustrated by the remark of a Scottish cotton spinner in 1833 that his cottages were "scattered in groups through the neighbourhood, subject, therefore, to no special control."¹

If, as it appears, approximately half of the cottages associated with early mills were built on sites not consistent with a policy of maximum supervision, it probably follows that some planning consideration of greater importance than

1. Answers of Manufacturers to Queries (P. P. 1834, XX).

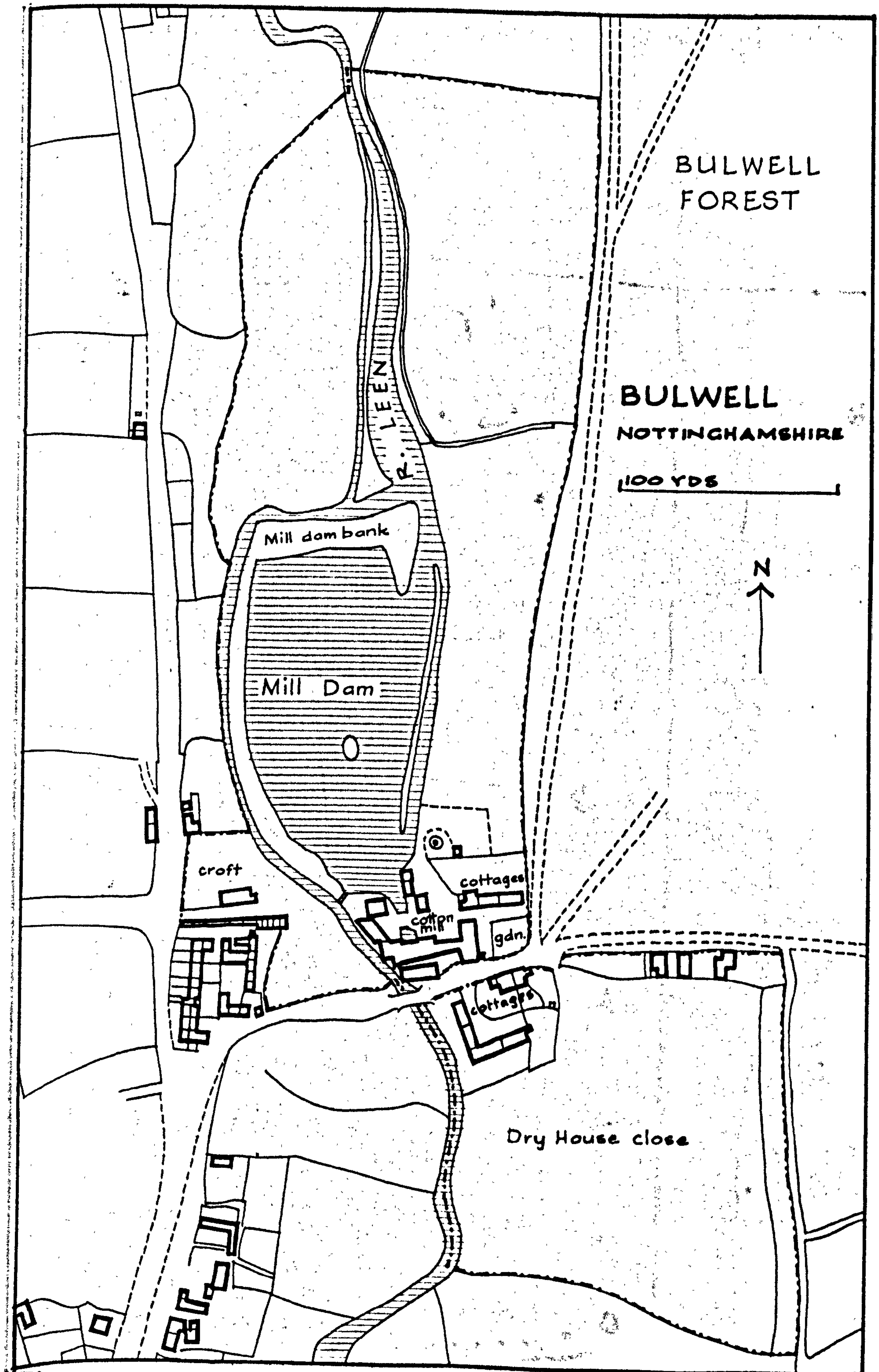


Fig. 12.

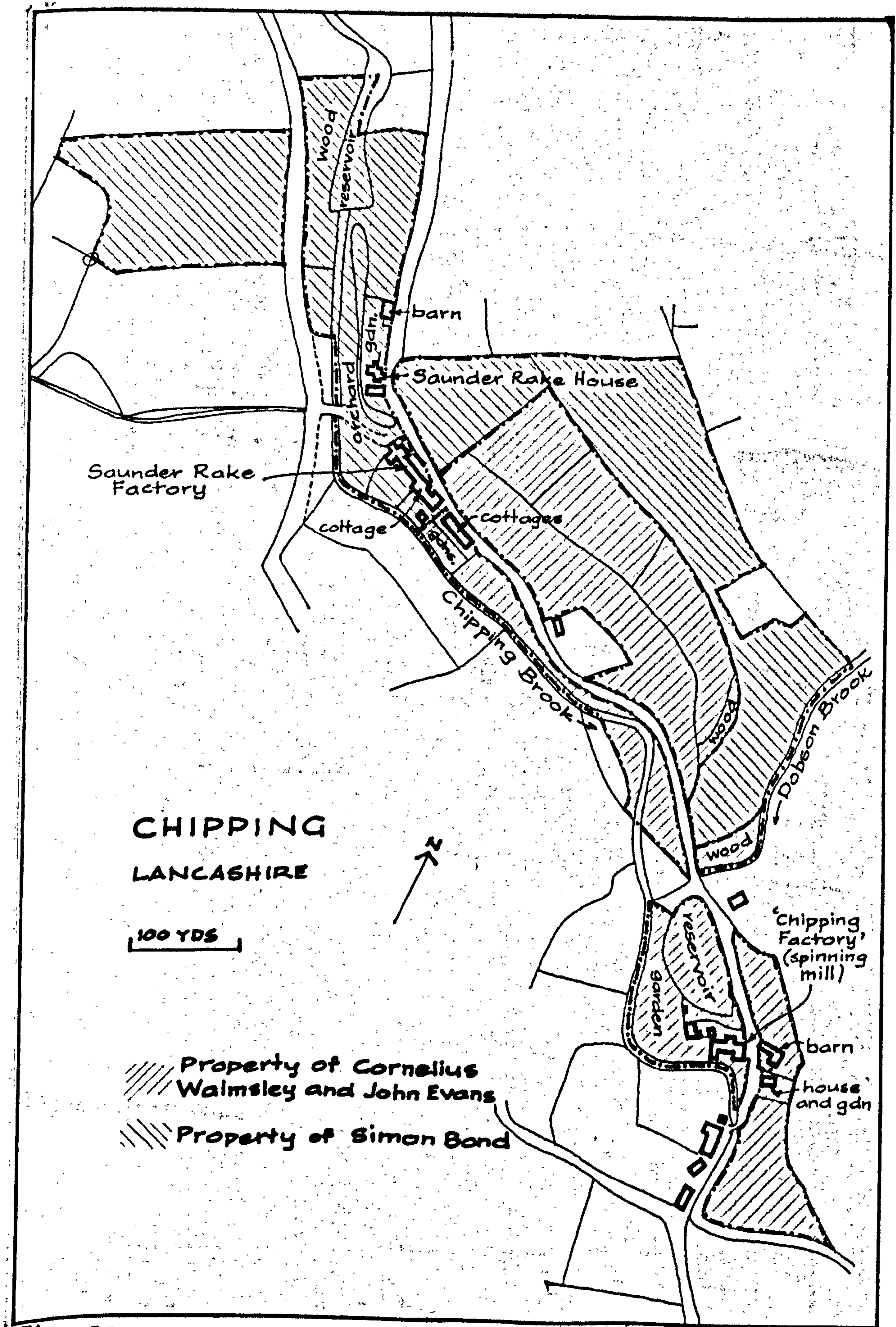


Fig. 13.

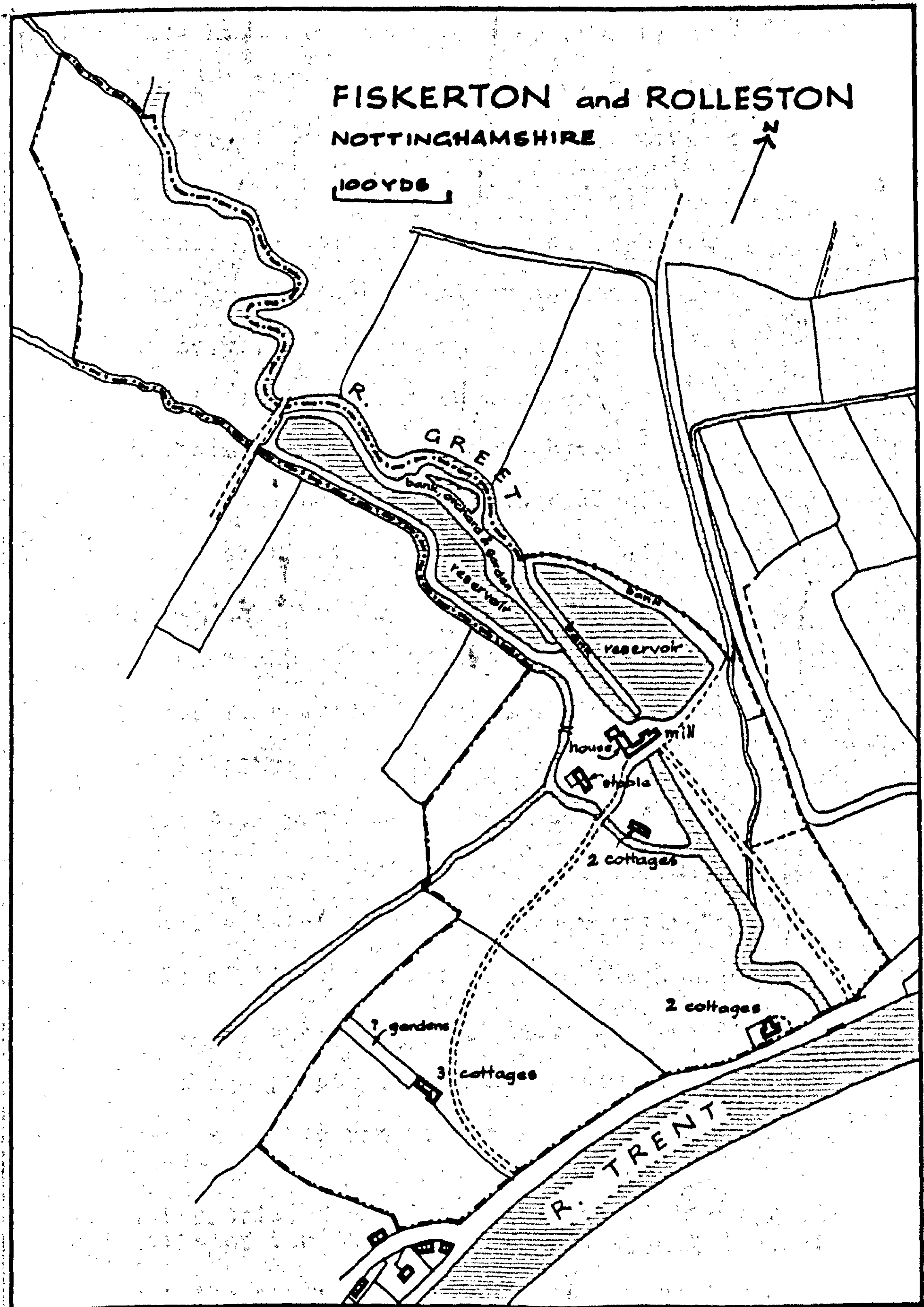


Fig. 14.

workforce management was often involved. The majority of housing may have been located away from mills because of a preference for low value land, but even this motive may have been secondary to a preference for land of secure tenure. It might be said that low value and security of tenure generally went together. as the majority of ownership disputes would concern the more valuable valley bottom land with all the attendant complications of easements and water rights. The disputes between the Robinsons, owners of a group of cotton mills in the Leen Valley and Lord Byron,¹ and between Arkwright and the Duke of Rutland following Arkwright's unauthorised alterations to the course of the river Wye at Bakewell² are two instances of the difficulties inseparable from the ownership of valuable valley bottom land.

Evidence from which to judge the weight of the preference for freehold sites for cottages is not extensive, but it is sufficient to provide an indication of the importance of security of tenure. It appears that the majority of early country mill estates consisted either entirely of freehold or entirely of leasehold land.³ In the Tithe Survey for 96 estates, 16 were found to possess land of both tenures as well as cottage property. They appear to be sufficient to demonstrate a marked preference for freehold sites for

1. J. D. Marshall, "Early applications of steam power - the Cotton Mills of the Upper Leen" Trans. Thoroton Soc., LX (1956).

2. The details of Arkwright junior's compromise appear in a new lease of water rights from the Duke dated 23rd Dec. 1786. Arkwright MSS (Chatsworth Muniments, ARK/39)

3. Persons deemed to possess freehold are, for present purposes, those whose names are entered in the "Landowner" column of the Tithe Survey apportionments, excluding those specifically stated to be lessees, the latter being owners of a life interest only. It is intended to distinguish freeholds of inheritance from inferior species of tenure in general.

cottages:

Table 9

PROPORTION OF FREEHOLD LAND AND PROPORTION OF FREEHOLD COTTAGE SITES IN 16 MILL ESTATES OF MIXED TENURE, c.1840

Estate and proprietor	LAND			% freehold	COTTAGE SITES	
	a.	r.	p.		Number	% freehold
Cromford (Arkwright)	2,022	1	20	99%	263	100%
Habergham Eaves (Dugdale)	314	3	24	76%	107	100%
Styal (Greg)	251	1	29	28%	67	61%
Cressbrook (McConnell)	241	2	8	79%	62	97%
Buglawton (Vaudrey)	55	0	11	47%	17	100%
Bakewell (Arkwright)	41	2	18	43%	51	92%
Walmersley (Kay)	24	2	0	67%	73	100%
Tintwistle (Steele)	20	0	18	24%	30	100%
Chadderton (Taylor)	16	3	5	7%	2	0%
Pleasley (Hollins)	15	1	24	96%	10	100%
Padiham (Helm)	14	2	29	18%	19	95%
Royton (Travis)	14	0	30	88%	66	100%
Macclesfield (Bayley)	10	0	31	25%	14	100%
Brough (Pearson)	9	1	25	36%	2	0%
Ashbourne (Cooper)	5	3	1	96%	7	100%
Colne (Bramley and Alcock)	1	2	9	54%	12	58%
Arithmetic mean percentages:				55%		81%

The arithmetic mean proportion of freehold land in the evidence for 16 estates was only 55%, but the effect of the policy adopted by proprietors in siting their new cottages raised the corresponding proportion for cottage sites to 81%. As some cottages were acquired together with the land on which they stood, a higher proportion than the latter figure is hardly to be expected.

(11) Site selection policy: the case of the Greg estate at Styal.

Few estates are better suited to an investigation of the influences governing the selection of sites for cottages than that of Samuel Greg at Styal in the north of Cheshire. This estate was based on a large mill founded in 1782.¹ The extent of the estate in 1841 and the dates of acquisition by Greg of the various holdings of which it consisted are shown in fig. 15 (p. 98). At that time it had grown to over 250 acres, of which a quarter was freehold of inheritance; it included 66 cottages, nearly two thirds of which stood on this freehold land.²

There is a possibility that the potentialities for the establishment of a cotton mill at Styal may have been brought to the attention of Samuel Greg by George Faulkner, the son of a tenant farmer occupying a leasehold estate in Styal under the Earl of Stamford.³ Faulkner's farm was one of the earliest landholdings to be absorbed into Greg's property.⁴

As Greg was a newcomer to Styal in 1782 with no ancestral property there, all his acquisitions of land there must be regarded as purposeful.⁵ Both he, and his eldest son, Robert Hyde Greg, followed a consistent policy of investing their profits in land. From 1782, Greg gradually acquired

1. See p. 52, footnote 3.

2. T. S. of Pownall Fee (5/327)

3. George Faulkner, born 1754 probably at Styal, was described in 1790 as "of Balbriggan near Dublin." It is not impossible that Greg, an Irishman, may have heard of Styal through Faulkner. Stamford Leases: leases of Faulkner's Farm (John Rylands Lib., J. R. Charters 4156, 4253.)

4. Suit Roll of Manor of Bollen cum Norcliffe (J. R. Charter 4312).

5. Greg's father was a man "of good position in the neighbourhood of Belfast, who sent two of his sons to push their fortunes in England." J. Morley, in Macmillan's Magazine XLVIII (1883).



leases of a number of small landholdings under Lord Stamford. The sequence and terms of the various leases had a considerable bearing on his building decisions. In his dealings with the Earl, Greg was treated on the same basis as the Earl's tenant farmers. Apart from the initial lease of the mill site, all his leases were for three lives, and leases later granted to Robert Hyde Greg were of the same type. Lord Stamford was in the custom of charging his tenants an entry fine, an annual rent, and a heriot on the death of each named life. The initial lease of the mill grounds was granted in 1784 on completion of construction of the mill.¹ This first lease appears to have been only for a term of seven years,² a most unsuitable term for industrial purposes, though far from abnormal as an agricultural lease. Later holdings, taken by Greg on leases for lives, were firstly Gibbs' Farm in 1785, or rather three parcels of land under that name, fragments of a once somewhat larger holding;³ and Faulkner's Farm, of which Greg first took a sub-lease in 1786.⁴ Additional Gibbs' land may have been taken in 1792, but the evidence is unclear.⁵ At this period, with about 44 acres of land mostly held under leases for lives, Greg's acquisitions ceased until 1802. The

1. Greg Papers: Letter from Greg to Worthington, 3rd Nov. 1799 (C5/8/4)

2. The renewed lease of 1791 was described as "but a prolongation of the former one, conformable to a contract expressed therein." (Ibid.).

3. J. R. Charters 4199, 4240.

4. Suit Roll of Manor, op. cit.; Greg's Land Tax payments for Faulkner's Farm are first recorded in 1787: Land Tax Returns for Pownall Fee (Ches. R. O., QDV/2).

5. Land named as "Part of Gibbs" first appears in the 1792 Land Tax Return, although it is clear that Greg had long before leased land of that description.

dormant period corresponds neatly with the years of economic crisis and setback in manufacturing industry.

The only land in Styal not controlled by Lord Stamford was the Oak Farm, or Curbishley, estate,¹ and on purchasing it, probably in 1802, Greg's estate entered a distinct second phase. At the same period he also took a lease of the Toad Lane estate,² probably because it lay between the two parts of his newly acquired Oak Farm freehold.

In 1811 or 1812 Greg took a sub-lease of the Quarry Bank Farm under James Shaw.³ Many other farms were leased from the Earl during the later history of the property through most of the nineteenth century, but these later acquisitions do not call for consideration as they have no bearing on the building decisions of Greg or his son.

Apart from the initial lease of the mill site, it emerges from valuation evidence that successive acquisitions of leasehold land were generally in descending order of value. Table 10 (p. 101) sets out the mean values per statute acre of the agricultural land in each tenancy according to a valuation in 1829.⁴ The true values of the holdings including

1. The Oak Farm or Curbishley was freehold from 1422; although nominally held of the Earl of Stamford and John Trafford in the late eighteenth century it was a freehold not reverting to the lords. See Finney, MS History of Wilmslow (1785, Ches. R. O., DFF/38). The date of Greg's acquisition of this estate is not beyond dispute, but it must fall between 1799 and 1804. See Suit Rolls of Manor (J. R. Charters 4313, 4314; Land Tax Returns; Lazenby, "Social and Economic History of Styal" M.A., Manchester (1949), 114.

2. Greg first paid Land Tax on this estate in 1802.

3. Quarry Bank Farm, or Shaw's estate, was included in the assessment of Greg's Property Tax for 1812 but not for 1810. Greg Papers: "Mill and Quarry Bank Memoranda" p.3: Duty on Property (C5/3/1).

4. Clarke's Valuation (C5/6/1).

buildings would be higher, though hardly comparable for present purposes. The value per acre of Gibbs' Farm is a little inflated by the fact that in 1829 part of it was in use as a garden to Quarry Bank House, but otherwise the values given apply strictly to land in agricultural use. In all cases the freehold value of agricultural land was estimated at 30 years' purchase.

Table 10.

VALUES OF UNDEVELOPED LAND IN GREG TENANCY UNDER
THE EARL OF STAMFORD, 1829.

Tenancy and date of acquisition	Land area exclusive of building sites	Mean value per statute acre		
		a. r. p.	£	s d
No. 63: Mill site and riverside land (leased 1784)	13 0 6	61	16	0
No. 28a: Gibbs' Farm (leased 1785)	15 1 32	67	4	0
No. 51: Faulkner's Farm (sub-leased 1786)	11 1 14	62	8	0
No. 17: Toad Lane (leased 1802?)	22 0 21	54	6	0
No. 29a: Quarry Bank Farm (sub-leased 1812?)	51 2 32	54	0	0
No. 34: Davenports (leased 1814)	39 0 15	52	16	0
Nos. 24, 31, 32, 33b. (leased pre-1829)	131 0 12	40	10	0

A valuation at this late date rather than earlier in the period of Greg's acquisitions has the disadvantage that it may be affected by Greg's own improvements, which might partially account for the descending values of the more recent acquisitions.

Building work commenced in 1782 with the mill, and, in the years immediately following, Greg completed his own mansion, Quarry Bank House, and five smaller houses in the mill grounds.¹

The first new building constructed after the acquisition of Gibbs' and Faulkner's farms was the apprentice house. This was built in the period 1786 to 1790,² at a time when Greg had three holdings of leasehold land at his disposal from which to select a suitable site. His first option was the mill site, then on a lease for seven years subject to an agreement for periodic renegotiation, the initial term of which was just about to expire.³ Greg may well at that time have foreseen harsh terms on its renewal,⁴ and decided not to make inessential improvements there. His second possible choice was Gibbs' farm, leased to him in 1785 for three lives aged 27, 40 and 56.⁵ His third possible choice, Faulkner's farm, was then on a lease granted to Mary Faulkner and her two sons in 1755⁶ with Greg as an undertenant since 1786.⁷ The ages of the three Faulkner lives in the head lease in 1785 were 31, 34 and under 70 years.⁸

1. Buildings mentioned in the 1798 lease in a manner implying that they were in existence in 1791 and probably contemporary with the mill. (J. R. Charter 4275).

2. Described in 1790 as a "dwelling house lately erected by Samuel Greg and uses as an habitation for his apprentices" (J. R. Charter 4253).

3. Letter from Greg to Worthington, op. cit.

4. The terms of the 1791 renewal are not known, but in 1798 they were a fine of £1000, an annual rent of £80 and heriots of £5, the latter lease being the first lease for lives of this property.

5. J. R. Charter 4240.

6. J. R. Charter 4156.

7. Suit Roll of Manor (J. R. Charter 4312).

8. J. R. Charter 4253.

Gibbs' and Faulkner's farms were clearly of about equal security, assuming normal expectancy of the unexpired lives. Security in each case was far superior to that of the mill site. Greg decided to build the apprentice house on Faulkner's farm, probably influenced also by the interest of the Faulkner brothers whom he had taken into his business, it appears, at a managerial level.¹ When a new lease came to be granted to Greg as tenant in chief in 1791 following the death of Mary Faulkner, Matthew and George Faulkner were named lives in the new lease together with Greg himself.²

It appears from a comparison of land values field by field that the choice of the particular plot of ground for the site of the apprentice house within Faulkner's farm fell upon the cheapest corner. Fig. 16 (p. 104) shows the values of the surrounding fields per Cheshire acre³ as valued in 1829. Values within Faulkner's farm evidently decrease towards the south, and the southernmost corner was, accordingly, chosen.

With the purchase of the freehold Oak Farm in 1802⁴ Greg's property entered a second phase of development, which included a large amount of cottage construction.⁵ The first eight

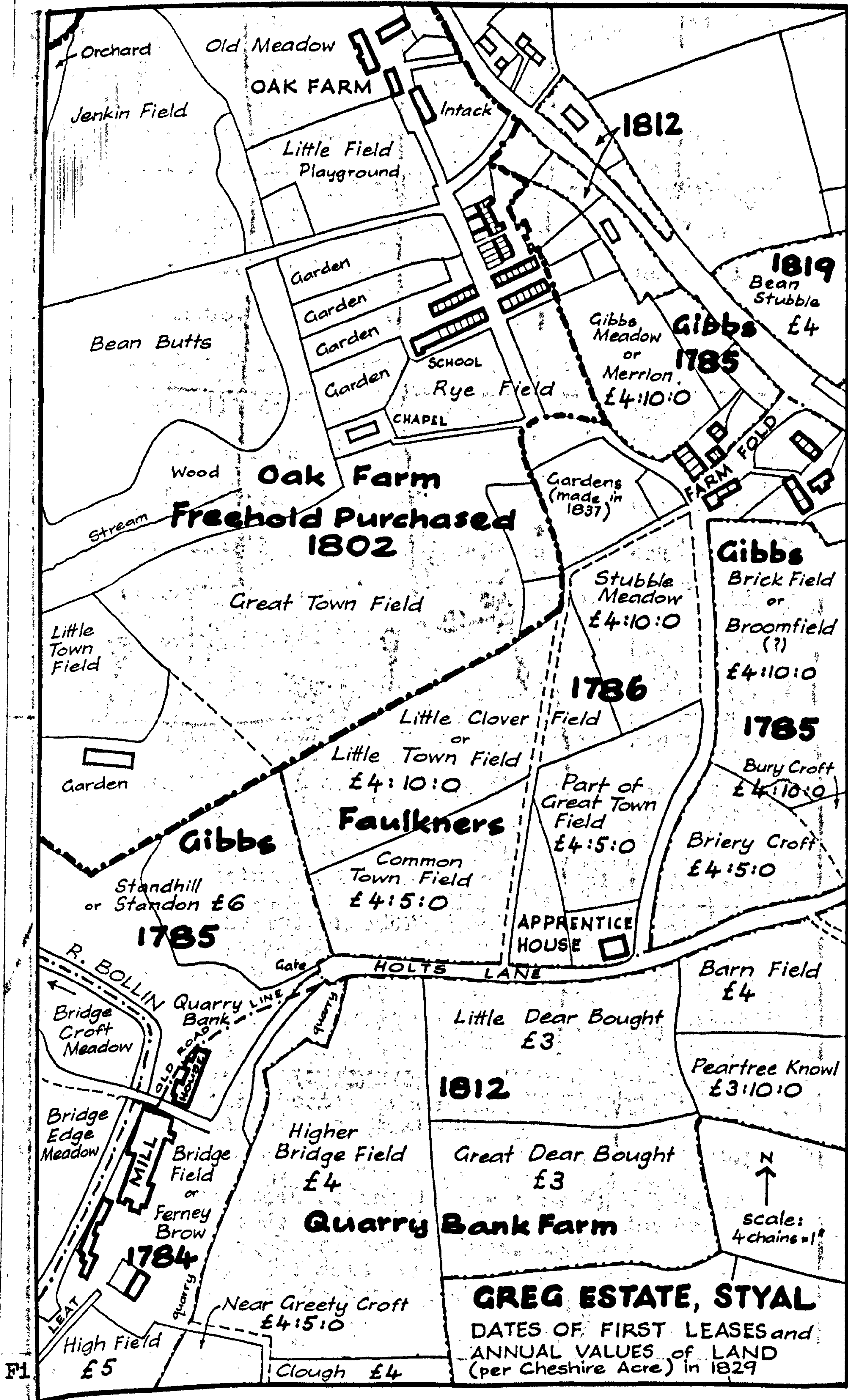
1. Matthew Faulkner (elder brother of George, see p. 97, footnote 3) was described in 1790 as "of Styal, Cotton Manufacturer" (J. R. Charter 4253). In 1798 he was referred to as a servant or workman of Samuel Greg, living in a house in Bridge Field close to the mill (J. R. Charter 4275).

2. J. R. Charter 4253.

3. The Cheshire acre here used is that based on eight yards to the linear perch; one Cheshire acre is therefore 2.16 statute acres.

4. Assuming the Land Tax evidence to be reliable: see p. 100 footnote 1.

5. Some old cottages in the Farm Fold were included in the leases of Gibbs' and Faulkner's farms. Greg repaired these but added no new ones. The Farm Fold was perhaps a fragment of a once more substantial settlement associated with the field name "Town Field" immediately adjacent to the south, lying partially within the isolate freehold Curbishley or Oak estate.



cottages on the Oak Farm were built in 1806¹ and four larger cottages were added probably soon after 1810.² Finally, in 1822 and 1823 the four parallel terraces of 27 cottages with cellars and one house were added.³

If, as it appears, the Oak Farm was acquired by Greg in 1802, it requires to be explained why the construction of cottages did not commence until 1806. There may have been both general and particular reasons. As a larger mill, the Quarry Bank mill did not become affected by the 1802 Apprentices Act until the middle of 1804,⁴ and Greg may only have decided belatedly to consider building new cottages after this date. It is also possible, in this case, that the presence of a sitting tenant delayed his building decision. In 1804 and 1805, following a revision and updating of the Land Tax lists, the Oak Farm is recorded as owned by Greg but occupied by James Bayley. Bayley's name disappears from the Land Tax records for 1806. It may well be that Greg acquired the Oak Farm subject to a tenancy which was not immediately terminated.

The new housing on the Oak Farm was built on Rye Field. Assuming from the evidence of comparable land values that it is likely that Rye Field was worth about £4 10s per Cheshire acre as agricultural land at 1829 values, it is clear that a

1. Partnership Book (C5/1/2/2).

2. These additional cottages had not been built by the time of Greg's 1810 Land Tax assessment (C5/3/1), but they existed in 1822 (C5/1/2/3). An early date in this period appears probable.

3. The first fourteen of the 27 cottages with cellars are entered at the commencement of the Cottages Account in 1822, and were probably the reason for opening this account in the company's books. The next comparable expenditure, almost certainly refers to the house and the remaining thirteen cottages. (C5/1/2/3.)

much more expensive site was chosen than the available cheap land at £3 per Cheshire acre on the Quarry Bank or Shaw's farm, land which would also have provided a site much closer to the mill. The reason for building on part of the Oak farm rather than on the fields of low value ironically named Great and Little Dear Bought was evidently the insecurity of Greg's sub-tenancy of the latter farm. By 1829 it hung by one surviving life, aged 64.¹ Greg appears to have considered improvements there at one stage, but his son dissuaded him. "Will you lay out anything on James Shaw's farm?" R. H. Greg asked his father; "If so, you may pay for it again before the year is out. The loss is small, but the vexation serious."² The Gregs evidently considered there would be no problem about obtaining the head lease following Shaw's death, but they were under no illusion that the Earl would not take the opportunity of rack-renting them on their own improvements. The remark of R. H. Greg quoted above dates from 1829, after the completion of the new village, but similar reasoning is likely to have applied with greater force earlier in deciding the site of the village.

When Robert Hyde Greg built Norcliffe Hall in 1833 he selected for his site the detached part of the Oak Farm. He included the leasehold Toad Lane farm in his private grounds as a deer park, but constructed no buildings there. From the decisions on the choice of site for the apprentice house, the 40 cottages and finally Norcliffe Hall, it is clear that tenure came before all considerations of land value. Although

1. Woodward's valuation, item 29a (C5/8/13/9).

2. Letter from R. H. Greg to Samuel Greg, 26th Sept. 1829 (C5/8/13/22).

the value of land in Styal was, furthermore, generally high,¹ it appears that the cost of land was not a large element in the cost of providing cottages. The 40 Oak farm cottages, four of which were of three storeys and 27 of which had cellars, cost a total of £4,800 to build in the period from 1806 to 1823;² the value of the freehold of the field chosen for their site was only £316.³ Although this was an unusually large site, at about 600 yards per cottage, the land cost only accounted for about 6% of the total value of the development.

It thus appears that the Gregs' choice of building land was a matter of simple principle. When a choice was not governed by technical requirements, as in the case of the mill itself, the tenancy or landholding would be chosen in accordance with maximum security of tenure; then the particular building plot, in accordance with land values within the chosen holding; and finally, the buildings laid out in accordance with principles of architectural economy yet to be considered.⁴ The adoption of uncompromisingly economic principles in planning can hardly have been unusual amongst industrial estate owners.

1. The mean for Styal as a whole was £40 per statute acre in 1829, including some moss. The mean for land occupied by Greg was then £63 per statute acre. (C5/8/13/9).

2. C5/1/2/3.

3. Assuming the annual value of Rye Field as agricultural land in 1829 to have been £4 10s per Cheshire acre, and the freehold value calculated at 30 years' purchase.

4. See Chapter 3 below.

CHAPTER 3.

HOUSING COSTS AND DEVELOPMENT

Part 1. Empirical evidence of housing costs

(1) Sources of evidence compared.

Evidence is available from a number of sources for the costs incurred in building cottages in the period of the Industrial Revolution. It is not, however, a straightforward matter to combine the available evidence in a single index of building construction costs. Different classes of housing development were not always comparable. Some of the available evidence refers to cottages built by their occupiers, some to cottages built by speculators, and some to cottages built by various larger classes of investor, including landowners and industrial proprietors. The sums likely to be included in an account of cost would be different in each case, so that cost evidence from one source would appear to contradict that from others.

In all classes of development a large part of the cost of building is likely to have consisted of the prime cost of purchasing materials, used or wasted, and paying wages to the craftsmen and labourers employed. In addition to these common factors there were in some cases additional expenses due to supervision and other overheads, such as the cost of storing and protecting materials. There was also the profit

due to a master craftsman or contractor employing his own capital in the interval between the commencement of work and the payment by the building owner, or, alternatively, the building owner's additional loss of interest on his capital if he decided himself to finance the work in progress from the start. In an assessment of total costs, it would be necessary to include these costs over and above the prime costs of labour and materials, though they might vary somewhat in various classes of building work. Many early references to the cost of building cottages state a sum without any explanation of what is, or is not, included.

Evidence for the costs incurred by labourers building cottages for their own occupation may be particularly misleading as an indication of the cost to an industrialist or landowner of building similar small cottages. It was the opinion of Thomas Bernard, writing in 1797, that the cost of building cottages for their own use experienced by the poor in rural communities were very unrepresentative of the costs experienced by members of other social classes. "Something," he wrote, "may be deducted for things done by the labourer himself, or family, at extra hours, or by some of his neighbours, particularly in carriage, something for materials at an under price, and for favour, which workmen can and will shew the poor, in the price of work done. It seems to be a fact, that they can contrive to build cheaper than the higher classes of life. Of four cottages near Aylesbury, built about eighteen years ago with my permission on the waste, the cost was from £20 to £30 each, including the walls of the gardens. They are good habitable dwellings."¹

1. Communications to the Board of Agriculture (1797) I, Appx., 410.

This illustrates two methods by which rural labourers building for themselves achieved low-cost cottages: by failing to take account of the value of their own labour, and by obtaining materials and skilled help at subsidised, or charity, rates. There may have also been an element of barter, by agreement or tacit understanding, perhaps of the cottage owner's labour as a form of payment for assistance or materials, for which no money payment would arise or be remembered when answering questions about the cost.

In many cases the poorer sort of rural labourers were said to have built cottages for themselves for very much less than the £20 to £30 mentioned by Bernard. References to the cost of cottages of the lowest class are sometimes found to refer to materials only, implying the probable fact that they were built entirely by the labour of poor squatters. Part of the low cost is to be explained by the use of mud walls and thatch, the occupants being concerned to achieve the utmost initial economy, heedless or unaware of maintenance difficulties in the future. As late as 1840 cottages were reported to be built in some parts of Gloucestershire for as little as £10, or in Devon for £5.¹ It would be impossible to use these specimen "costs" in any meaningful comparison with the costs experienced by other classes of persons building cottages. Many were built of impermanent materials. Spare-time work performed by neighbours for no payment, debts allowed to stand for a period without interest being demanded, or, at the lowest level, materials taken from the parochial waste without any

1. Sanitary Inquiry, Local Reports, England and Wales, (P. P. 1842, XXVII), 15, 97.

payment, all involved subsidies not available to other classes of builder. Public opinion sometimes rebelled against these subsidies; Arthur Young described squatters at Chattris whose cottages "did not cost them more than £10 to £15;" but the complaints of those whose common rights were being infringed finally put a stop to further building.¹

If, as it appears, one cannot use evidence of cottages built by the agricultural labouring class as a guide to the cost of cottages in general, perhaps better guidance might be obtained from consideration of the work of small urban building speculators and the terminating building clubs. Chadwick's Sanitary Inquiry included a very full survey of building costs in about 1840 in a number of Poor Law Unions in the manufacturing districts dominated by urban building.² Three grades of cottage were distinguished at mean costs of £40, £64 and £90, corresponding to rent levels of 1s 3d, 2s 3d and 3s 6d per week.

There are reasons why cottage building costs in the predominantly speculative urban market ought not to be taken as a precise guide to the cost of similar cottages built by industrial masters. In the virtual absence of any control over standards of construction, speculative builders were able to put up cottages at far less cost than would be possible for an industrial proprietor concerned both with the long-term retention of his investment and with his reputation in the eyes of his insurers. Urban speculative builders were said by Edward Twistleton in 1840 to build "light cottages

1. Annals of Agriculture XXXVI, 584-9

2. Sanitary Inquiry, Local Reports, E. and W., 246. See also Part 4 (pp 183 ff) below.

at comparatively trifling expense." The same witness reported the remark of a builder that "everything hinges on whether you build a cottage to sell or to keep. If you build one to sell, and you do not care about making use of the very best materials, you may run up a cottage for almost nothing."¹ This is perhaps the key to the matter. A speculative builder, building to sell, was only concerned to minimise the future maintenance costs of his cottages to the extent to which he anticipated that his customers would or could consider them; in other words to the extent to which this point entered their thoughts in choosing between what was offered by different builders. Standards would naturally be worse in a "seller's market". Materials might be bought at the same prices and labour paid the same wages by persons building for motives of long-term investment, but the speculative builder's interest lay in the reduction of quantity. An industrialist or landowner building "to keep" was, by contrast, open to persuasion by his craftsmen to use the most substantial forms of construction.² His own advantage in keeping maintenance costs down coincided with the wish of his employed craftsmen to maximise the amount of their own work.

Another difficulty hindering the comparison of building

1. Ibid., 136. For Manchester evidence in support of this view see Sanitary Report, ed. Flinn (1964), 343-4.

2. "As each workman has only to attend to his own business, without any regard to the well ordering of the whole, it is natural to suppose he will endeavour to push in as much as possible of his own particular branch, and of such parts of that branch as, according to the usual prices, he will get the most profit by." W. F. Pocock, Architectural Designs for Rustic Cottages (1807), 21.

costs in speculative and in investment circumstances was that the purchaser of a speculatively built cottage paid a price set by the competition between builders, which might be unrelated to the net costs of materials and labour.¹ The hidden profit of the builder might be expected to rise to the point where competition with artisans' building clubs would commence; the popularity of such clubs implies good profits in the speculative sector.² It is impossible to tell whether slightness of construction made speculatively built cottages cheaper than those of the long-term investor in cottage property, or whether the unknown profit margin cancelled out this questionable advantage. It would hardly be possible to lay down a general rule about the amount of builder's profit normally obtained, which must have depended greatly on the fluctuating state of demand. A profit margin of up to 25% had been regarded as reasonable in mid-eighteenth century London.³

It might be suggested that in the absence of a clear guide to building costs, particularly in the late eighteenth century, some reliance might be placed on the value of the cheaper class of shares in artisans' building clubs; but it is to be

1. J. E. Thorold Rogers, Six Centuries of Work and Wages (1884), 544, blamed the rise of the professional builder for excessive building prices in the mid-nineteenth century.

2. "They prevail considerably among the working people, but more fully among the shopkeepers and better classes of people." E. Ashworth, in Select Committee on the Health of Towns (P. P. 1840, XI), Question 1,875

3. From 12½% to 25% over prime cost was "reasonable that every master should be paid, for the interest of his moneys laid out; for his warehouse room etc.; and for his time, expence and trouble to buy in, attend gentlemen, etc., which when sold in small quantities for repairs, as likewise for day workmens' labour, is honestly worth 25%" B. Langley, London Prices of Bricklayers' Materials and Works (1748), p. 11.

doubted whether these afford even a clear indication of the costs of club cottages, let alone cottages financed in other ways. Building club shares normally fell within the range from £60 to £120, which, it has been suggested, was the sum accumulated by investing 5s to 10s a month for 14 years.¹ Shares in Northwood's Building Society (1781) were worth £120, but the cottages intended to be built by this club were to cost £72 each.² The Amicable Building Society, of the same foundation year, intended its cottages to cost not more than £80.³ Shares in the Droylesden Society were worth only 60 guineas.⁴ The Deritend Building Society, also founded in 1781, intended to build three grades of house costing £70, £140 and £200.⁵ In 1786 the Dudley Arms Building Society had shares worth £50, but in this case the intention appears to have been to build shops.⁶ John Arrowsmith's Building Society in Preston in 1793 based its calculations on a subscription of a guinea a month for 70 months, or £73 10s per share.⁷ The shares in Hawker's Building Society were worth £150 in 1794.⁸ In 1820 the Burnley Building Society valued its shares at £120 each.⁹ If shares were generally equivalent to building costs, these would be very high figures to pay for cottages of the artisan class. Many problems arise in translating share figures into building costs. Shares not

1. S. J. Price, Building Societies, their Origin and History (1958), 102.

2. *Ibid.*, 27

3. *Ibid.*, 28

4. *Loc. cit.*

5. J. A. Langford, A Century of Birmingham Life (1868), I, 201.

6. Price, op. cit., 59

7. *Ibid.*, 61.

8. *Loc cit.*

9. *Ibid.*, 65.

infrequently covered the building not of one, but of two or even three dwellings, in cases where a club member might, for example, build a front house for himself and a back house or two to let off and help to recover his outlay.¹ Building clubs in Manchester were thought to build at the rate of at least $1\frac{2}{3}$ cottages per share. Evidence for this was given by a witness in 1842 who reported, "A gentleman conversant with these subjects informed me that there had probably been, from the commencement, 150 of these building societies. Taking each club at 100 shares of £100 each, there must have been raised in this manner for building cottages £1,500,000; and calculating each house to have cost £60, which is a high average, there has been not less than 25,000 houses erected in Manchester and the adjoining townships."² This view that building club cottages generally cost less than £60 would have to be seen against the fact that the club member's expenditure included the cost of the site, which might in the more congested areas be a considerable fraction of the total cost.

A further difficulty is that building clubs were only distinct from savings clubs for a short period of their history, and it may be doubted whether the sizes of shares after about 1800 always had regard to building intentions. S. J. Price's study of the early building societies shows that from about this date, although "the provision of houses remained their primary objective, ... in growing numbers they opened their

1. S. D. Chapman and J. N. Bartlett, "The Contribution of Building Clubs and Freehold Land Society to Working-class Housing in Birmingham" in Chapman (ed.), The History of Working-class Housing (1971), 238-9.

2. Sanitary Inquiry, Local Reports E. and W., 241.

membership to those whose sole desire was to save money, so that, on the termination of the society, they would receive, not the title deeds to a house worth, say, £120, but a like sum in cash."¹

Despite these difficulties, there are a few instances in which it is known precisely how much club members paid out per cottage. The accounts of the Longridge club, quoted by Price, illustrate the manner in which members paid for their cottages. From 1793 to 1804 this club built 20 cottages, the average cost per cottage for labour and materials being £87. No element of fraud on the members by their officers or employed tradesmen appears in the surviving archives,² though this figure appears extraordinarily high for two-storey back to back cottages. The generally bad reputation of the early building clubs was such that their members cannot always be supposed to have been treated with absolute probity. It would be most unsafe to place confidence in building cost evidence of this class.³

1. Price, op. cit., 41.

2. Ibid., Chapter 3 *passim*.

3. The elements of pure savings and the lottery combined in early building clubs created a situation in which members discovered a means of gaining returns far beyond that permitted by the Usury Laws. The early ideal of mutual support and encouragement gave way to a system in which members competed with each other, offering competitive discounts on their share entitlements to obtain early payment. It was said in 1842 that "a day is fixed when the amount is to be tendered for, and those who will make the greatest sacrifice, or allow the largest discount, may obtain the amount." (Sanitary Inquiry, Local Reports, E. and W., 241) Improvident members would sometimes forgo up to 20% in their anxiety to receive early payment of their shares. As such large discounts created a large net loss to the unfortunate investor unable to wait, members came to use building clubs as a method of profiting from each other's improvidence. By the mid-nineteenth century discounts of as much as 50% were not thought abnormal. (See E. A. Wurtzburg, Acts Relating to Building Societies (1886), 4, 15ff.) There is no necessity to suppose that building clubs flourished by virtue of economical building or service to their members.

The only safe view at this stage appears to be that early evidence of the cost of constructing working class cottages ought to be treated with the greatest caution, and that evidence of one class ought not to be used as an indicator of the costs experienced in another class. Common elements of labour and materials costs must underlie all classes of cost evidence, but they tend to be concealed. Evidence of costs for comparison with those of industrial cottage owners ought only to be taken from the work of persons in similar circumstances. Landowners' cottages and those belonging to others whose interest in building was one of long-term investment, such as canal or turnpike companies, are probably the only reasonable parallels with industrial cottages. There is likely to have been a tendency common to the latter classes to regard the cost of a building as simply equivalent to the sum of materials and labour, as the managerial organisation and other elements of overheads are likely to have been in existence before being required. There is likely to have been a similar view of constructional standards, as the same calculation of the optimum balance between initial capital expenditure and future annual costs and returns might well be made.

Some local variability of cottage building costs is to be anticipated even if the evidence consulted is confined to the class of substantial building investors such as landowners and manufacturers who might be supposed to have possessed a capacity for management and the foresight to see the advantages of substantial construction in the long term. The unevenness of local materials costs may have been more noticeable in the

earlier period of the Industrial Revolution than later in an age of much improved transport. Plymley remarked in 1803 that "even where all the materials are bought, the price will differ so much, according to general and local situations, that accuracy may be unobtainable."¹

1. J. Plymley, General View of the Agriculture of the County of Salop (1803), 111.

(11) Some evidence of the cost of building cottages.

The building cost examples of cottages built by landowners and manufacturers may perhaps be taken together as similar classes of evidence. The detailed building accounts in the ledgers of Evans and Company of Darley Abbey suggest that to a manufacturer or a similar long-term investor in cottage property the costs of building were regarded as simply the sum of prime or factor costs. Overheads were ignored. The valuation of a building was taken to be its cost of construction plus the value of the site.

Changes in the prices of materials and labour are likely to have followed the general prices index, but building costs may have been slow to respond; the slowness of building work and the possibility of using stored materials would tend to smooth out year by year fluctuations. It appears not to have been unknown for a dozen or so cottages to take two or three years to complete, as manufacturers, at least, organised their building work.¹

It would also be difficult to judge, without empirical evidence, whether building costs would tend to move more or less than general prices over a long period. From the 1770s to the 1810s general prices nearly doubled;² but the price of

1. There is clear evidence that the cottages built by Evans and Company at Darley Abbey were built as slowly as this, in the recorded dates of payment for labour and materials.

2. Decennial averages based on Phelps Brown and Hopkins' index are: 1770-9 = 100; 1780-9 = 102; 1790-9 = 124; 1800-9 = 123; 1810-9 = 199. "Seven Centuries of the Price of Consumables" Economica (1956).

timber, being largely an imported article the supply of which was disrupted by the effect of war on the Baltic trade, appears to have far exceeded this increase.¹ Building prices might therefore have been expected to have risen by more than 100%, unless changes in design and the substitution of cheaper materials managed to create counterbalancing economies. Suspended floors of gypsum plaster laid on straw might for instance be substituted for floorboarding in some districts. The view has been put forward by Prof. Pollard that in the period from the 1770s to the peak of the wartime inflation the costs of constructing cottages in manufacturing communities rose only by a third or a half, "rising from about £40 or £45 in the 1770s to £60 during the war inflation."²

Prewar period. Some early details of expenditure on cottages on the Bridgnorth to Shrewsbury Turnpike have been discovered by Dr. Norman Mutton, but particulars of the sizes of cottages are not known. In 1765 £23 was paid for a toll house and on another occasion £12 10s for an additional room. In 1779 a toll house and gate at the Wheel Inn, Worfield, were taken down and removed to Shepley Common, £50 being allocated for the work. On another occasion, a small house, perhaps a single room, was to be built for not more than £10. Dr. Mutton's view is that in this vicinity and at this time £25 was probably a realistic cost for a 1-up, 1-down type

1. See Gayer, Rostow and Schwartz, Growth and Fluctuation of the British Economy (1950), for statistics of timber imports; Tooke, History of Prices (1838), gives prices of the principal imported species of structural timber, Memel and Quebec fir.
2. S. Pollard, The Genesis of Modern Management (1968 edn.), 236

type of cottage.¹

An early indication of the cost of labourers' cottages of the 2-up, 2-down type is given by Nathaniel Kent in 1775. Kent estimated that the cost of a pair of brickwork cottages with the upper storey formed as an attic would be £66 each, or, with two full-height storeys, £70.² Built of timber, similar cottages would cost £58 and £66 10s each respectively. Kent's estimates were possibly somewhat high; in 1797, building prices having risen since 1775, Lord Brownlow, a Lincolnshire landowner, commented: "The actual expense of building might be less than stated by that author; ... but he does not include pigsty, or hovel for fuel and cow occasionally."³ Kent's designs, specifications and estimates were also repeated in Dickson's Practical Agriculture in 1808⁴ without any suggestion of their being out of date.

From a study of evidence on landowners' cottages and farmhouses in contemporary literature, Fussell and Goodman came to the conclusion that brick cottages were normally thought to cost "from £50" in the closing decades of the eighteenth century.⁵ Their account of the evidence might be criticised for giving the impression that prices were static, as they do not appear to have considered inflation to have been of any importance. Their exhaustive study of the

1. I am indebted to Dr. Mutton for these unpublished details.

2. N. Kent, Hints to Gentlemen of Landed Property (2nd edn., 1776). Kent was agent to Sir Charles Cocks, a landowner in Gloucestershire and Worcestershire, but it is unclear whether his prices refer to these counties.

3. Communications to the Board of Agriculture (1797), I ii 89.

4. R. W. Dickson, Practical Agriculture (1808), 129 ff.

5. G. E. Fussell and C. Goodman, "The Housing of the Rural Population in the Eighteenth Century" Econ. Review (Hist. Supplement) (1930), 64.

Board of Agriculture reports confirms the paucity of the evidence. They refer to the lack of interest of the writers of the "few books on rural architecture ... mainly concerned with the more paying structures ... than with the cottage costing only from £50, to the design of which but little importance was attached, unless the cottage was intended to be a gatekeeper's lodge or an ornament to a park." Fussell and Goodman refer to cottages at approximately the same cost in the first decade of the nineteenth century, although some intervening rise in prices must be allowed for. £50 before 1793 may be therefore somewhat high.

Fussell and Goodman also made considerable use of some indications of prices for a series of cottages published by Thomas Davis in 1795. Some of the designs illustrated by Davis were "already executed by the Marquis of Bath, part by Joshua Smith esq., and the rest are new designs."¹ Davis claimed that his estimates of "nothing less than £50" for a single cottage was a figure with the authority of long experience in building, but he showed no awareness of fluctuations or currently higher levels at the date of writing, though he did mention that his West of England examples might be less costly than similar designs constructed elsewhere in the country. Davis gave five specimen plain designs, and two ornamental, the first two plain cottages being single ones at £50, the third a pair at £90, and the fourth and fifth also pairs of cottages at £100. The ornamental designs were also

1. T. Davis, "Address to the Landholders of the Kingdom" in Letters and Papers on Agriculture, Planting, etc., Bath and West Society, 11 ser., VII (1795), 294-310.

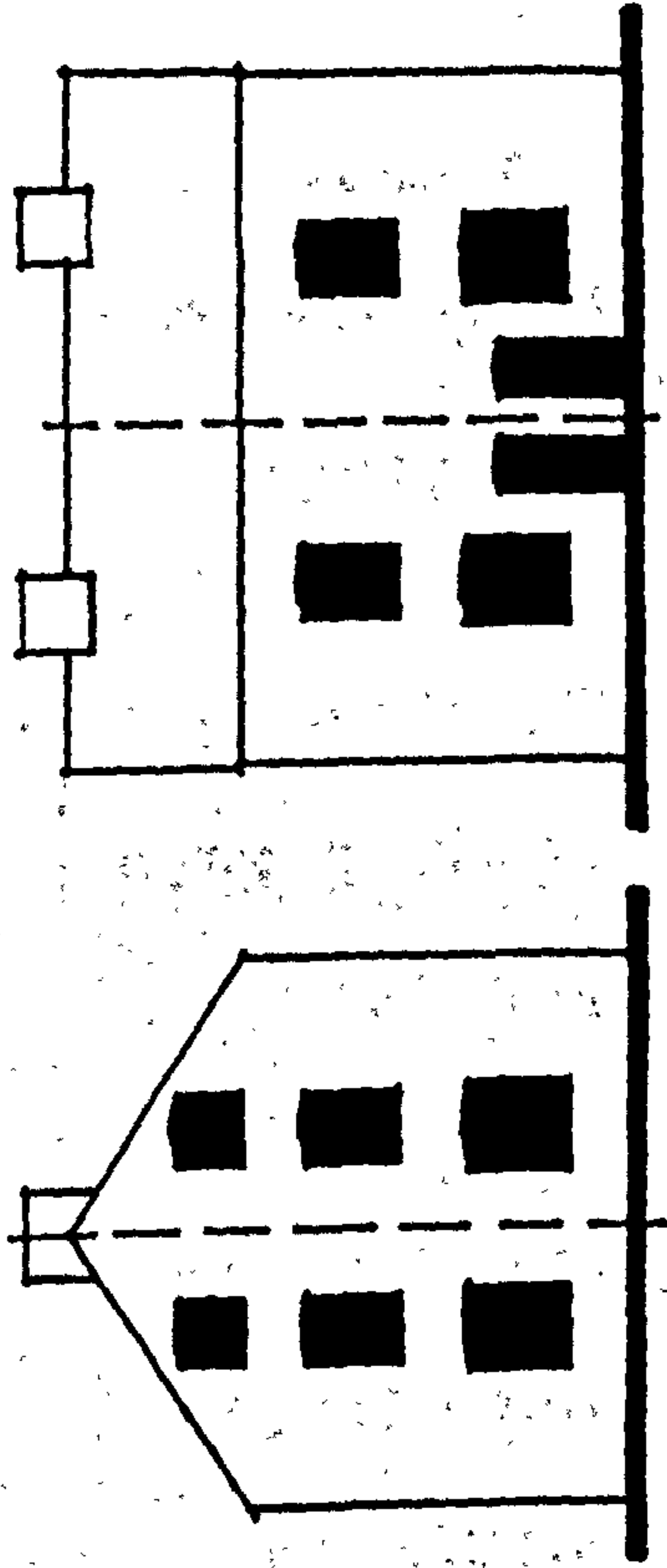
for single cottages at £50 and £70. His object in giving these prices was merely to give a "round sum at which they may in general be executed in the western counties, instead of entering into a detailed estimate of the particulars."

Two examples of the costs of industrial or similar cottages actually built in the prewar period are available. The first is a group of four small cottages built by Evans and Company at Darley Abbey (fig. 17, p. 124). In June 1792 these four brickwork cottages, planned in a cluster, were conveyed from the company to the private ownership of Thomas Evans.¹ On the analogy of the company's later surviving building accounts it is probable that the building account in the ledger for the four cottages was closed and balanced in that month, and the cottages are likely to have been built in 1791 or early 1792. It is certainly evident that the cottages were completed before the beginning of the economic crisis of Autumn 1792. The four cottages were completed at a cost of £177 19s 7d, or £44 9s 10½d each. Each was of rectangular plan, 12ft 6ins by 15ft 6ins internally, and consisted of two storeys and an attic. The structural volume of the group of cottages, as well as it can be estimated because of the uncertainty of foundation depth, appears to be 21,384 cubic feet and the unit cost therefore 1.99 pence per cubic foot.

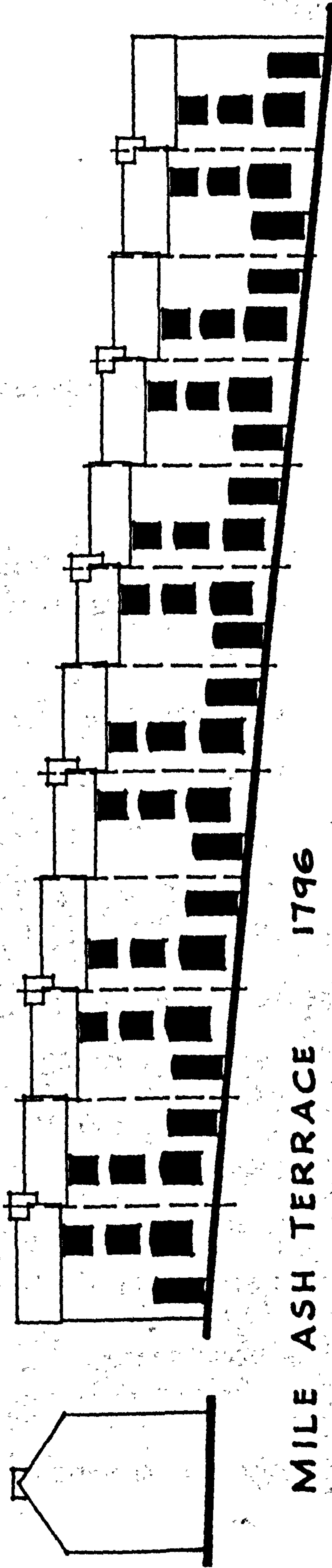
A single cottage of the 2-up, 2-down type was built by Plymley in 1793 in Shropshire for approximately £50. Plymley gives the following description and account of the cost: "The door opens opposite to the jamb of the chimney, to shelter the

1. Evans Papers, "D" Ledger, folio 27 (Derby B. Lib., 162-2-70). These cottages are now named "The Four Houses".

DARLEY ABBEY
EARLY COTTAGES



THE FOUR HOUSES
1792



MILE ASH TERRACE 1796

1:250

Fig. 17.

kitchen fireplace. The chimney is in the middle, to keep the two chambers warm. Neither is a thoroughfare to the other ... the gable ends are capable of containing a window each, large enough to admit good light and air ... the cottage cost perhaps £50; in other situations it may have been built for less at the time; but the wages of masons and carpenters have increased since then. The cover is of blue slates. It is neatly fitted up on the inside, but a fireplace in the larger bedroom was unfortunately forgotten; ... the rooms are small."¹ The indication that the upper storey of this cottage was an attic and that the rooms were small suggests that the structural volume is likely to have been under 5,000 cubic feet, and the unit cost below 2.4 pence per cubic foot. As a single cottage it would be likely to have cost a little more than a terrace, cluster or semi-detached cottage of similar size.

Despite paucity of evidence, the conclusion appears to be emerging that a substantial, plain brick cottage would be likely to cost about £45 to £50 in labour and materials at the close of the prewar period. Evans and Company's cluster cottages at 2d per cubic foot are well supported by comparison with the other slight contemporary evidence; this may be a reasonable prewar rate for groups of cottages in northern

1. Plymley, loc. cit. One reason for Plymley's vagueness about the cost was his recognition that some persons would not account realistically for the full value of materials and labour used. "It is difficult to give any account of the expense of buildings, where all the materials are not bought, and where the person building may have other works going on from which the workmen may be called. In one case the estimate of labour may be erroneous; in the other, it may be difficult to appreciate the stone or the timber."

or midland manufacturing districts.

War period. Insurance evidence provides a possible indication of the value, and, by inference, the construction cost, of manufacturers' cottages at the start of the war period. It is not always possible to distinguish new from old cottages in insurance valuations, but the practice adopted of noting carefully that cottages were "brick or stone, slated or tiled" where appropriate indicates that most of the cottages insured were of comparatively recent date. Sums insured for cottage property were frequently only "rounded" figures, perhaps not to be closely relied on for assessing actual losses.

Evidence for the sums insured for 211 cottages found in 20 insurance policies of about 1795 give figures ranging from about £20 to £100 or more:¹

Table 11

FREQUENCY DISTRIBUTION OF COTTAGE INSURANCE VALUATIONS
UP TO £100 TAKEN FROM 20 INSURANCE POLICIES FOR
MILLOWNERS' PROPERTY, c.1795:

Sum insured per cottage (to nearest £10)	Number of cottages
£20	25
£30	43
£40	46
£50	13
£60	34
£70	20
£80	13
£90	0
£100	17

1. See Table 1, p. 33.

There appears to be some concentration of values around £40 and £60. The mean of values below £90 is £45 3s.

Although confirmatory evidence of the usual valuations of cottages is welcome, it is fortunately not necessary to rely on insurance evidence for the cost of building cottages in the war period. A small range of examples of war period building costs for cottages of known size are available.

(1.) In 1796, Evans and Company at Darley Abbey completed a terrace of twelve cottages in Mile Ash Lane for £837, or nearly £70 per cottage.¹ (See fig. 17, p. 124.) Evans provided his own bricks for this work from kilns about 300 yards from the site. No doubt this permitted some saving in the expense of carriage, but there is no reason to suppose that the bricks, at 28s per 1000, were charged to the building account at anything less than a commercial rate.² These cottages were the same size as the four cluster cottages previously considered (p. 123); their cost, on the other hand, was very much higher, at 3.12 pence per cubic foot.

(2.) In the period from March 1797 to May 1798 Evans and Company built the first half of Brick Row on the site of their recently discontinued brick kilns.³ (See figs. 18 and

1. Evans Papers, "D" Ledger, folios 27, 78 etc. This account was brought forward from the lost "C" Ledger. A few late payments may have been entered in the maintenance accounts after the closing of the building account, but they are unlikely to be of any consequence.

2. E.g. bricks charged at 28s per 1000 in Dec. 1795 ("D" f. 18); Cf. brick sales July 1795 to May 1786, 188,000 @ 28s per 1000 ("D" ff. 16 etc); some supplied to Mile Ash houses at 25s. Other leading industrialists are likely to have accounted realistically also: thus R. Goodwin, manager of Samuel Oldknow's kilns, "sold" bricks to Oldknow and Company at 31s per 1000 in 1804, as to outside customers. Oldknow Papers, Brick Sales Book from 1804 (John Rylands Lib., Engl. MSS 832).

3. "D" ff. 91 etc.: "New Houses in Brick Yard".

19, pp. 129 and 130) The last kiln had been built in May 1796. The new terrace was of unusual design, and included a large schoolroom on the second floor above three of the cottages. There was a separate door and staircase serving the schoolroom, at the end of the terrace. There appear originally to have been two double-fronted cottages of three storeys at the left end of the terrace, or possibly four single fronted cottages; the evidence is ambiguous.¹ The entire terrace cost £958² for labour and materials, or 3.37 pence per cubic foot. The high unit cost may be partly due to a more substantial type of construction in the schoolroom and to the inclusion in the building account of numerous fittings both there and in the larger cottages. The first part of Brick Row is the only part for which a detailed building account is available. It is clear that the schoolroom was fitted with benches and desks, and its floor constructed as a "double floor", probably signifying boarding and counterboarding as in some industrial buildings. Some, at least, of the cottages were provided with built-in units of furniture called "beaufets"³ provided with lockable cupboards and drawers. Other items of joinery included window boards to all the cottages, framed window shutters, shelves, architraves, skirtings, mouldings round fireplaces and

1. These cottages, now seven in number, are described in the Ledger account as five ("D" f. 141). They are also described as "best" and "inferior" houses ("D", Raworth's Account). It appears the first four cottages were originally intended for two double-fronted "best" houses with, as now, three cottages beneath the schoolroom.

2. Balance of account = £995, less "891 yards of ground at 10d" (£37) = £958.

3. Buffets.

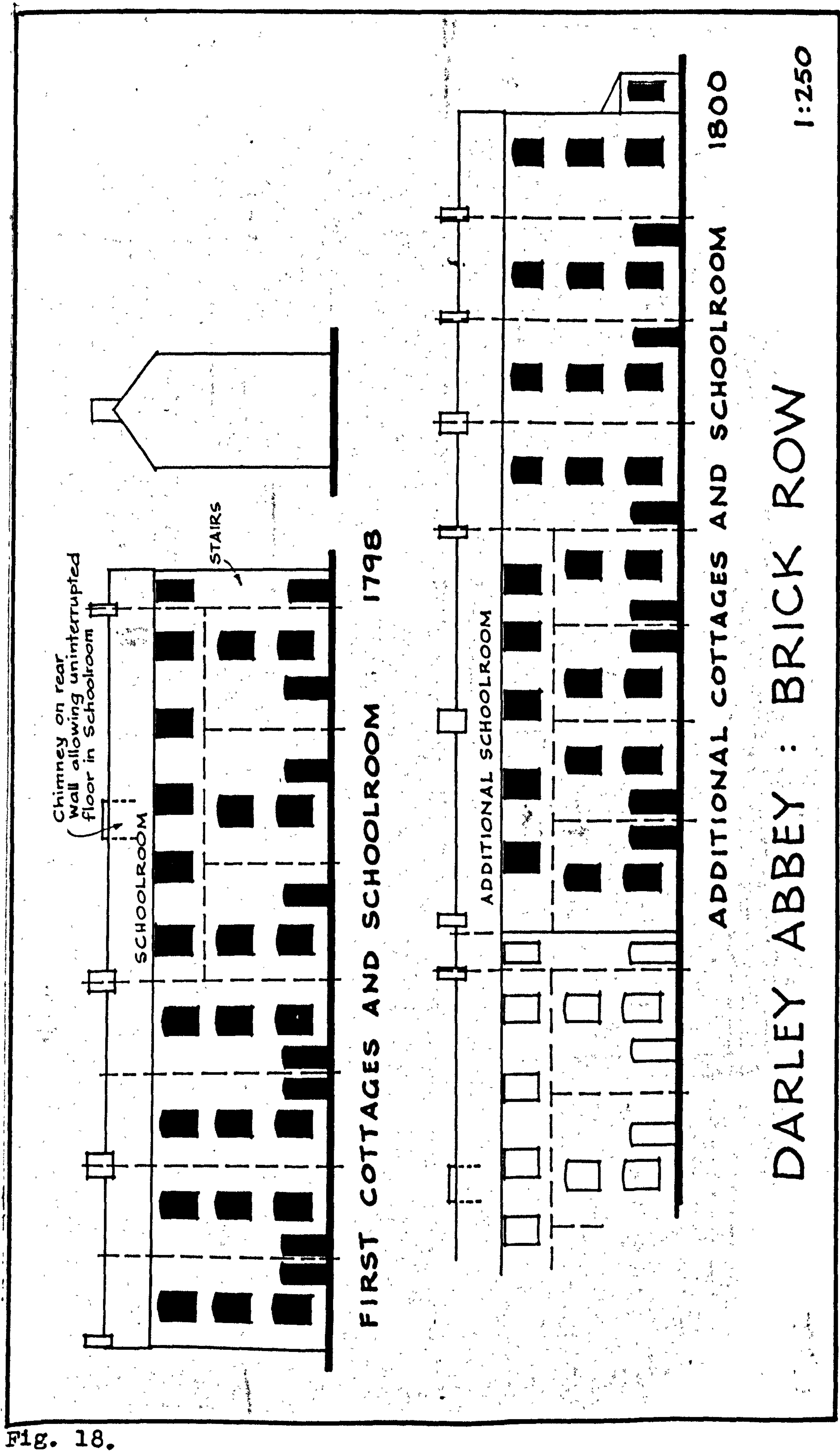


Fig. 18.

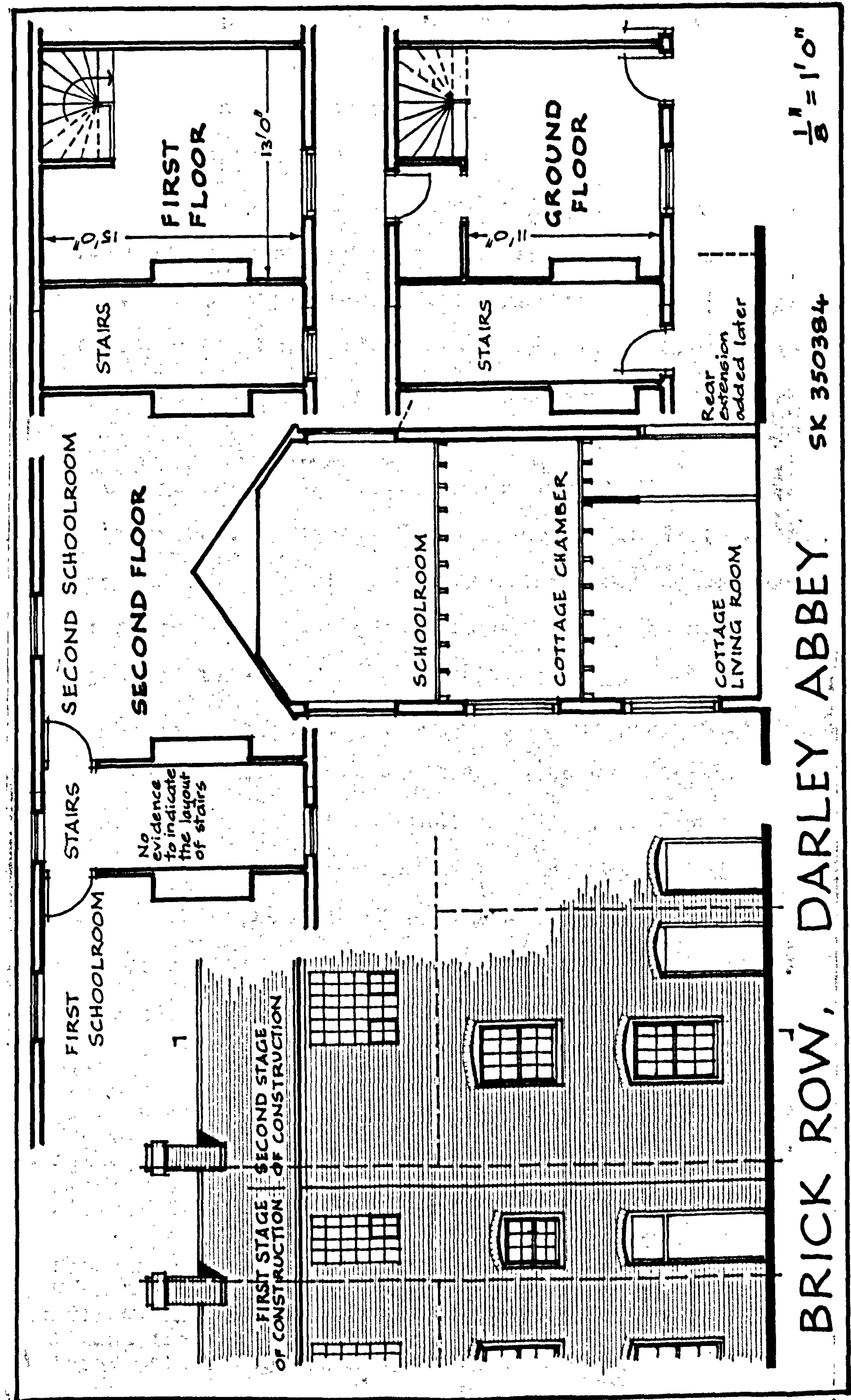


Fig. 19.

"capping" to fireplaces, perhaps signifying mantelpieces.¹

The cost of constructing necessities was also included.

William Raworth's joinery account added £41 to the cost of these cottages, much, though not all, of which can be regarded as an excess over normal standards. Omitting his payment, the cost per cubic foot would have been 3.22 pence. One or two other details of cost appear which are unlikely to have been normal: a number of oak joists and boards were used; stone steps; some external work, including fencing with oak rails and posts; pavings with drains and gratings; gravel paths and gates, evidently for gardens in front of the cottages; and the sinking of a well. Some extra expenses may have resulted from complications of layout necessary to provide an uninterrupted floor area in the schoolroom.

(3.) In 1798, Philips and Company of Tean in Staffordshire built a terrace of cottages and loomshops which came to be known as Kilncroft Row.² The layout of this terrace was unusual with nine "chamber houses" on the upper floor and a number of "houses" with loomshops below. The chamber houses were of four rooms on one floor; most were reached by individual staircases at the rear, the site having a slight fall to the front. The number of "houses" with loomshops on the ground floor is unclear; they appear from records to have been five in number, although seven are referred to locally. The overall plan size is sufficiently clear from the Ordnance Survey, and

1. Raworth's Account, loc. cit.

2. Tean Hall Papers, "Particulars of Property 1774 - 1806" (Staffs C. R. O. D 644/8/1,3,5). "Eight new houses on the Croft and the land" were valued at £1467 9s. Identification of these houses supported by local information.

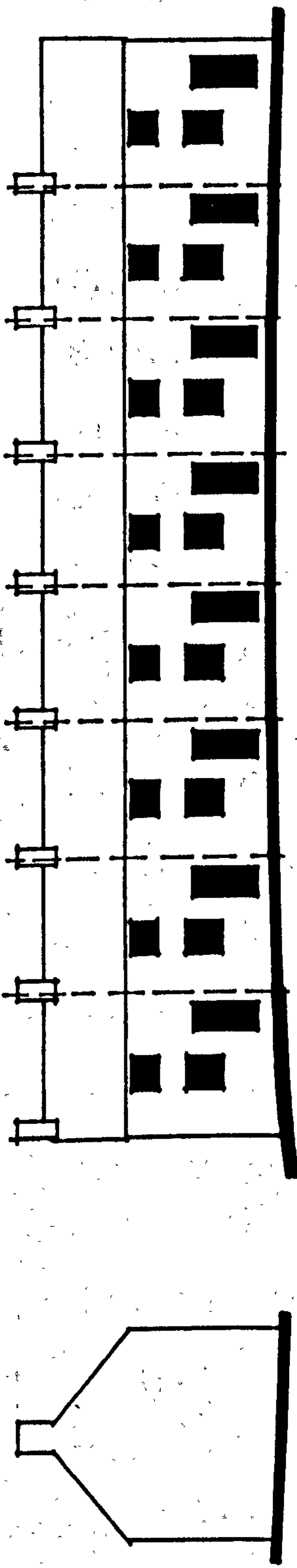
the storey heights are known to have been eight feet.

Assuming construction similar to other early cottages in Tean belonging to Philips and Company, a cost, including the site, of about 3d per cubic foot is indicated.

(4.) In 1799 Philips and Company completed Holborn Row, a terrace of eight small cottages of the 2-up, 2-down type¹ (see fig. 20, p. 133). These cottages were stated to have cost £493, or £61 12s 6d each, giving a cost of 2.62 pence per cubic foot. The evidence for this price is more satisfactory for present purposes than that of Kilncroft Row, as it does not include the site value and the buildings survive; but there may be doubt about the date of the work. It first appears in the Philips archives amongst "particulars of property, 1774 to 1806" under the year 1796, though the date was later altered to 1799. The difference could be important at that very inflationary period.

(5.) The last eighteenth century example to be considered is the second half of Brick Row in Darley Abbey, completed in May 1800 (see fig. 18, p. 129). This, like the first half of Brick Row, was an expensive building, also containing a schoolroom on the second floor, though this second schoolroom used the entrance and stairs of the earlier one. The terrace also contained four single depth and width cottages of three storeys and four similar cottages of two storeys. Judging by the evidence of chimney positions, in this case no attempt was made to provide the school part with an uninterrupted

1. Tean Hall Papers, loc. cit. "Eight New Houses, Lombhill" (i.e. Tombhill).



EIGHT COTTAGES 1799

UPPER TEAN : HOLBORN ROW

1:250

Fig. 20.

floor, The total cost was £844,¹ giving a unit cost of 3.46 pence per cubic foot. It might be expected that the cost of phase two of Brick Row would be comparable with phase one, completed only two years previously, and evidently designed to very similar standards. The rise in cost on a cubic foot basis was only $2\frac{1}{3}\%$. A greater difference might, on the other hand, have been anticipated from the change in the manner of paying for the work. In the second phase, the company relieved themselves of the trouble of supervising work by employing their former brickwork contractor and building surveyor, John Welch, as a general contractor; accordingly, the company did not open ledger accounts for this work. It cannot be said to what extent Welch used his own capital to commence work, or what profit he earned.

(6.) In 1806, Samuel Greg and Company at Styal in Cheshire built their first eight new cottages in the form of a terrace of four with a back-to-back pair at each end, thus creating a plan with two short wings.² (See fig. 21, p. 135.) The building cost £469,³ or 3.8 pence per cubic foot.

(7.) Greg and Company also built a terrace of four three-storey cottages (fig. 21) at some period between 1810 and 1820, but probably soon after the former date. A valuation of these cottages at an early date was £100 each, which might well be a "rounded" figure. If correct, the cost would be

1. The bill of the contractor, John Welch, came to £798; to this must be added £46 for oil, paint and other finishing costs met by the company directly. ("D" ff. 142, 207, etc.)

2. This unusual plan is also found at Cromford, but the date of the latter example is unknown.

3. Greg Papers, "Partnership Book" (Manchester Ref. Lib., C5/1/2/2) p. 26: "Sept. 1st 1806: To cost of eight cottages at the Oak, £468 18s 11d." A further £13 2s 10½d was spent two years later on railings and drains.

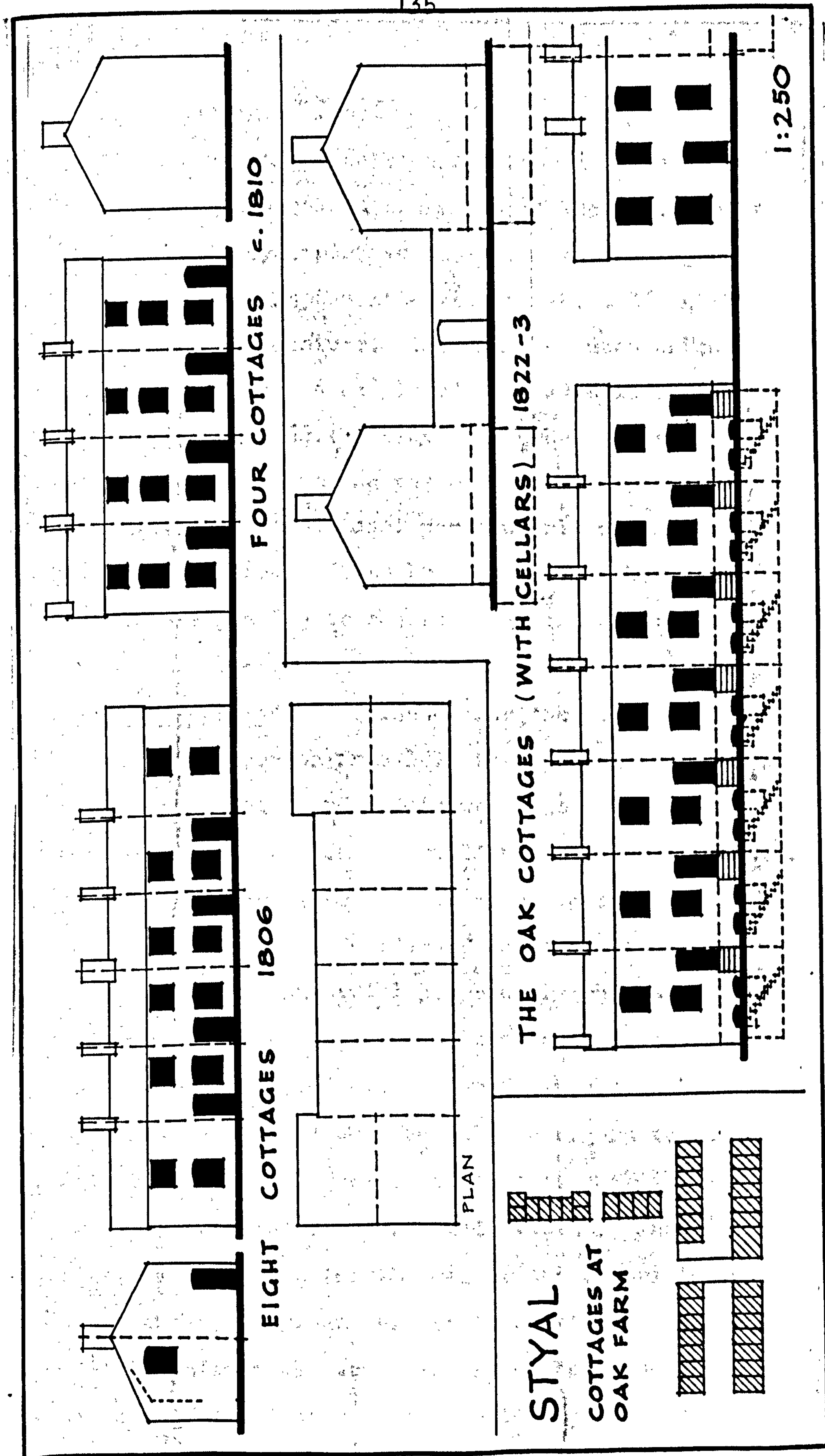


Fig. 21.

3.51 pence per cubic foot.

These examples of costs do not form a clear series because of considerable differences in the design of the cottages, but they appear to show a trend running from about 3d per cubic foot in the mid-1790s to about 3½ in the first decade of the new century. The examples upon which most reliance might perhaps be placed are (1) Mile Ash Terrace, Darley Abbey, and (6) the eight cottages at Styal. It is possible that a cost of 4d per cubic foot may have been reached in the disturbed conditions, particularly with regard to timber prices, from 1808 to 1813; these may have led the valuer of example (7) to resort to a rounded figure.

Post-war period. Evidence for the cost of industrialists' cottages in the period from 1815 to the middle of the century reveals a downward trend. This was also a period of organisational change in the building industry with the rise of professional services capable of relieving investors in building of much of the burden of detailed management. As building work for industrial proprietors changed from direct to indirect forms of management, the basis of costs are also likely to have been changed. Manufacturers employing general contractors would no longer be able to regard the prime cost of labour and materials as equivalent to building costs. Contract sums at later dates would evidently include establishment charges, charges for the use of the contractor's capital and his profit, which an earlier industrialist, managing his own building work, would absorb without troubling to calculate. For a decade or two following the end of the war,

manufacturers' building costs probably continued to be regarded as equivalent to prime costs; the changes in the organisation of the building trades associated with Thomas Cubitt in London are not likely to have appeared widely or to have achieved approval in the provinces for a considerable period.

Evidence has been considered that at the end of the war period a mean unit cost for cottages in manufacturing districts would be about $3\frac{3}{4}$ d per cubic foot. In the post-war period several large building booms occurred which may temporarily have kept levels high, but lower costs appear soon to have emerged. A small number of post-war cost specimens may be considered:

(1.) In 1822, Samuel Greg's cottages account includes a figure of £1,904 expended on 14 cottages. After the entry of several smaller sums the expenditure of £2,049 follows in 1823, evidently for the remainder of the cottages comprising the four principal terraces at the Oak Farm.¹ 28 cottages thus cost £3,953, or £141 each. 27 of these were large cottages of the 2-up, 2-down type, with large cellars in addition possibly originally intended to serve as loomshops. These cellars were later occupied as separate dwellings, but were probably not fitted out fully for this purpose from the start.² These buildings cost 3.86 pence per cubic foot; the extra cost of forming cellars may make this a poor example for purposes of comparison. (See fig. 21, p. 135 and fig 27, p. 197).

1. C5/1/2/3: entries for 1st March, 1822 and Sept, 1823.

2. "In^o Bayley moves to a cellar in the new cottages" Mill and Quarry Bank Memoranda, 5th Nov. 1825 (C5/3/1): this the earliest evidence of cellar occupation. The 1841 Census records 19 cellars as occupied.

(2.) Four types of cottage were built by the Ashworths of Egerton in about 1830 (fig. 23, p. 179): these cottages, of hammer dressed gritstone, with simple label moulds over the doors and windows, were provided with small, paved rear yards, each with a privy and ashpit, and surrounded by six-foot walls. In each living room there was a boiler, oven and firegrate, and "sham stove" grates in the parlours and larger bedrooms. Estimates for these cottages give unit costs of 2.39, 2.82, 2.44 and 2.62 pence per cubic foot for the four types in descending order of size. The costs of these cottages will be more fully considered later.¹

(3.) In about 1840 the normal cost of constructing a cottage of terrace type in the Glossop district of Derbyshire, with walls constructed of the local gritstone masonry 20 inches in thickness, was stated to be £90. These cottages were normally 30 feet in depth with a frontage of 15 feet and room heights on each storey of 7ft 9ins. They usually contained "a good front room, in which the family live, and at the rear what is called a back kitchen, or rather scullery, and also a pantry or cellar, used for both purposes, and generally forming a sub-storey to the limited extent of it ... the yard contains the necessary conveniences of privy, pigsty and coalhouse."² These large cottages would have a structural volume of about 10,000 cubic feet; at £90, the unit cost falls a little above 2d per cubic foot.

By mid-century the cost of labourers' cottages appears to have descended to approximately 2d per cubic foot, though in

1. See p. 178

2. Sanitary Inquiry, Local Reports, E. and W., 248.

view of the increased use of architectural embellishment by prominent industrial investors in housing (perhaps led by the cheapness of money to treat capital outlay more liberally) it may be unreasonable to compare, for instance, the known costs of cottages at Saltaire, Copley, etc., with earlier examples.¹ Because of the large size favoured, even the cheapest model cottages of the mid-century cost £100 or more, at a time when the unit cost tended to fall below 2d per cubic foot. In 1862, an authority on the economics of cottage construction, J. B. Denton, placed the mean cost at £140. Denton urged that "it should be a matter of general concern to see how cottages could be built at £200 a pair, so that economic rents could be within the labourer's pocket."²

Nothing has been said, in the present discussion, about architects' published designs, for which estimates were sometimes published, although they were usually aimed at the class of person considering building for their own employees and tenants, rather than for speculation. Many architectural copybooks were little more than a form of architect's trade advertisement, the cost information in which may not always be reliable.³ Even in the mid-nineteenth century, architects' prizewinning designs for model cottages were more

1. J. Hole gives details of cottages at Saltaire which work out at approximately 2d per cubic foot. Homes of the Working Classes (1866), 67-8. Cottages at Copley were slightly cheaper.

2. The Builder, 27 Dec. 1862, 925.

3. Authors of architectural copybooks were frequently very vague or non-committal on prices. This was partly because users of their designs were expected to alter the styles and sizes to suit their own requirements. One of the few to provide prices, John Plaw, thus stated that he only did so "in compliance with repeated hints by many of my friends." Sketches for Country Houses (1800), 7.

than once criticised for the impossibility of constructing them within the stipulated cost limits.¹

From this examination of specimen costs of cottages built by industrialists and by landowners in parts of the country where broadly similar prices to those of the manufacturing districts might be expected to have applied, an empirical building cost index for cottages is beginning to emerge. Up to the start of the economic crisis and commencement of the war in 1793 a unit cost of about 2d per cubic foot was to be expected; in the early war years prices rose sharply, to 3d in the mid-1790s and by a lesser increase to 3½d in the first decade of the 1800s. It is unclear what happened in the later war years, but in the immediate post-war years costs may have been a little reduced, continuing thereafter to descend gradually to perhaps 2½d by the 1830s and 2d in mid-century. This "index" is no more than an uncertain approximation which not all examples fit particularly well; but as it is a prime-cost "index" based on the costs of wages and materials, it will be useful to investigate whether it is supported by the available evidence for fluctuations in wages and materials prices.

1. A discussion on this point was reported in The Builder, loc. cit. J. B. Denton was reported to say: "Much had been endeavoured to be done by prizes and the efforts of various societies; but it was a fact that not one of those prize designs had provided for buildings that could be erected for the money which was stated as a necessary condition to the premium offered." See also J. N. Tarn, Working Class Housing in the Nineteenth Century (1971), Chapter 4.

Part 2. The prime cost of labour and materials used in housing construction.

(1) The cost weights of labour and materials.

Examples with which to illustrate the cost of constructing cottages are not numerous, but the little empirical information available may be augmented by a study of the fluctuating prices of labour and materials, provided some estimate can be made of the weight of each as normally combined in work of this type.

Labour and the two main groups of building materials each appear to have amounted to about a third of the total costs of building cottages in the early years of the nineteenth century. A record of the breakdown of costs for two cottages built by Thomas Eccleston of Scarisbrick Hall was set out by Dickson in 1815.¹ Although Dickson refers to drawings of these cottages, none have survived. The quantities of materials listed would be consistent with a pair of narrow-fronted cottages of two storeys, each with a plan area of about 15 by 30 feet. The date of the estimate appears to be circa 1805,² and certainly

1. R. W. Dickson, General View of the Agriculture of Lancashire (1815), 108 ff.

2. Dickson evidently acquired his information on these cottages at a date subsequent to the writing of Practical Agriculture in 1804 (published 1807). Although Dickson wrote at length on the construction of cottages in this work, he then possessed no information comparable in quality to that on the Eccleston cottages. Dates for the acquisition of the information much later than 1807 are also improbable because he refers to the proprietor's name as Eccleston and not Dicconson, as changed in that year. For information on Thomas Eccleston, alias Dicconson, see F. H. Cheetham, "Scarisbrick Hall, Lancashire" Trans. L. and C. Antiqu. Soc. XXIV (1906), 99; Victoria County History of Lancashire, III (1907), 269.

before Eccleston's death in 1809. Eccleston had "a great number of cottages on his different estates, both for the accomodation of the farm labourer and the artisan," and the figures published by Dickson may be regarded as reliable evidence applicable to a well studied design.

In the cost of Thomas Eccleston's cottages, labour amounted to £55 1s 9½d, or 32.8%; masonry materials to £55 19s 7d, or 33.3%; and the carpentry and miscellaneous group of materials to £57 0s 6d, or 33.9% of the total cost.

Table 12

BREAKDOWN OF LABOUR AND MATERIALS COSTS IN THE CONSTRUCTION OF A PAIR OF STONE COTTAGES IN LANCASHIRE, c. 1805.

	Labour						Materials			Totals		
	building			carting								
	£	s	d	£	s	d	£	s	d	£	s	d
MASONRY &c.:												
Stonework	11	15	3*	3	4	0	20	7	3*	35	6	6
Brickwork	4	6	8	3	15	0	7	10	0	15	11	8
Paving	3	6	8	3	0	0	10	0	0	16	6	8
Roofing	2	0	1½	3	6	10½	11	12	4	16	19	4
Plastering &c.	5	14	0	1	10	0	6	10	0	13	14	0
				£	s	d						
subtotal				41	18	9				55	19	7
CARPENTRY &c.:												
Nails, laths							4	13	0			
Timber							43	9	6			
Glass							5	16	0			
Nails, Ironmongery							3	2	0			
subtotal							57	0	6			
TOTALS												
				55	1	9½				113	0	1
										168	1	10½

* The information on which this table is based does not distinguish the costs of stonemason's materials and labour. These are assumed to be divided in the same proportions as bricklayer's materials and labour.

Comparable evidence, though very limited, tends to confirm that the breakdown of costs in the case of Eccleston's cottages is in no way abnormal. Other available evidence for the costs of constructing brick or stone cottages in this period do not distinguish labour as an item separate from materials costs. Only very broad or approximate comparisons are therefore possible.

Table 13

SOME SPECIMEN ANALYSES OF THE COST OF CONSTRUCTING COTTAGES &c., 1775 - 1830, DISTINGUISHING MASONRY AND CARPENTRY COSTS.

Specimen	1	2	3	4	5	6	7	8	9	10	11
Date	1775	'75	'97	'97	'97	'97	1805	'30	'30	'30	'30
Cost (each) £	66	70	190	280	299	403	84	114	103	79	71
Mason	} 60	} 64	} 31	} 33	} 32	} 35	10	} 47	} 47	} 47	} 47
Pavior							21				
Bricklayer			0	0	0	0	9	0	0	0	0
Plasterer			8	} 19	9	} 21	8	8	7	8	8
Tiler/Slater			0		12		10	7	7	8	8
Thatcher			5	0	0	0	0	0	0	0	0
TOTAL	%		44	52	53	56	58	62	61	63	63
Carpenter	36	32	49	41	42	38	} 42	} 38	} 38	} 38	} 37
Glazier	2	2	5	6	5	5					
Smith	2	2	2	1	1	1					
Painter	0	0	0	0	0	0					
TOTAL	%	40	36	56	48	47	44	42	38	38	37

(1 & 2: N. Kent, Hints to Gentlemen of Landed Property (1775); 3 to 6: Croker, in Communications to the Board of Agriculture (1797), considering costs of houses only; 7: R. W. Dickson, General View of the Agriculture of Lancashire (1815), 108 ff.; 8 to 11: Sanitary Inquiry, Local Reports, England and Wales (P. P. 1842, XXVII), 340-1)

Taking labour and materials together, it appears in the case of Eccleston's cottages (specimen 7) that the masonry work, which included the larger share of the labour, entailed

an expenditure of £97 18s 2d, or 58.2% of the total cost. Other evidence, though not always inspiring the greatest confidence, suggests that from the end of the eighteenth century to the 1830s the proportion of expenditure on masonry materials and labour was usually close to 60% in the case of cottages and similar buildings. There also appears to be a slight fall in the masonry cost weight during the war years, possibly due to higher expenditure on timber.

The prices of materials included within each major group tended to fluctuate together. It has been found in a study of the price movements of building materials after 1845 that the masonry group "shows a marked stability; [these materials] are less sensitive to short term fluctuations and have also about the same moderate trend." The remaining, predominantly carpentry, group of materials "are more subject to the influence of world markets."¹ These conclusions are probably no less true for the period before 1845; particularly during the war years, there is likely to have been considerable disparity between the movement of the two groups,

It appears reasonable to view the cost analysis of Ecclestone's cottages in c. 1805 as of a high order of reliability. If labour, masonry materials, and carpentry materials at that date each accounted for a third of the total costs of cottage construction, this provides a datum against which to compare the costs of these major elements at other dates. It remains to examine the fluctuations peculiar to each element.

1. K. Maiwald, "Index of Building Costs in the United Kingdom, 1845-1938" Econ. H. R., ii ser. VIII (1955).

(11) Fluctuations in the cost of a unit of labour.

Several historians have produced wage rate evidence relevant to the payment of building labour in the manufacturing districts. Rates quoted usually refer to the wages of a summer, or ten hour, working day, or a week of ten such days. It will be convenient to adopt the craftsman/day in the summer months as the unit of labour to be discussed. Some building work was paid for at piecework rates, but the more difficult problem of following the fluctuations of piecework rates does not appear to have been attempted; it will, perhaps, not be unreasonable to assume that the rates of payment for piecework broadly kept pace with day wage rates, so that an index for the one may serve for both.

Wage rates in Lancashire and the West Riding up to 1795 have been studied by Dr. Gilboy,¹ her evidence permitting the commencement of the rise in wages during the war period to be examined. Up to the mid 1780s, wages appear to have been steady at 2s for craftsmen and 1s 6d for labourers, although this does not quite conform to the usual $1\frac{1}{2} : 1$ differential.² In the first three years of the war the normal differential was restored, and levels reached a mean of 2s 8d for craftsmen

1. E. W. Gilboy, Wages in England in the Eighteenth Century (1934), Chapter VI.

2. The $1\frac{1}{2} : 1$ differential was imposed by 5 Eliz. c. 4 and applied in Quarter Sessions wages assessments. See A. L. Bowley, in Jnl. Royal Stat. Soc. LXIV (1901), 104; J. E. Thorold Rogers, Six Centuries of Work and Wages (1884), 427. This differential seems to have been the norm from about 1450 to 1914, apart from minor occasional departures. See Phelps Brown and Hopkins, "Seven Centuries of Building wages" Economica (1955).

and 1s 10½d for labourers:

Table 14.

RISE IN WAGE RATES IN MANUFACTURING DISTRICTS, 1785 TO 1793-5.

After Gilboy

	Craftsmen	Labourers
Before 1785	2s	1s 6d
Mean of rates quoted in the period 1786 - 1792	2s 3d	1s 7¾d
Mean of rates quoted in the period 1793 - 1795	2s 8d	1s 10½d
Approximate proportionate increase in the period 1785 to 1793-5	33%	25%

Sir Arthur Bowley provides evidence with which to continue the history of the wages of craftsmen and labourers beyond 1795.¹ There appears to be a very satisfactory agreement between the end of the Gilboy series in c.1795 and the commencement of the Bowley evidence at the same date, taking a mean of the wage rates given by the latter for a number of Lancashire, Cheshire and West Riding towns:

Table 15.

WAGE RATES IN MANUFACTURING DISTRICTS, c.1795.

	Craftsmen	Labourers
Gilboy's evidence for Lancashire and the West Riding: mean of 1793-5	2s 8d	1s 10½d
Bowley's evidence for Lancashire, Cheshire and the West Riding towns: mean of 1793-6	2s 8¼d	1s 11½d

1. A. L. Bowley, "The Statistics of Wages in the U. K. during the last 100 Years: (Part VI) Wages in the Building Trades - English Towns." in Jnl. Royal Stat. Soc. LXIII (1900), 297 ff.; "... (Part VIII) Wages in the Building Trades - Concluded." Ibid., LXIV (1901), 102 ff.

The disturbed state of the economy during the war period and the sparseness of surviving wage rate evidence before about 1810 must make any conjecture about the progress of the wages index in that period highly speculative. Nonetheless, some fragments of evidence are available. Bowley's evidence for the movement of wage rates in the war years is very thin, but a rise from c.1795 to c.1815 of about 33% emerges in the one place, Macclesfield, where figures are available at both dates. In this instance the wages of craftsmen rose from 3s to 4s. A larger increase, 60%, appears in Macclesfield labourers' wages, from 1s 8d to 2s 8d; but this is suspect.¹ In general, it may be wiser to pay more attention to the wage rates of craftsmen than those of labourers, as labourers' wage rates appear somewhat variable between individuals, and where examples are few in number, there is a high risk of error. Is 33%, then, a trustworthy figure for the proportionate rise in wage rates during the war years? As wage rates tend to be higher in populous, industrialised districts, and as Macclesfield was an early centre of industry, it is not improbable that other industrialising districts may show a greater proportionate increase than 33%. The combined evidence of the Gilboy and Bowley means for craftsmens' wages at about 2s 8d in 1795 and the Macclesfield level of 4s in 1815 suggest a rise of 50%, which may be more satisfactory for the purposes of an "index".

1. The 1795 level of 1s 8d may be unrepresentative, as it agrees badly not only with the consensus of 1s 11d just considered, but also with the Lancaster labourers' wages of 2s and 2s 6d quoted for 1796. Possibly the labourers' wages of 2s 8d in Macclesfield in 1815 are also unrepresentative: Dickson, op. cit. (1815), 293, suggests the norm would be 3s.

By 1815, furthermore, the wage rates applicable in Manchester had probably become the norm in many of the lesser urban centres of the manufacturing districts, or at least wage rates not far below those of Manchester. Manchester wage rates quoted by Baines with an air of authority at the end of the war period tend to justify the adoption of a craftsmens' rate of 4s in 1815 for the purposes of an index.¹ The conclusion at this stage appears to be that in the manufacturing districts of Lancashire and parts of the adjoining counties, a rise in wage rates from 1785 to the start of the war period in c.1795 occurred amounting to about 30%. During the war period a further rise of 50% followed, the total rise from 1785 to 1815 amounting therefore to 100%, or from a craftsmens' rate of 2s in 1785 to 2s 8d in 1795 and 4s in 1815. The next question is to determine when, in the war period, the actual rises took place.

*

Baines' evidence is further useful in showing that the whole of the rise had occurred by 1810, and that from 1810 until 1820 building wage rates were unchanged, and only slightly

1. E. Baines, History of the Cotton Manufacture (1835), 438, gives craftsmen's rates at the end of the war period for whitesmiths and carpenters at 4s 2d; for stonemasons, bricklayers and painters at 3s 8d, "allowing for winter"; for slaters at 3s 6d, and for plasterers at 3s 2d likewise. The rate for bricklayers' labourers was 2s 7½d. The high proportion of carpenter's, mason's and bricklayer's work in domestic building construction appears to justify the adoption of 4s as a mean craftsman's wage rate in 1815. It is unnecessary to follow Baines' allowance for winter reduction of earnings, as the question here concerns payment for work actually performed, rather than workmens' earnings.

reduced by 1832.¹ The same rates applied in Manchester and "the other principal seats of the cotton manufacture".

The national index of building wage rates compiled by Bowley, in which a smaller rise is shown than that which probably occurred in the manufacturing districts, concentrates the whole of the rise into the period from 1800 to 1810.² Bowley warns that for the period before 1830 his index must be considered approximate.

R. W. Postgate's predominantly London evidence³ shows wage rates remaining fairly constant from the 1780s to the closing years of the century, followed by a stringly rising trend led by bricklayers' wages reaching their peak in 1803 and those of masons and carpenters in 1808. Other trades caught up in the first 25 years of the century. Wage costs, on this evidence, should be closely linked to the rising phase of the general price index in the closing years of the eighteenth century, with a time lag of several years, but no subsequent fall.

Phelps Brown and Hopkins' index⁴ is based on Oxford and London wages; the authors re-use Bowley's London figures, changing them into Oxford equivalents on the rule that Oxford rates were equal to London rates less a fifth. They too therefore show a close timing between general price inflation

1. Ibid., 439.

2. Taking 1900 = 100, Bowley (op. cit., 1901) gives: 1795-1800 = 40; 1800-10 = rise to about 57; 1810-25 = 57; 1827-30 = near 53; 1831-35 = 53. Thereafter a gradual rise to 58 in mid-century.

3. R. W. Postgate, The Builders' History (1923), Appendix 1. In 1790 the London wage rates of carpenters, masons, bricklayers, plumbers and plasterers were all at 3s; in 1826 all were at 5s. The wage rates of the first three of these trades (of the greatest weight in building wage costs) rose to 3s 4d in 1794, partially to 3s 8d in 1797, to between 3s 8d and 4s 5d in 1801, and between 4s 9d and 5s in 1803. By 1826 the 5s rate was established in all these trades.

and the rise of building wages. They indicate periods of rise concentrated in the mid-1770s and early 1790s, with a further rise in the decade before 1810 and constant wage levels thereafter until the 1840s.

The building cycle evidence produced by Shannon¹ and by Cairncross and Weber² may also provide a clue to the likely periods of increase in building wage levels. The 30% prewar increase noted above on the basis of Gilboy's series corresponds to a period of rise in the demand for building materials "beginning early in the 1780s ... checked in 1788 or 1789 and, when resumed, continued until 1793 or 1794."³ This was followed by the downturn of the building cycle until 1799. The possibility of a fall in wage rates in the period up to 1799 appears improbable; building wage rates are found to be much more resistant to fall than wages in other industries.⁴ The severity of this period of economic crisis in its effect on the building industry is seen in the great reduction in consumption of materials.⁵ Constant wage levels, albeit with drastically reduced employment, appears a reasonable conclusion for the period from 1795 to 1799.

The main period of wage increase is likely to have been stimulated by the rising phase of the building cycle from

1. H. A. Shannon, "Bricks - A Trade Index" Economica I (1934), 300

2. A. K. Cairncross and B. Weber, "Fluctuations in Building in Great Britain, 1785-1849" Econ. H. R. ii ser., IX (1956), 283.

3. Ibid., 285.

4. Phelps Brown and Hopkins, op. cit., 202; T. S. Ashton, Economic History of England - The Eighteenth Century (1955), 224-6.

5. Cairncross and Weber, op. cit., 296. There was a 53% diminution in the consumption of bricks, 48% diminution in the consumption of glass and 23% diminution in the consumption of tiles in the period 1793-9.

1799 to 1803 in urgent response to the unprecedented increase in the cost of living shown in the rise of the general price index to a peak in 1800 or 1801.¹ The rising phase of the building cycle did not reach a peak but rather "a high plateau stretching from about 1803 to 1813." This agrees well with Postgate's evidence of sharp rises in wage rates up to 1803 followed by a continuing, but only very gradual, rising trend in the following half decade. Postgate's guidance appears to be reliable on the timing of wage rate increases in the war period, although his actual figures, being London rates, cannot be directly adopted for the northern counties and the manufacturing districts.

*

At this point, sufficient evidence has, perhaps, been assembled to make the compilation of a very tentative "index" of a craftsman's a day wage possible. For present purposes, this may be sufficiently close to an index of the labour cost element in simple building work. The ratio between the wages of a craftsman and those of a labourer was not quite constant, but appears to have stood close to $1\frac{1}{2} : 1$ for much of the period under consideration. Insufficient is known about the proportion of the two types of labour used in building for anything other than a constant proportion to be assumed. On these broad assumptions, and taking 1805 as a datum year, a tentative "index" might take the following form:

1. See M. W. Flinn, "Trends in Real Wages, 1750-1850" Econ. H. R. ii ser., XXVII (1974), 400, for a review of indices.

Table 16.

SUGGESTED SUMMER DAY WAGE RATES OF CRAFTSMEN IN THE MANUFACTURING DISTRICTS AND A RELATED BUILDING LABOUR COST INDEX DURING SUCCESSIVE PHASES OF THE BUILDING CYCLE, 1785-1830.

1805 = 100

Dates	Building Cycle	Craftsman's summer day wage	Labour Cost Index
1785 - 1787	Rise	2s	52
1788 - 1790	Small rise	2s 2d	57
1791 - 1792	Rise	2s 6d	65
1793 - 1798	Large fall	2s 8d	70
1799 - 1800	Rise	2s 8d	70
1801 - 1803	Rise	3s 2d	82
1804 - 1807	Level	3s 10d	100
1808 - 1811	Small rise	4s	104
1812 - 1815	Fall	4s	104
1816 - 1819	Rise	4s	104
1820 - 1821	Small fall	4s	104
1822 - 1825	Large rise	4s	104
1826 - 1827	Large fall	4s	104
1828 - 1830	Level	4s	104

The problems of this "index" need not be underestimated. For some classes of work, payment by task or piece was normal, and the rate of payment for such work may have adjusted itself more rapidly to the fluctuating demand for building work than standardised craft day wages. Sawyers' work was normally paid in this way; many invoices for sawyers' work performed for Samuel Oldknow survive.¹ Other easily measurable labour was probably similarly paid. Dickson in 1815 implied that day wage payments were reserved for work

1. Oldknow Papers, Invoices etc. (John Rylands Lib., Engl. MSS, 752).

which could not easily be measured.¹ There may have been a difference of practice between manufacturers and other employers of building labour, but perhaps measured work should be regarded as the norm.

Variability of wages between individuals appears to be strongly present in the case of labourers' wages. The evidence for wages paid for building work at Darley Abbey in 1803-4 shows a typical craftsman's day wage at 3s 6d.² According to the "normal" $1\frac{1}{2} : 1$ differential, this would correspond to a labourer's wage of 2s 4d. The day wages actually paid to labourers ranged from 1s 10d to 2s 10d, or even from only 1s 6d if the payment to weekend watchmen on the site is included:

Table 17.

SPECIMEN LABOURERS' DAY WAGES FOR BUILDING WORK AT DARLEY ABBEY, 1803-4.

John Brierley (March 1803)	2s 10d
John Walters (November 1804)	2s 8d
John Dilks (August 1804)	2s 6d
Thomas Barnard (November 1803)	2s 4d
Do. (January 1804)	2s 4d
Daniel Austin (February 1804)	2s 4d
John Davey (March 1804)	2s 2d
Do. (July 1804)	2s 2d
Isaac Pegg (August 1804)	2s 2d
John Gilman (October 1804)	1s 10d
William Frost } Watchmen? employed	
David Gilman } various Sundays	1s 6d

There was, furthermore, a marked difference in wage rates from district to district. The evidence for Lancashire, with

1. Dickson, *op. cit.* (1815), 103.

2. *Evans Papers*, "E" Ledger, folio 66; for labourers' wages quoted in table 17 see "D" ff. 98, 100, 363-4; "E" f. 2-4.

a very unequal state of industrial development in its various parts, illustrates particularly clearly the difficulty of any attempt to construct or apply a uniform labour cost index.

It was said in 1794 that "the price paid for various kinds of labour varies more in Lancashire than in probably any other county in the Kingdom. An ingenious correspondant observes, 'that the rate of wages is in proportion to the distance of townships from the seats of manufactures,' e.g., at Chorley the wages of a common labourer 3s with ale; at Euxton, 2s or 2s 6d; at Eccleston 1s 6d or 2s; at Mawdesley and Bishham ... in harvest time 1s 2d and 1s 4d."¹ A contrast also appeared 21 years later, in 1815: common labourers in industrial towns were said to earn 3s in summer and from 2s 6d to 2s 8d in winter, but in the agricultural districts of the Fylde summer wages were only from 2s to 2s 6d, winter wages from 1s 6d to 2s.²

As the reduced winter wage corresponds to a reduced quantity of work performed,³ it appears justifiable to take note only of the summer wage as the measure of the price of a ten hour unit of labour throughout the year; but evidence for the payment of labourers and masons employed by Samuel Oldknow from August 1800 to January 1801 shows a variability in the mean day wage paid which exceeds what might be expected. Although the causes of short term variations in the mean wage

1. J. Holt, General View of the Agriculture of Lancashire (1794).

2. Dickson, op. cit. (1815), 593.

3. The summer working day consisted of ten hours, and applied during 33 weeks of the year. During the remaining 19 weeks the working day consisted nominally of nine hours. See Bowley, op. cit. (1901), 102.

paid are unknown, the winter shortening of the working day, though important, was clearly not the only factor involved:

Table 18

DAY WAGES OF A GANG OF MASONS AND LABOURERS AT MARPLE,
1800-1

Fortnight commencing	Work	Total wages			Number of men	Mean day wage	
		£	s	d		s	d
Aug. 2	New bridge at Old Hall	19	10	5	17	1	11
Aug.16	Do., masons	27	2	1	16	2	10
Aug.30	Do., masons	22	5	5	17	2	4½
	Repairs	6	4	3	4	2	7
Sep.13	New bridge at Old Hall, masons	28	1	4	18	2	7½
	Repairs	5	6	10	4	2	2¾
Sep.27	New bridge at Old Hall, masons	24	3	0	20	2	0½
	Repairs	4	16	0	3	2	8
Oct.11	New bridge at Old Hall, masons	26	12	7	20	2	2½
	Repairs	8	10	6	5	2	10
Oct.25	New bridge at Old Hall, masons	25	19	11	22	1	11¾
	Repairs	8	15	1	5	2	11
Nov. 8	Improvements at Mellor Lodge	6	14	0	17	1	7¾
	Repairs	8	9	0	5	2	9¾
Nov.22	Improvements at Chapel Houses	14	11	1	11	2	2½
	Improvements at Mellor Lodge	6	3	0	10	1	0½
	Improvements at Navigation Inn	5	17	0	6	1	7½
	Improvements at Mellor Lodge	17	8	8	18	1	7½
Dec. 6	Improvements at Mellor Lodge	17	8	8	18	1	7½
Dec.20 (to Jan.2)	Improvements at Mellor Lodge	8	7	8	10	1	5

Costs in building might be affected by the level of managerial ability with which labour was directed, as pointed out by Henry Holland: "The expense will depend not only on the facility of procuring labour and materials, but on the economy and management of those who direct."¹ The slowness of construction work and the lack of innovation in all but the smallest fraction of industrial housing may be an encouragement to think that differences in managerial ability did not make any large difference to the amount of inefficiently employed or wasted labour and hence to costs. The only available test of this appears to be to examine the consequences of ordering overtime work. The evidence of the pay rates of Samuel Oldknow's building workers² suggests that it was no more expensive to employ labour on overtime than on normal day rates:

Table 19

DAY AND OVERTIME WAGE RATES OF SAMUEL OLDKNOW'S
BUILDING WORKERS, 1801

Day wage rate (probably 10 hours)	Corresponding overtime pay rate per hour	Ten hours overtime
under 1s	1d	10d
1s to 1s 4d	1½d	1s 3d
1s 4d to 2s	2d	1s 8d
2s to 2s 6d	2½d	2s 1d
2s 6d to 3s	3d	2s 6d

1. H. Holland, in Communications to the Board of Agriculture (1797), I ii 102.

2. Oldknow Papers, Time Books (John Rylands Lib., Engl. MSS, 817 III).

(iii) Fluctuations in the cost of materials.

No north of England brick prices series is available, but Prof. Rimmer has commented on rises in the prices of bricks in Leeds: "Between 1770 and 1840 the price of bricks in Leeds increased sixfold. This happened despite an expansion of the local industry from less than half a dozen brickmakers in 1797 to 17 in 1817 and 49 in 1834. The biggest jump in prices occurred sometime during the war."¹ This extraordinary rise may be difficult to reconcile with other evidence, but it at least provides a warning of the unexpected local cost movements that might result from local circumstances.

Lord Beveridge provides four series of brick prices fully covering the period from the 1770s to the general prices peak of 1811-13.² A fifth series ends in 1800 but agrees, as far as it goes, with the other four. From about 1770 to about 1796 they show very little movement, apart from a slight increase absorbing the newly imposed brick tax of 1784. This period of steady prices contrasts with the closing half decade of the century, in which very steep rises occurred. From 1795 to 1811 the price series derived from Office of Works records show the price of red stocks increasing from

1. W. G. Rimmer, "Working Men's Cottages in Leeds, 1770-1840" Trans. Thoresby Soc. XLVI Misc. 13, (1957-61), 191.

2. Lord Beveridge, Prices and Wages in England I (1939). The five series of brick prices given are: Greenwich Hospital grey and red stocks, p. 298; Office of Works grey and red stocks, p. 497; Naval Stores (ending 1800), p. 680.

51s to 110s per thousand and grey stocks, the type used in common brickwork, rising from 33s to 62s. The evidence derived from the Greenwich Hospital records is even more complete. In this case red stocks rose from 70s to 89s and grey stocks from 29s to 58s. Although these are not North of England prices, they provide the best available indication of the proportional rise in brick prices. No correctly weighted mean rise can be calculated, but in the series quoted by Beveridge, high weights in the compilation of a brick prices index would evidently apply to the grey stocks, rising by 88% and 100%. The Greenwich Hospital grey stocks series appears the more complete, and may be the better one for the purposes of an index:

Table 20.

BRICK PRICES INDEX: 1771-1828.

1805 = 100

After Beveridge.

1771-81	44	1802	102	1819	107
1776	46	1805	100	1820	108
1777-9	47	1806-7	103	1821	109
1780-1	45	1808	106	1822	107
1782	50	1809	108	1823	110
1783	61	1810	112	1824	116
1786-93	54	1811-13	118	1825	113
1795	57	1814-15	113	1826	105
1798	59	1816-17	107	1827	95
1799	81	1818	113	1828	94

Mid-nineteenth century evidence suggests that a third of the price of bricks was due to labour costs in their manufacture. A breakdown of brickmaker's costs at Nottingham estimates the cost of labour digging clay,

milling, grinding, tempering, moulding and kiln firing, at 9s 6d per 1000 for bricks selling at 28s per 1000. Near London, clamp burned bricks cost the brickmaker 12s 2d in labour and sold for 30s per 1000.¹ The larger movements in the labour cost index may therefore be expected to appear in the brick prices index.

The addition to the price of bricks due to the brick tax was probably of much less consequence, despite contemporary complaints. In 1784 it was imposed at 2s 6d per 1000 bricks,² and increased in 1794 to 4s³ and in 1803 to 5s 10d.⁴ The Excise Act of 1803 also determined the maximum dimensions of bricks at 10" by 5" by 3", to prevent evasion of the tax by such persons as Joseph Wilkes of Measham, whose giant bricks or "gobs" would henceforth be taxed at 10s per 1000.⁵ From Beveridge's brick prices series it appears that the initial imposition of 2s 6d was followed by an immediate commensurate rise in prices, but the increase to 4s ten years later appears to have been absorbed without a price increase. At the time of the second increase, to 5s 10d, prices were so unstable that the effect is unclear. The tax did not increase, to any marked extent, during its lifetime in real terms, as it merely followed inflation. The most adverse effects of the brick tax may have been felt indirectly. There was complaint that in some places the rise in brick

1. E. Dobson, Elementary treatise on the manufacture of Bricks and Tiles (1850), I 91, II 44, 94.

2. 24 Geo. 3. c. 24

3. 34 Geo. 3. c. 15

4. 43 Geo. 3. c. 69

5. Wilkes and Jewsbury built cotton mills at Measham in 1783 and 1801. They also built much of the village of Measham, where many examples of their special brickwork are to be seen.

prices exceeded the amount of the tax. If no more than the strict amount of the tax were to be added to building costs, one might expect about £5 to be added to the cost of a small cottage. In 1842 Edmund Ashworth complained: "It is not the duty of 5s 10d alone which is added to the cost of making bricks; but the vexatious regulations attending upon the Excise creates a sort of monopoly which limits competition, and enhances the value; bricks are sold in the neighbourhood of Bolton at about 25s per 1000, which, if there were no duty, I think would be sold at half the price."¹

Available information, though scanty, suggests that other materials in the masonry category probably followed price movements not unlike that of bricks. Beveridge also provides two series of prices for lime, which would influence the cost of mortar, plaster, concrete and some types of flooring as well as limewash.² The Office of Works paid 10s 6d per centum (25 bushels) from 1777 to 1797. Prices then rose steeply: 11s 3d in 1798, 12s 9d in 1799, and 14s 6d in 1800. From 1800 to 1807 there was no change, but a further rise to 15s in 1808. The Greenwich Hospital prices remained at 6s 9d from 1770 to 1794, then at 7s 6d from 1795 to 1800, 8s 6d in 1801, and 9s 6d from 1802 to 1808. There is a marked similarity of movement between these lime prices and those for bricks, both exhibiting a period of steep rise in the closing half decade of the eighteenth century. Apart from the use of bricks to build lime kilns, there would appear to be very little causal connection between the two. No doubt

1. Sanitary Inquiry, Local Reports, E. and W. (P. P. 1842, XXVII), 339

2. Beveridge, op. cit. Lime prices paid by Greenwich Hospital, pp. 296-7; by the Office of Works, pp. 495-7

both were affected by high labour costs and charges for cartage. Both commence as mineral workings and would be governed by the value of land. Such observations strengthen the view that a brick prices index may provide an indication of the movements of other materials in the masonry category, of which stone and lime were the most important.

It appears curious that the rise in brick and lime prices should have been concentrated in such a short period, but there seems to be a tolerably close connection with the period of greatest rise in the general prices index and the probable period of maximum wages increases discussed above. Only the more moderate increases in general prices in the early 1790s appears not to be reflected in these materials prices. During the economic deterioration following 1793, home produced materials prices probably suffered the effects of a fall in consumption. Shannon's evidence¹ shows a fall in brick production nationally from 909 millions in 1793 to 421 millions in 1799. Production increased again in the last two years of the century.

*

A simplified brick prices index may, in the absence of more detailed evidence, give some indication of the movement of the masonry group of materials as an element in the cost

1. Shannon, op. cit.

of building cottages:

Table 21

SUGGESTED COST INDEX OF BRICKS AND MATERIALS OF
RELATED PRICE DURING SUCCESSIVE PHASES OF THE BUILDING
CYCLE, 1785-1830

1805 = 100

Dates	Building Cycle	Index
1785 - 1787	Rise	54
1788 - 1790	Small rise	54
1791 - 1792	Rise	54
1793 - 1798	Large fall	58
1799 - 1800	Rise	85
1801 - 1803	Rise	102
1804 - 1807	Level	102
1808 - 1811	Small rise	111
1812 - 1815	Fall	115
1816 - 1819	Rise	110
1820 - 1821	Small fall	108
1822 - 1825	Large rise	111
1826 - 1827	Large fall	100
1828 - 1830	Level	94

*

Timber was the most important material in the second group in its effect upon building costs, but the variety of available species and qualities appears to have discouraged attempts to construct an index of timber prices. Thorold Rogers provides an enormous number of specimen prices,¹ but of such variety it is hardly possible to form them into an

1. J. E. Thorold Rogers, History of Agriculture and Prices in England VII (1902).

index. Beveridge, preferring to present his prices evidence in series, took the extraordinary step of omitting timber prices altogether.¹ Nothing quoted by Thorold Rogers for the period of the Industrial Revolution advances the knowledge of price movements substantially beyond the series of prices of Memel fir and Quebec yellow pine published by Tooke in 1838.²

Imported softwood was evidently in considerable demand in England over the period of the Industrial Revolution, despite the temporary disruption of trade by war. In 1793 ten million cubic feet of timber were imported; the lowest figure during the war years came in 1808, when only 4.3 million cubic feet were imported. In 1815 the trade had recovered to 15.6 and by 1841 to 32.7 million cubic feet.³ Home supplies must have come into increased exploitation during difficult years, particularly such native hardwoods as elm, lime or ash, which landowners before the war had not found worth the expense of felling.⁴ Apart, perhaps, from peak years, an index of softwood prices may give a fair indication of building timber costs, particularly in the construction of simple buildings.

Tooke's timber prices were taken from Prince's Price Current⁵ and are evidently London prices, but there would seem

1. Beveridge, op. cit.

2. T. Tooke, History of Prices and of the State of the Circulation from 1793 to 1837 (1838), 417.

3. Gayer, Rostow and Schwartz, The Growth and Fluctuation of the British Economy, 1790-1850 (1950).

4. See evidence of Lord Brownlow in Communications to the Board of Agriculture (1797), I ii 89.

5. W. Prince, London Price Current (Periodical, commenced publication in 1782). Alternatively known as Prince's London Price Current or The New London Price Current.

little reason to expect markedly different prices at other ports. For present purposes it will be convenient to simplify Tooke's evidence by averaging the high and low figures in each quarter and the quarterly figures in each year, and presenting the resulting price series in index form, based on 1805:

Table 22.

IMPORTED TIMBER PRICE INDEX, 1782-1838
1805 = 100

After Tooke

(a) Memel fir

		1790	52	1800	162	1810	294	1820	100	1830	56
		1791	72	1801	144	1811	322	1821	87	1831	68
1782	95	1792	66	1802	98	1812	176	1822	63	1832	64
1783	72	1793	64	1803	125	1813	211	1823	71	1833	71
1784	60	1794	74	1804	98	1814	176	1824	74	1834	70
1785	53	1785	97	1805	100	1815	123	1825	83	1835	78
1786	52	1796	80	1806	143	1816	60	1826	60	1836	81
1787	42	1797	86	1807	147	1817	88	1827	64	1837	76
1788	47	1798	84	1808	324	1818	60	1828	60	1838	74
1789	41	1799	118	1809	360	1819	86	1829	64		

(b) Quebec yellow pine

		1790	37	1800	96			1820	66	1830	61
		1791	40	1801	99	1811	192	1821	58	1831	63
		1792	43	1802	86			1822	60	1832	62
		1793	43	1803	105			1823	78	1833	59
1784	43	1794	25	1804	93			1824	74	1834	74
1785	38	1795	70	1805	100			1825	77	1835	70
1786	24	1796	60	1806	116			1826	61	1836	70
1787	39	1797	51	1807	154			1827	52	1837	69
1788	38	1798	85	1808	212			1828	59	1838	63
1789	36	1799	78	1809	273			1829	58		

A simplified timber prices index may be constructed largely following Tooke's evidence of Memel fir prices, as the price per load of Memel fir was generally below that of Quebec yellow pine, and Memel is in most respects the stronger timber. The peak levels in the price of Memel fir, however, probably bear little relationship to actual timber costs in building. To reduce this difficulty, the prices for 1808-9, when imports were severely restricted, will be ignored and the price for 1807 repeated. The high price for 1811, on the other hand, must stand as this was a year of large imports:

Table 23.

SUGGESTED COST INDEX OF TIMBER DURING SUCCESSIVE PHASES
OF THE BUILDING CYCLE, 1784-1830

1805 = 100

Dates	Building Cycle	Index
1785 - 1787	Rise	49
1788 - 1790	Small rise	47
1791 - 1792	Rise	69
1793 - 1798	Large fall	81
1799 - 1800	Rise	140
1801 - 1803	Rise	122
1804 - 1807	Level	122
1808 - 1811	Small rise	227
1812 - 1815	Fall	171
1816 - 1819	Rise	73
1820 - 1821	Small fall	93
1822 - 1825	Large rise	73
1826 - 1827	Large fall	62
1828 - 1830	Level	60

(iv) A theoretical building cost index.

Three indices have now been considered, one of wage costs, one of brick costs and one of timber costs. Each has been constructed on the same datum year, 1805. A study of mid-nineteenth century materials price movements, as already noted, strongly suggests that one group of materials as a whole tends to follow the movement of brick prices, and the other, similarly, follows timber. Although some divergence between the price movements of various materials must be expected, the movements of the two groups of materials were clearly dominated by the behaviour of brick and timber prices. It ought, therefore, to be possible to find the reason for any sizeable movement in the cost of building cottages which appears in empirical evidence, in a prior movement of one or more of the three element indices.

More as an experiment in method than in a serious attempt to reconstruct actual building cost movements on such incomplete evidence, it is possible to combine the three indices in a single theoretical building cost index. An excellent cost analysis for cottages built in Lancashire in c.1805 has been considered (pp. 141-2), in which it appeared that at that date the three elements of wages, the masonry group of materials and the carpentry group of materials each constituted a third of the total cost. The weight of each element in 1805 being equal, it becomes possible to reconstruct the theoretical cost of building with these elements appropriately weighted

for other dates:

Table 24.

THEORETICAL BUILDING COST INDEX APPLICABLE TO COTTAGES
DURING SUCCESSIVE PHASES OF THE BUILDING CYCLE, 1785-1830

1805 = 100

Dates	Building Cycle	Element indices			Combined index $(\frac{A+B+C}{3})$
		A Wages	B Mason's materls. etc	C Carpen- ter's materls. etc	
1785 - 1789	Rise	52	54	49	52
1788 - 1790	Small rise	57	54	47	53
1791 - 1792	Rise	65	54	69	55
1793 - 1798	Large fall	70	58	81	70
1799 - 1800	Rise	70	85	140	98
1801 - 1803	Rise	82	102	122	102
1804 - 1807	Level	100	102	122	108
1808 - 1811	Small rise	104	111	227	147
1812 - 1815	Fall	104	115	171	130
1816 - 1819	Rise	104	110	73	96
1820 - 1821	Small fall	104	108	93	102
1822 - 1825	Large rise	104	111	73	96
1826 - 1827	Large fall	104	100	62	89
1828 - 1830	Level	104	94	60	86

Perhaps the most obvious objection to an index compiled in this manner is that it takes no account of the measures used by builders to mitigate the effect of materials prices increases. From the index as it stands, it would appear that during the war years an advantage was to be gained from reducing carpentry and increasing masonry, and during the

peace years the advantage lay in reducing masonry and increasing carpentry. It remains to consider in what ways the layout of cottages may have changed to accommodate these changing factor costs.

There is already a certain amount of agreement between this "cost index", despite the incompleteness of the evidence with which it has been compiled, and the empirical findings set out in the conclusion to Part One of this chapter (p. 140). It may in time be possible to construct a better index on the basis of fuller materials prices, and on a specimen cost analysis for a year of less disturbed prices than 1805.

Part 3. Refinements of design.

(1) Cost analysis as a design aid

Manufacturers may tend to leave less written record of their building ideas than landowners, but their keen interest in reducing costs to a minimum need not be doubted. Finding the terrace cottage suited to the needs of their workpeople, they are likely to have given careful thought to alternative designs. They required a means both to predict likely costs and to evaluate alternative designs.

The ability of building designers to perform the first of these tasks has been examined by F. Jenkins.¹ They have, since the time of Sir Roger Pratt in the mid-seventeenth century, been able "somewhat nearly to calculate the expense of any designed building". Jenkins quotes the detailed example given in Leyburn's Mirror of Architecture in 1734 with specimen prices of materials. Many builders' price books appeared in the eighteenth century, and Jenkins concludes that it was then possible to forecast the costs of a designed building with confidence. The examples he gives are all of pricing performed after the completion of a design; he does not pursue the other point, of the use made of cost analysis as an aid in the task of designing.

The theory of cost analysis current in the eighteenth

1. F. Jenkins, Architect and Patron (1961), Chapter 7, "Architectural practice in the seventeenth and eighteenth centuries."

century held that the costs of construction for particular building types were proportional to floor area. The appeal of a simple theory of such evident practical utility causes no surprise. The theory evidently arose because experienced estimators calculating the costs of many buildings of one type, and measuring in the sequence suggested in the standard handbooks, very soon realised that when they had initially ascertained the cost of the floors and walls they could at that stage predict with some confidence the outcome of a full measurement. They could predict the cost of the carcase of the building with even greater confidence, as the main difference between one building and another lay in the expense of the finishings. Both William Salmon and William Leyburn in their handbooks¹ pointed out that cost information could conveniently be expressed in the form of a price per square, i.e., per hundred square feet of flooring. In Salmon's words, "the naked building, or shell of a brick house (the floors being finished), is valued by the square or 100 feet, if in high streets, viz. 1st rate, at £25 per square, 2nd rate at £35 per square, 3rd rate at £45 per square, 4th rate at £50 per square. But these rules may be augmented at the discretion of the surveyor, or according to the finishing the house."² Leyburn, similarly, gives as an example a house of 20 ft by 44 ft in plan, with cellars, three storeys and garrets, costing £41 per square. Rough estimates

1. W. Salmon, Palladio Londinensis (1734) and W. Leyburn, The Mirror of Architecture or the Ground-Rules of the Art of Building (1734), the latter quoted by Jenkins, op. cit., 125-6.

2. Salmon, op. cit., 77

performed on the basis of such figures have been described by Prof. F. M. L. Thompson as "advance estimating performed from sketchy calculations" which persisted "well into the nineteenth century".¹

Not every surveyor approved of "estimating in general". In 1774, Thomas Skaife dismissed rule-of-thumb methods as both unnecessary and misleading. In a period when tradesmen were becoming less frequently consulted on the design of buildings, there was perhaps little call for approximate estimations. "Many surveyors," he wrote, "have, or propose, methods for estimating by knowing the exterior dimensions of a building, that is, guessing at the expense by the number of squares the house contains; but this is a very uncertain rule, and can never be followed with any degree of certainty unless all buildings were finished in one manner and consisted of no other variation than the size of the structure."²

Despite disapproval of the publication of such methods on the part of persons with a professional interest in surveying, the method of pricing by reference to a unit of floor area or, as a later refinement, of building volume, was of too evident utility to fall into disuse. A parallel method was readily taken up for the purpose of rating valuation. Bayldon, in 1834, advised surveyors valuing property for the poor rate to measure the number of cubic yards, and to apply a rate per cubic yard chosen according to the age and condition of the building.³

1. F. M. L. Thompson, Chartered Surveyors, the Growth of a Profession (1968), 70

2. T. Skaife, Key to Civil Architecture (1774), 218

3. Bayldon, Treatise on the Valuation of Property for the Poor's Rate (1834), 63-4.

An important advance was made by 1800 with the realisation that the costs of buildings of similar area and specification varied with the shape of the plan. Some estimators may have been aware of this before, but the first to note the point in print appears to have been D. Laing. Laing considered that in theory the most economic plan shape would be a square. "The nearer the plan of a building approaches to a square, the greater are its conveniences, and the cost proportionately less. A square, equal in superficial extent to a parallelogram, requires less external walling, and consequently less internal finishings."¹

*

Working class cottages would be sufficiently uniform in specification in many cases to satisfy Skaife's requirement for buildings "finished in one manner". Manufacturers and other substantial investors in cottage property could readily decide what they could afford on the basis of knowledge of recent local building costs, particularly their own. The results of the practical experience of building work by manufacturers and others interested in building housing on a large scale has not been left on paper to guide the historian, but the evidence of the cottages themselves would suggest some care in adopting economical designs. They were evidently

1. D. Laing, Hints for Dwellings (1800), vi.

quick to appreciate the principle that the plans of rectangular buildings should be as little elongated as possible, as Laing advised. Applying this principle to the design of terrace cottages, it was perceived that a terrace as a whole, being one large elongated building, became cheaper if its length was minimised and its depth (and height) allowed to increase in lieu to maintain the desired area or volume. The great object in terrace design, which is utterly unmistakable later in the nineteenth century, was to make the individual cottages as narrow as possible, or to achieve similar economy by double-banking them as back-to-back or two tier pairs.

Two aspects of economy in the design of terrace cottages call for particular attention: firstly, the major adaptations of design in response to fluctuations in materials prices, which appear largely to be a matter of proportioning height to depth, and secondly the measure of economy to be achieved by minor adjustments of plan shape.

(11) Economy in proportioning terrace height to depth.

It must have been clear to persons building during the war years that the relative proportions of masonry and carpentry costs were not always the same. The question arose of deciding to what extent economy could be found by adjusting the cross-sectional height or depth of a terrace to alter the proportions in which masonry and carpentry were required. Room heights might not vary widely, but depths were flexible and the building heights might be anything from one to four storeys, though usually two or three.

Building element costs in the construction of cottages in terrace form might be divided into three categories according to their connection (a) with the number of storeys, (b) with the depth of the building from front to rear, assuming a constant cottage width, or (c) with neither height nor depth. At the risk of some oversimplification, there are:

(a) costs mainly dependant on the number of storeys -

i. Masonry etc.: walling, chimneys, some partitions, plastering.

ii. Carpentry etc.: staircases, some partitions

(b) costs mainly dependant on building depth -

i. Masonry etc.: ground preparation, ground floor, roof covering.

ii. Carpentry etc.: roof structure.

(c) independent costs -


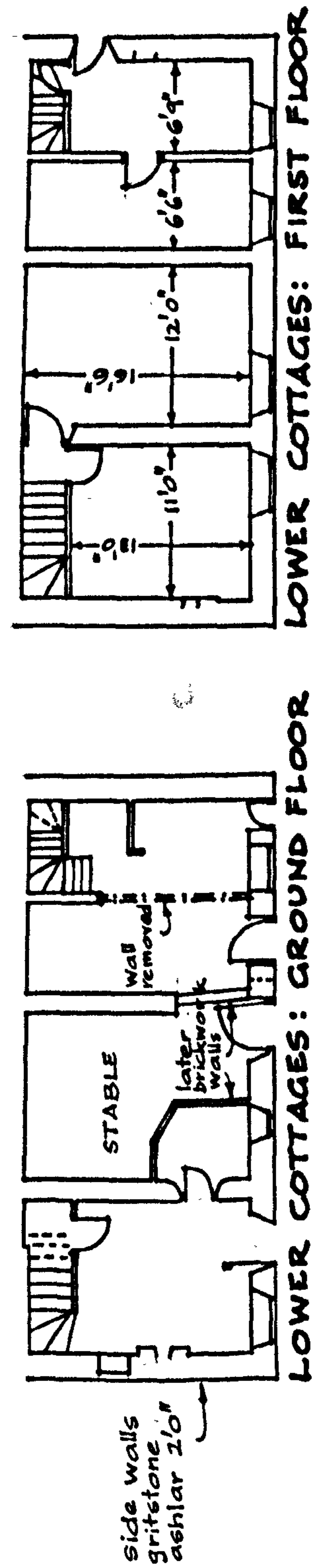
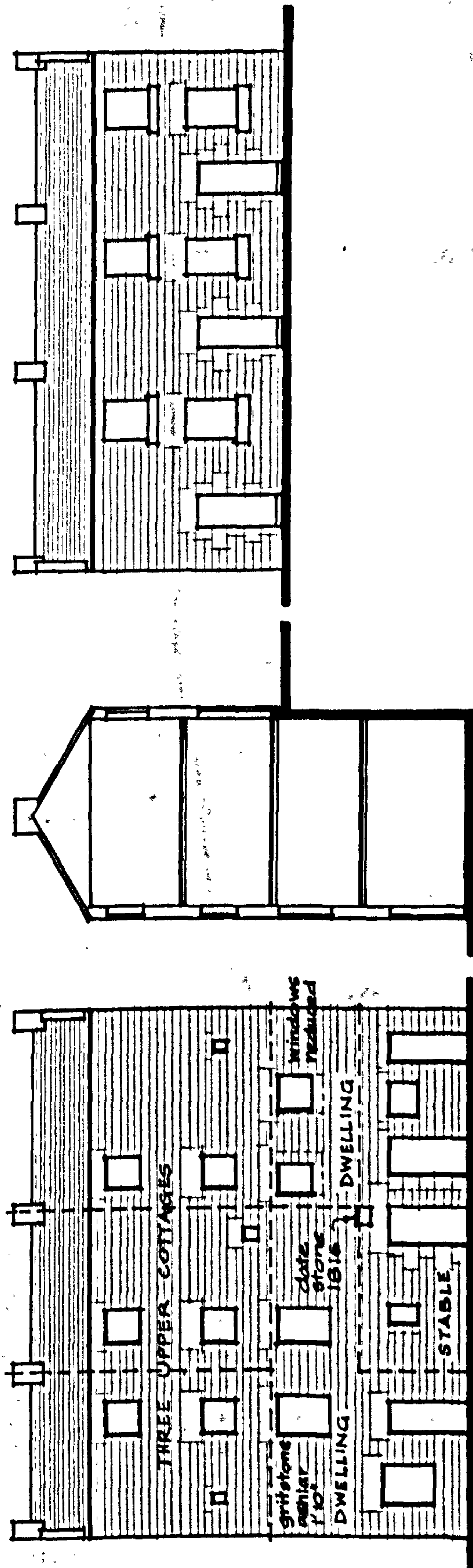
i. Masonry etc.: none.

ii. Carpentry etc.: suspended floors and ceilings, joinery, services, furniture and fittings.

In choosing between alternative designs for terrace cottages with the same floor area but arranged in a different number of storeys, it would be apparent that the most important factors were roof structure cost governed by plan depth and walling cost mainly governed by the number of storeys. In building work in the war period the three storey type of terrace cottage of one room in depth was frequently employed; in later housing, cottages with smaller rooms arranged 2-up, 2-down became more usual. It has been noted above that the proportion of brickwork to timber costs tended to be lower during the war years. Particularly in the years of restricted imports and high timber prices from 1808 to 1813 it became of great importance to minimise the use of timber.

A second consideration tending to favour tall cottages of one room depth was the cost of ground preparation. In places where only steeply sloping ground was available, some builders discovered the economy of constructing two-tier cottages. The upper tier is usually found to be a cottage of two storeys entered from the higher ground, the lower tier usually a single storey cottage rather like a superior cellar dwelling. Mill-owned specimens of this type exist at Brooksbottom near Bury, Milford near Belper (fig. 22, p. 176), and at Egerton. The type is perhaps better known in the West Riding, though it might occur anywhere, including South Wales, where ground of this type is exploited.

The early disappearance of the single storey cottage probably reflects the comparative cost of timber. Large terrace cottages of one storey may occasionally be found in the vicinity of the east coast ports, one reason being presumably



W
S O E
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TWO-TIER COTTAGES, HOPPING HILL

$$\frac{1}{10} = 0.1$$

SK 350455

Fig. 22.

the low cost of timber. In most parts of the country large roof structures were not favoured. An opinion on this was given by Beatson in 1797: "As the most expensive part of a cottage is generally the roof, a great deal of roofing will be saved by building one apartment over the other."¹ The savings in roofing and ground preparation and floor were sufficient to outweigh the additional expense in stairs.

1. Beatson, in Communications to the Board of Agriculture (1797), I ii 110

(iii) Economy in proportioning cottage width to depth.

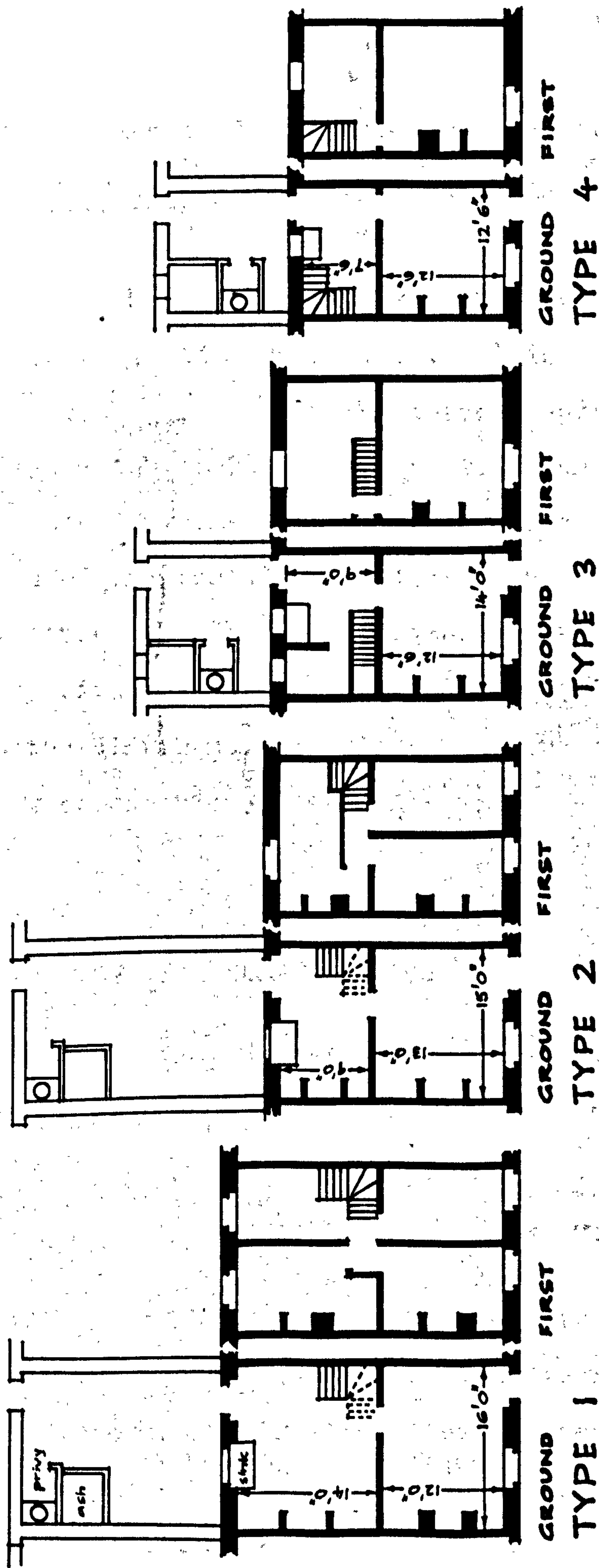
The effect of small differences in the proportions of width to depth may be illustrated with the help of details of four types of cottage of very similar specification built by the Ashworths of Egerton shortly after the construction of Egerton Mill in 1827 (fig. 23, p. 179).¹

Table 25

FOUR TYPES OF TERRACE COTTAGE AT EGERTON, c.1830

	Type 1	Type 2	Type 3	Type 4
Plan area (sq. ft.)	487	380	365	306
Plan ratio (depth ÷ width)	1.79	1.58	1.72	1.58
Eaves height (ft.)	18	18	16½	16½
Volume of structure (cu. ft.)	11,444	8,740	7,847	6,579
MASONRY	£52:17:0	£48:11:2	£37:8:0	£33:10:0
Ext. wall area (sq. ft.)	660	620	545	481
One party wall (sq. ft.)	649	527	495	381
Stone partitions (sq. ft.)	320	300	260	231
Floor paving (sq. ft.)	416	315	308	250
Yard paving (sq. ft.)	280	312	135	110
ROOF COVERING	£8:6:0	£7:10:0	£6:6:9	£5:12:0
Roof plan area (sq. ft.)	487	380	365	306
PLASTERING	£8:17:6	£7:12:0	£6:2:6	£5:10:0
Plastered area (sq. ft.)	3,020	1,820	1,584	1,446
CARPENTRY	£37:7:8	£34:10:4	£27:2:6	£24:0:0
Timber partitions (sq. ft.)	312	104	36	0
Floor & stair area (sq. ft.)	416	315	308	250
Ceiling area (sq. ft.)	416	315	308	250
Roof plan area (sq. ft.)	487	380	363	306
FIRE FIXTURES	£5:14:10	£4:13:3	£2:18:9	£2:18:9
Grates etc.	4	4	2	2
TOTAL COST PER COTTAGE	£112:13:0	£103:2:9	£79:18:6	£71:10:9
cost per sq. ft. of flooring	32.79d	39.29d	31.13d	34.33d
cost per cu. ft. of structure	2.39d	2.82d	2.44d	2.62d

1. Sanitary Inquiry, (P. P. 1842, XXVI), 266-7, 402; Sanitary Inquiry, Local Reports, E. and W. (P. P. 1842, XXVII), 336 ff (arithmetic corrected).



COTTAGES OF H. & E. ASHWORTH AT EGERTON

SD 709149

1:200

Fig. 23.

The only differences in specification were the inclusion of a small sunken larder under the stairs , and the use of Baltic deal instead of American pine for the roofs and windows, of types 1 and 2, and a different amount of partitioning in each type.

Type no. 1 has the narrowest plan shape: the ratio of depth divided by width being 1.79. This narrowness tends to give the terrace as a whole the nearest approximation to the square plan which would, according to Laing's rule, be the most economical. The economy to be gained from this narrowness of the individual cottages may be tested by setting the four types down in descending order of narrowness. Comparison with the cost per cubic foot confirms that although the differences in plan shape are small, narrowness is clearly accompanied by a cost saving.

Table 26

RELATION OF PLAN SHAPE TO COST

Type no.	Plan ratio (depth ÷ width)	Cost (pence per cu.ft.)
1	1.79	2.39
3	1.72	2.44
4	} 1.58 {	2.62
2		2.82

It might be supposed that size would be amongst the factors influencing cost. The quantities of materials included would tend to be governed by two-dimensional measurements, in some cases height and a horizontal measurement, and in some cases plan area. Quantities would, on the whole, be expected to vary with changes in volume in proportion as the square to the

cube, making larger cottages cheaper per unit of volume. Despite this, no correlation between size and unit cost appears in the crude evidence:

Table 27

RELATION OF SIZE TO COST

Type no.	Cottage volume (cu. ft.)	Cost (pence per cu. ft.)
1	11,444	2.39
2	8,740	2.82
3	7,847	2.44
4	6,579	2.62

If the costs per unit of volume were amended to allow for the effects of plan shape on cost, noted above, the remaining differences in cost possibly attributable to size would probably still be negligible.

Another possibility would be that the adoption of a narrower plan created an economy, not by generally saving materials, but by altering the proportion of masonry to carpentry. If this were so, the advantage of narrowness in a terrace cottage plan would be reversed under certain conditions of the market in building materials. That this is not so may be shown from the fact that, despite differences in narrowness of plan shape, the cost of each specimen breaks down into five elements in virtually the same proportions:

Table 28

RELATION OF PLAN SHAPE TO THE COMPARATIVE WEIGHTS OF FIVE COST ELEMENTS

Type no.	Plan ratio (d ÷ w)	Building element costs:				
		walling	roof cover	plaster- ing	carpen- try	fire fixtrs.
1	1.79	47%	7%	8%	33%	5%
3	1.72	47%	7%	7%	33%	5%
4	1.58	47%	8%	8%	33%	4%
2	1.58	47%	8%	8%	33%	4%

The amount of saving of masonry and carpentry resulting from a narrower plan shape were therefore equal. Although there were changes in the weights of these two materials groups in the total cost of building at various periods, this would not affect the principle that narrowness was a leading desideratum in cottages planned in terraces.

Part 4. Cottage rent expectation

(i) The rent potential of cottage property

In agricultural districts in c. 1840, according to the evidence in Chadwick's Sanitary Report, the simplest one room dwellings were rented at from 2½d to 1s 6½d per week; two room cottages, one-up, one-down, from 7d to 2s 6d; similar cottages with a back-house or wash-house annexed, from 9½ to 2s 6d; and 2-up, 2-down cottages from 9½ to 3s 9½d.¹ In the manufacturing districts, higher rents and better cottages were usual. Chadwick's Report also contains a most valuable table comparing the mean costs of building cottages and the levels of return on outlay according to the reports of Relieving Officers in many parts of Cheshire, Derbyshire, Staffordshire and Lancashire.² The Relieving Officers' information covered over 100,000 cottages in 24 Poor Law Unions (figs. 24 to 26, pp. 184-6). In his request for these reports, Charles Mott, the Assistant Poor Law Commissioner, defined three grades of cottages or tenements by reference to rent level: the lowest grade not exceeding 1s 6d per week, the middle grade above 1s 6d but not exceeding 2s 6d, and the best grade above 2s 6d but not exceeding 4s per week.³ Dwellings rented at over 4s per week were evidently not regarded as cottages. In the summary table these grades were said to give "average

1. Sanitary Inquiry (P. P. 1842, XXVI), 401 (Table 11).

2. Ibid., 400 (Table 10); Sanitary Inquiry, Local Reports, E. and W. (P. P. 1842, XXVII), 246.

3. Ibid., 244



Fig. 24.

Relieving Officers' evidence on the mean costs of constructing working class cottages, c.1840

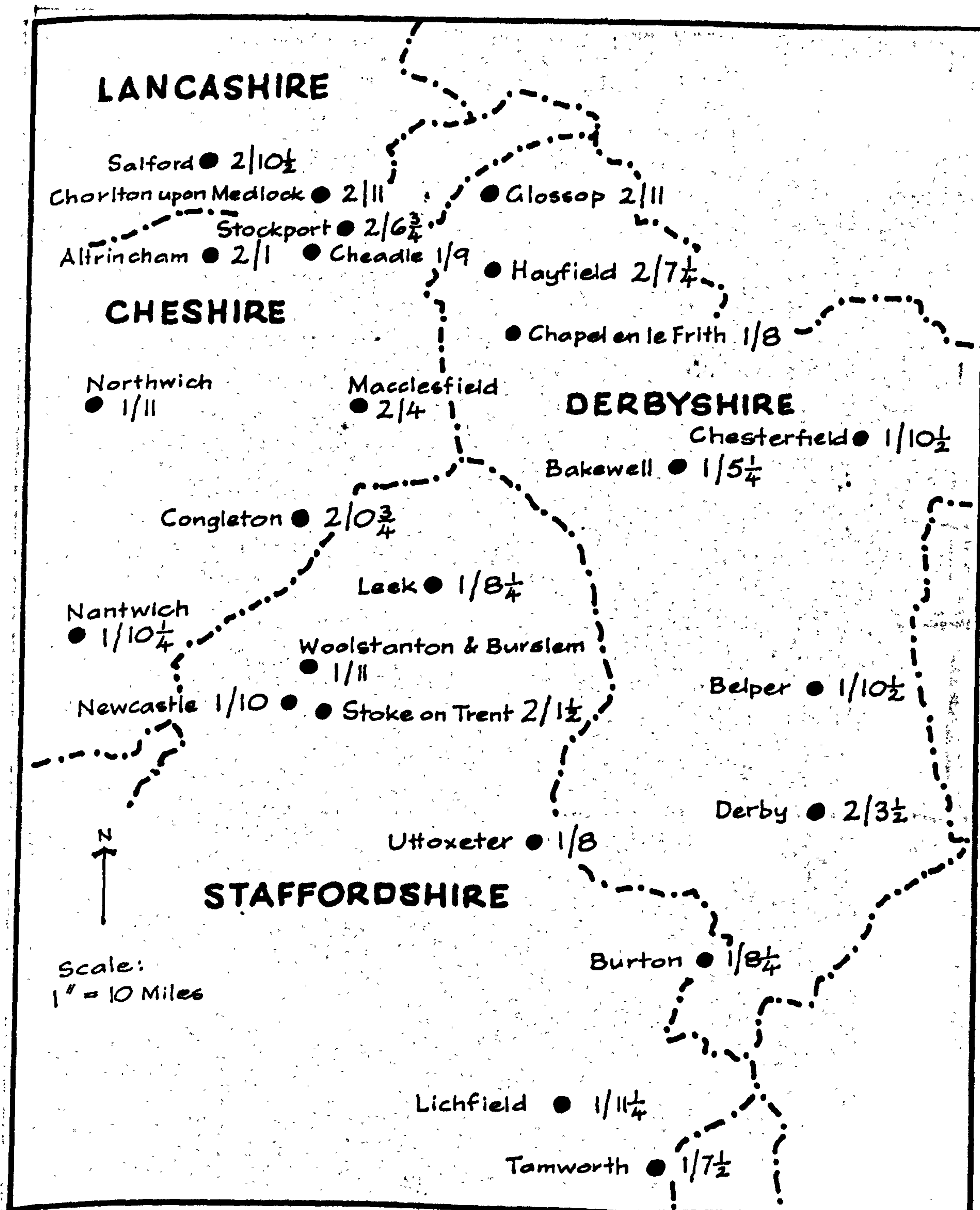


Fig. 25.

Relieving Officers' evidence on the mean net rent returns of working class cottages, c.1840

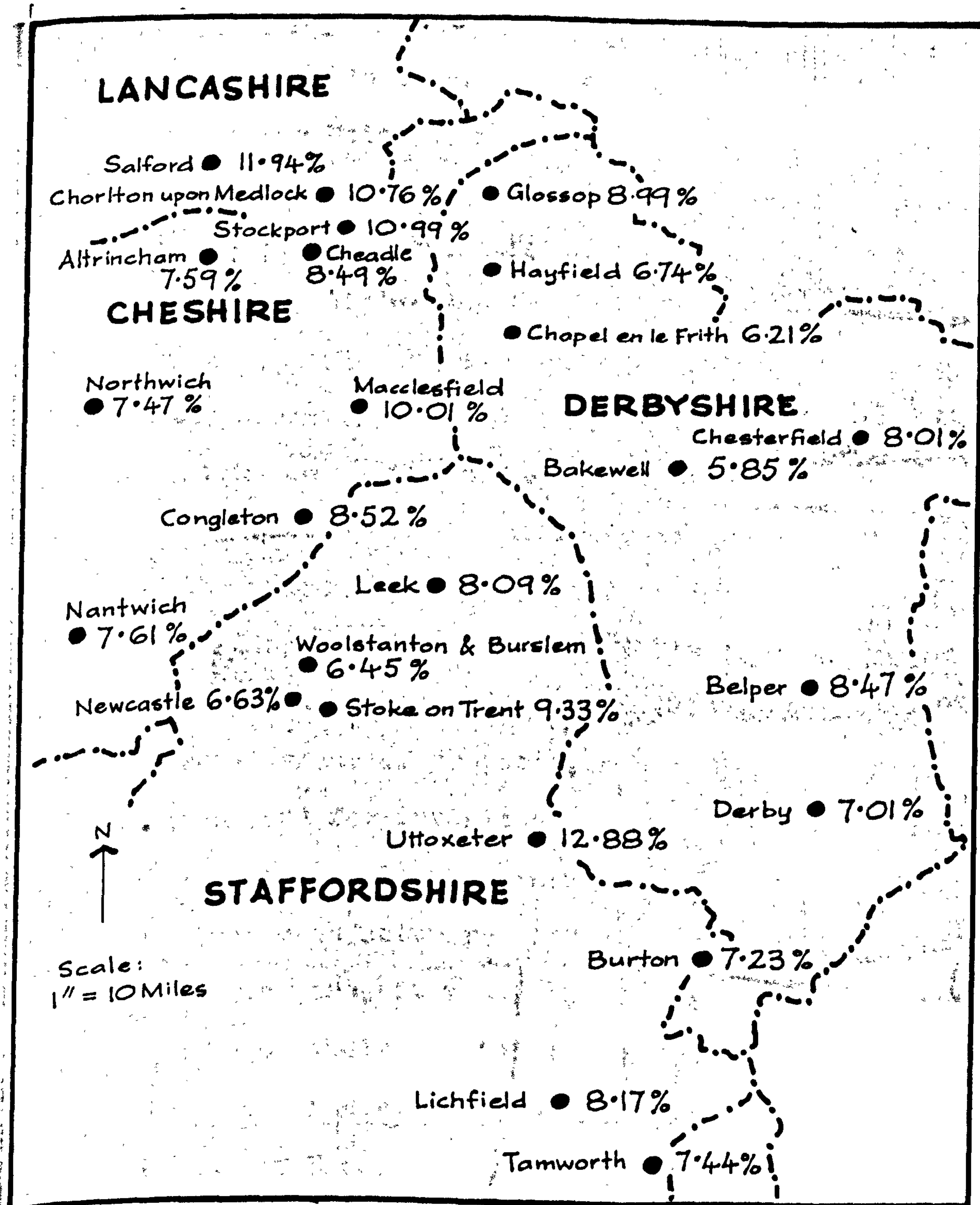


Fig. 26.

Relieving Officers' evidence on the mean net return on capital invested in working class cottages, c.1840

[returns] allowing for repairs etc." of 1s 3d, 2s 3d, and 3s 6d per week respectively.

Local mean net returns calculated from Mott's evidence varied from place to place to a considerable extent. Cottages in the Uttoxeter Union were said to return nearly 13%, thus repaying their costs of construction in an average of eight years; cottages in Bakewell yielded a little below 6%, thus repaying their costs of construction in an average of slightly over 17 years. The highest returns appear to have been realised in the urban centres, as compared with the country towns, but this might be partly due to the inclusion of ground rent in the rents quoted with no corresponding allowance being made for the price of building land in the building values.¹

Two leading manufacturers put their view on record that the optimum profit to a cottage landlord was to be derived from the worst grade of property, a view which would imply that a given fund for investment in cottages would be laid out most advantageously in as many cheap cottages as possible. They and other manufacturers with a reputation for providing better cottages were, it would therefore appear, generously forgoing some of their potential advantage by providing better cottages in the interests of the wellbeing of their tenants. Thomas Ashton of Hyde, before the Select Committee on the Health of Towns in 1840, commented adversely on the profiteering of small landlords: "That is the evil; and they do not care what is done with [their cottages]; their rule is, the worse the houses, the larger the interest they will get from them ...

1. No questions were asked regarding ground rent or land value.

[they derive] a very large interest on the worst houses; they build them as close as they can, to get in as many as possible."¹ Edmund Ashworth voiced a similar opinion. "The most advantageous investment in cottages," he said, "is the smallest size."² This might be thought a truism, were it not for the fact that very extensive evidence contradicts it as a general proposition. It also appears clearly from evidence of estate development used by Dr. Gaskell³ that, in the mid-nineteenth century, larger estate owners were able to impose restrictive covenants on the development of their property, and so benefit from the more lucrative middle class housing. Owners of small plots, by contrast, were obliged by the pressure of competition to lower their expectations of return and content themselves with working class housing. It is not impossible that a parallel state of affairs may have existed in the development of the various grades of purely working class housing. From Mott's evidence presented to the Sanitary Inquiry it appears that better cottages were a more profitable investment than the poor ones condemned by Ashton and Ashworth.

In the lowest grade the mean net return per annum on cottages and tenements was, according to Mott, 8%. A higher return, $8\frac{3}{4}\%$, was obtained from the middle grade, and from the best grade $9\frac{3}{4}\%$.⁴ The difference is not large, but it clearly favours the better property. An illusion that the worst cottages gave higher returns may have been due to a failure to take account of the full difference between nominal rent

1. S. C. on Health of Towns (P. P. 1840, XI), Qns. 2,617-8.

2. Ibid., Qn. 1,860

3. S. M. Gaskell, "Housing Estate Development, 1840-1918" Ph.D., Sheffield (1974), 9 ff.

4. These are weighted means, allowing for unequal numbers in each Union.

levels and actual rent receipts. In the lowest grade of cottage property, for which actual mean rent returns of 1s 3d per week were expected, the Relieving Officers reported that building costs ranged from £28 to £60 per cottage or tenement. In the middle grade they ranged from £40 to £90, and in the highest grade from £83 to £155. No date is given for these estimates, but building prices were fairly stable at this period. The weighted mean costs (or "general averages") were, respectively, £40, £65 and £92.

The Relieving Officers' evidence for the local net rent returns gained from each grade, after allowing for landlord's expenses, shows that in 18 out of the 24 Poor Law Unions from which returns were made there was a distinct commercial advantage in cottage property favouring the highest grade compared with the lowest. In twelve Unions, furthermore, the highest grade was preferable to the middle grade also. The lowest grade of cottage property was favoured commercially in only five Unions:

Table 29

RENT RETURNS ON THREE GRADES OF COTTAGE PROPERTY, c.1840

Poor Law Union	A lowest grade	B middle grade	C highest grade	weighted mean net return	advantage (C - A)
Salford	6.05%	12.50%	12.05%	11.94%	6.00%
Glossop	5.40%	7.20%	10.10%	8.99%	4.70%
Northwich	6.25%	7.50%	10.20%	7.49%	3.95%
Leek	7.00%	9.05%	10.60%	8.09%	3.60%
Chorlton upon M.	7.40%	10.50%	10.95%	10.76%	3.55%
Chapel en le F.	5.40%	7.30%	7.40%	6.21%	3.00%
Stoke on Trent	7.20%	9.55%	10.10%	9.33%	2.90%
Congleton	7.00%	8.55%	9.70%	8.52%	2.70%
Altrincham	6.65%	7.30%	9.00%	7.59%	2.35%
Macclesfield	8.50%	9.55%	10.85%	10.01%	2.35%
Nantwich	7.00%	7.75%	8.45%	7.61%	1.45%
Newcastle under L.	5.70%	7.35%	6.70%	6.63%	1.00%
Chesterfield	7.20%	8.20%	8.50%	8.01%	0.85%
Cheadle	8.15%	8.60%	9.00%	8.49%	0.85%
Tamworth	7.00%	8.35%	7.80%	7.44%	0.80%
Bakewell	5.60%	6.60%	6.25%	5.85%	0.65%
Belper	8.05%	8.60%	8.50%	8.47%	0.45%
Hayfield	6.50%	7.20%	6.50%	6.74%	0.00%
Utttoxeter	11.20%	14.40%	-	12.88%	?
Burton on Trent	8.15%	6.40%	7.85%	7.23%	-0.30%
Woolstanton & Burslem	6.50%	6.40%	6.05%	6.45%	-0.45%
Derby	7.20%	7.50%	5.85%	7.01%	-1.35%
Stockport	11.60%	10.85%	9.30%	10.99%	-2.30%
Lichfield	9.55%	8.45%	6.05%	8.17%	-3.50%

In 18 out of 24 Unions the number of cottages or tenements in the lowest grade exceeded the number in the highest grade. Despite the higher returns to the cottage landlord in the better property, no predominance of better cottages had come about by the date of Mott's survey. The survival of

old property and the creation of inferior new cottages, perhaps through the activities of a free market serving a population unable or unaccustomed to demand improved housing, caused the lower grades to predominate. Taking the evidence as a whole, the lowest grade comprised 34% of the cottages, the middle grade 42% and the highest grade 24%. The proportion found in the highest grade is much enlarged by the inclusion of Stockport, Salford and Chorlton upon Medlock Unions. In these cases high urban land values are likely to have inflated rents and distorted the evidence. Omitting these, the proportions of cottages in what might be called predominantly country-town Unions were 44% in the lowest grade, 47% in the middle grade, and only 12% in the highest grade.

Mott pointed to the inability of the poor to demand better cottages. He observed that although the worst grade returned a lower percentage to the landlord, the rents involved were a higher proportion of the tenants' earnings. Rents in the lowest grade were a quarter of income, in the middle grade a sixth, and in the best grade an eighth. The three grades therefore corresponded to family earnings of 5s, 13s 6d, and 28s respectively. Mott's conclusion was that "these results confirm the lamentable fact that the lower the poor are reduced in the social scale, the more they are subject to imposition and extortion."¹ In the present discussion, the conclusion may be put somewhat differently: the market for tenancies of high-rented cottages was, for whatever reason, limited, though highly profitable; few landlords were in a position to enter

1. Sanitary Inquiry, Local Reports, E. and W., 247.

it. Perhaps millowners aiming to house their workpeople were amongst the few cottage landlords thus favoured.

An industrial master was confronted with the problem whether the greater returns observable in the better grades of housing in the free market would be realised in his own cottage property, if he overreached effective demand and attempted to house a low class of industrial labouring population in better accommodation than that which they appeared to appreciate. The poor return on cottage property generally in the free market was partly due to rent defaulting and excessive damage, as Chadwick himself made clear.¹ Rent payments presented little problem to an employer landlord, but there was the risk that the other evils associated with bad tenants might nullify expected improved returns from improved cottages.

One would expect this problem to be at its worst in the earlier years of industrial development. It will therefore be useful to examine the evidence of rent returns on four grades of cottages owned by Evans and Company in 1796.² The Company divided their cottages into four grades, in accordance with a calculation that in each grade the net income would fall below the nominal income by 12½%, 15%, 18% and 20% respectively, because of the risks of cottages standing untenanted and the expenses of repairs. It is possible to compare the rent income per square foot per annum in each grade:

1. Sanitary Report, ed. Flinn (1962), 299

2. Evans Papers. "D" Ledger, folios 23 ff., 66 ff. (Derby Borough Library, 162-2-70).

Table 30.

COTTAGE GRADES AND RENTS AT DARLEY ABBEY, 1796

	best grade	second grade	third grade	fourth grade
Total annual nominal rent	£166 10 0	£57 19 0	£2 12 0	£41 12 0
Total stated floor area of cottages (sq. ft.)	22,284	10,535	552	9,387
Nominal rent per sq. ft. per annum	1.79 d	1.32 d	1.13 d	1.06 d
Reduction of income for cottages standing empty and expense of repairs	12½%	15%	18%	20%
Therefore probable net rent income per sq. ft. per annum	1.67 d	1.13 d	0.93 d	0.85 d

The housing judged to have been of the best quality or in the best condition, some of which can be shown, on other evidence, to have been new, was approximately twice as profitable on the test of rent return per unit of floor area. Both the cottage landlord in the free market and the industrial tied-cottage landlord found the same higher returns in better cottages; but the latter was armed with an ability to make tenants behave and pay rents as consistently as he would wish.

Some employers were accused of insisting on enhanced rents without troubling to provide better standards to justify their claim. One critic in 1842 quoted instances of employers in Ramsbottom demanding rents of up to 5s 5½d per week for one or two bedroom cottages; another condemned millowners' housing and the Anti-Corn-Law League in one breath, claiming that the rents of tied cottages owned by league supporters were ten per cent above usual rents.¹

1. R. Boyson, The Ashworth Cotton Enterprise (1970), 121.

It might be too hostile a judgement to conclude that the attraction of an increased rent was generally the industrial landlord's only motive for providing improved or enlarged cottages; but it is worth notice that the philanthropy which moved Ashton and Ashworth to self-congratulation was of a profitable sort.

*

Workers employed in cotton mills naturally constituted the majority of millowners' cottage tenants, and such people were better paid than most other labour. They offered the prospective cottage landlord a good market. In her study of the family economy of cotton workers Frances Collier has produced evidence of their wages at several periods.¹ In about 1795 the employees of McConnell and Kennedy "were earning comparatively high wages ... the income of their families must have been considerably above that of those whose workers were in the occupations Eden mentions", i.e., agricultural and common labourers. High wages did not always apply; in 1811 earnings were reduced by short term working to a half of former levels.² In periods of trade boom, as in 1824 or 1835, earnings and affluence were fully restored. One well informed contemporary believed that the Factory Commissioners' and Factory Inspectors' evidence on wages in the early 1830s

1. F. Collier, The Family Economy of the Working Classes (1965), 18.

2. Ibid., 22.

was "such as to dissipate the clouds of misrepresentation which disclaimers had breathed forth on the subject."¹

High rents were not to be obtained even from well paid workers without a strict policy of enforcement. The universal practice of deducting rent from wages appears to have afforded an elementary solution to this problem. Many of Samuel Oldknow's employees at Mellor in the early 1800s were paid by means of printed "shop notes" in the form of a personal statement of account, crediting the payment for work performed and debiting rent, keep of cow, meat, potatoes, coal, and sundry articles. The balance might be cashed at the truck shop or the value received in further goods.² A slightly different system was used at Styal: "The shopkeeper sent a weekly account to the bookkeeper at the mill of all the goods bought and the cost was deducted from the workman's wages. The account books extant show a 'balance of wages paid' when all else, rent, damage, goods, etc., had been subtracted."³ ... Those not employed by Greg paid their rents to the bookkeeper at monthly intervals, but the operatives had their rent deducted from wages, in addition to the cost of any damage the tenants or their children may have caused."⁴ The Ashworths at Egerton used a similar system.⁵

The educative process to persuade tenants that improved housing ought to be an aim in life did not always succeed. It is evident that tenants remained over-conscious of concomitant improved rent levels. It was a matter of regret to Edmund Ashworth that some of his tenant families so resented paying

1. E. Baines, History of the Cotton Manufacture (1835), 435.
2. Oldknow Papers, "Letters & Business Documents" (Manchester Ref. Lib., MF 731). Some shop notes were endorsed as cashed.
3. G. Lazenby, "Social and Economic History of Styal" M.A., Manchester (1949), 118
4. *Ibid.*, 105A-106.
5. Boyson, op. cit., 110-11.

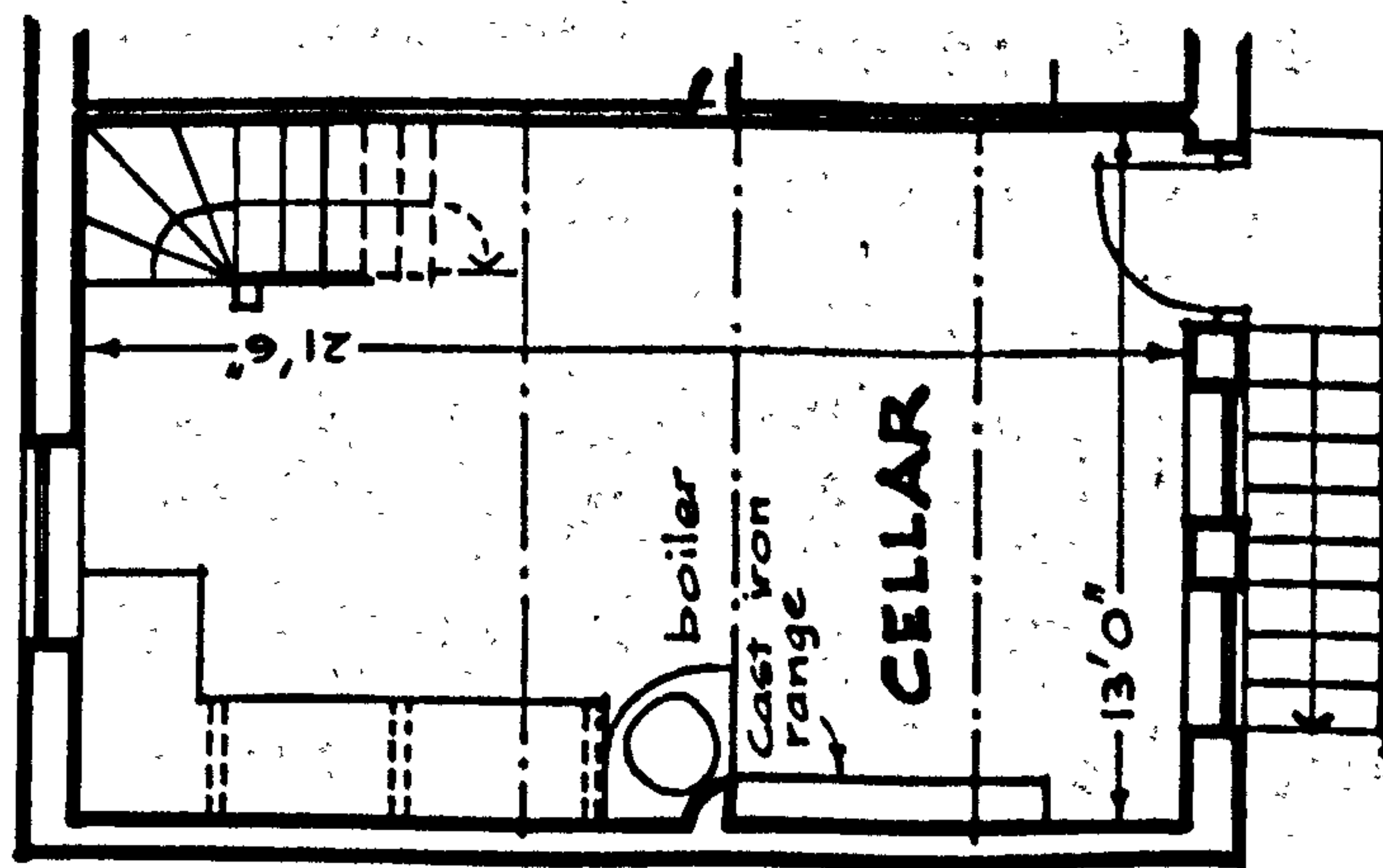
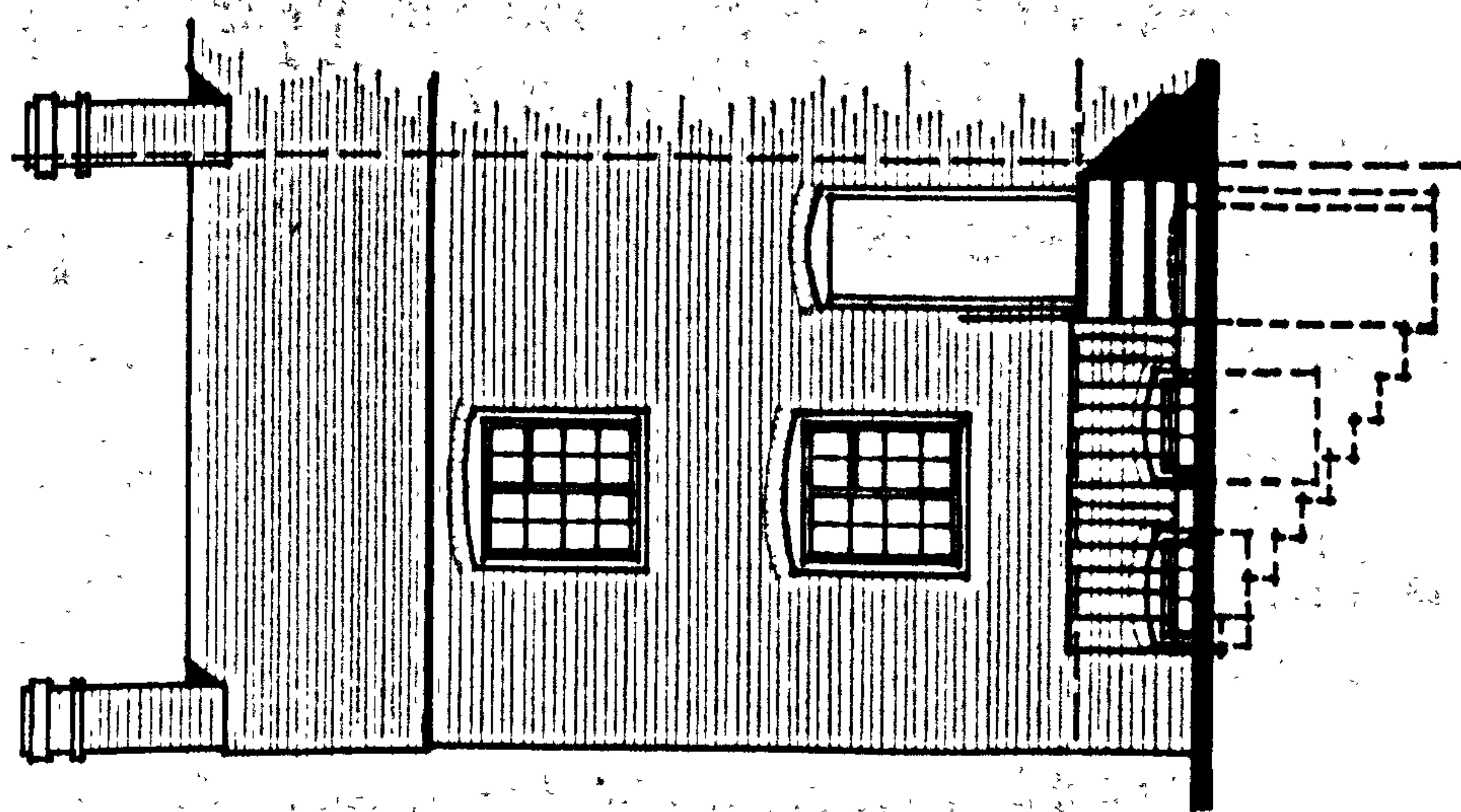
rent that they would shun improved cottages even when the rent difference was well within their means. "I have known a man and his family, with a good income, go from a good cottage to a bad one to save a shilling a week."¹ Similarly, when Samuel Greg of Styal built 28 cottages, of which 27 contained large cellars with fireplaces in the early 1820s (fig. 27, p. 197), probably with the intention that the cellars might serve as handloom workshops, but then deciding not to equip them, he found that his employees rushed to occupy these empty cellars. On the 5th of November 1825 a memorandum records, "John Bayley removes to a cellar in the new cottages and left the house in which the coachman now lives." On the 25th of February following "Nicholas Shuttleworth" (a domestic servant²) "flitted into a cellar".³ The cellars may at first have appeared satisfactory dwellings for single persons, and Greg evidently exerted no strenuous objection to these moves. The new tenants are unlikely to have installed the kitchen ranges and copper boilers found in the cellars. From the first, the cellars at Styal were probably rented at a shilling a week. The extreme mobility of tenants at Low Moor near Clitheroe has also been remarked by Owen Ashmore.⁴

1. S. C. on Health of Towns, 111.

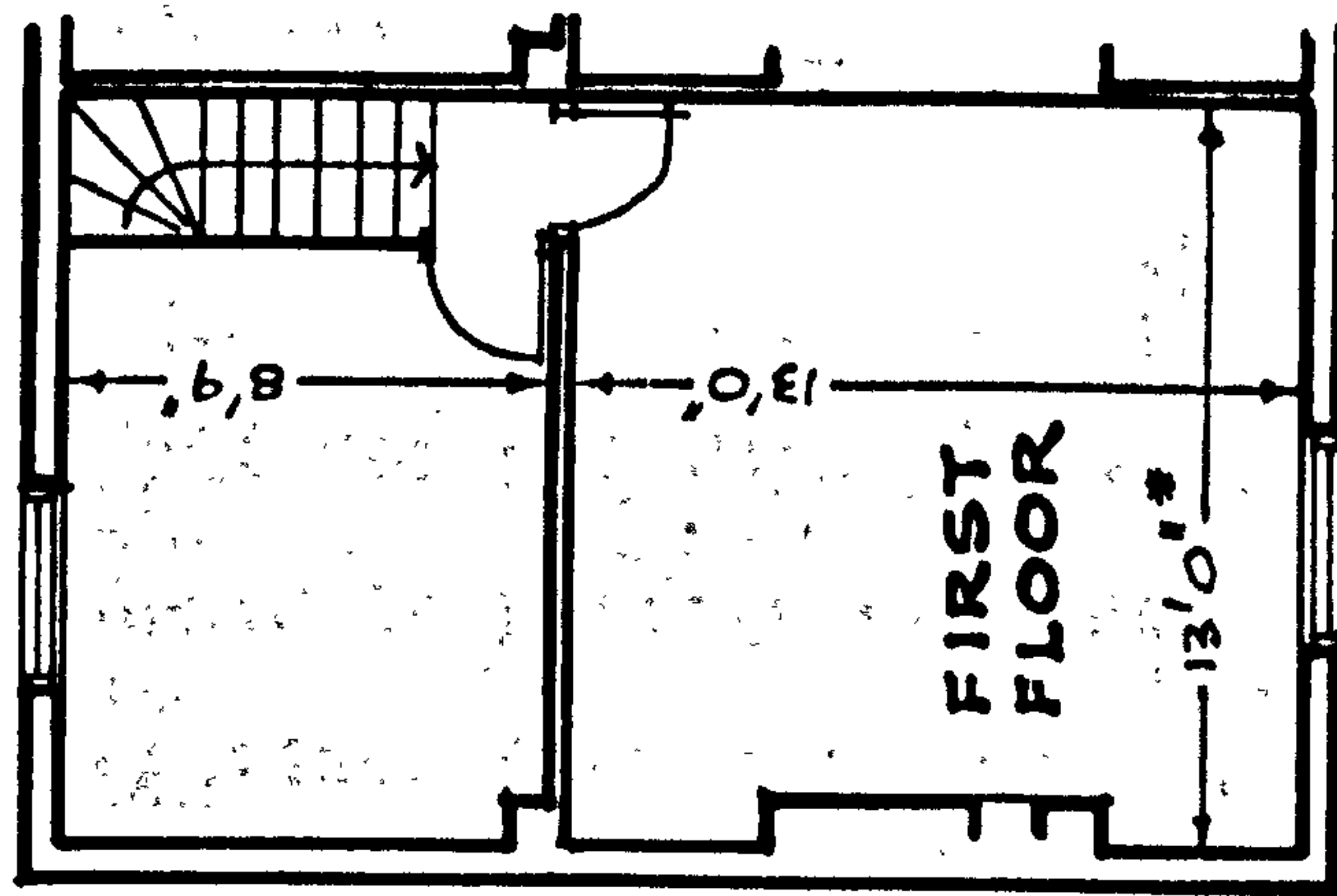
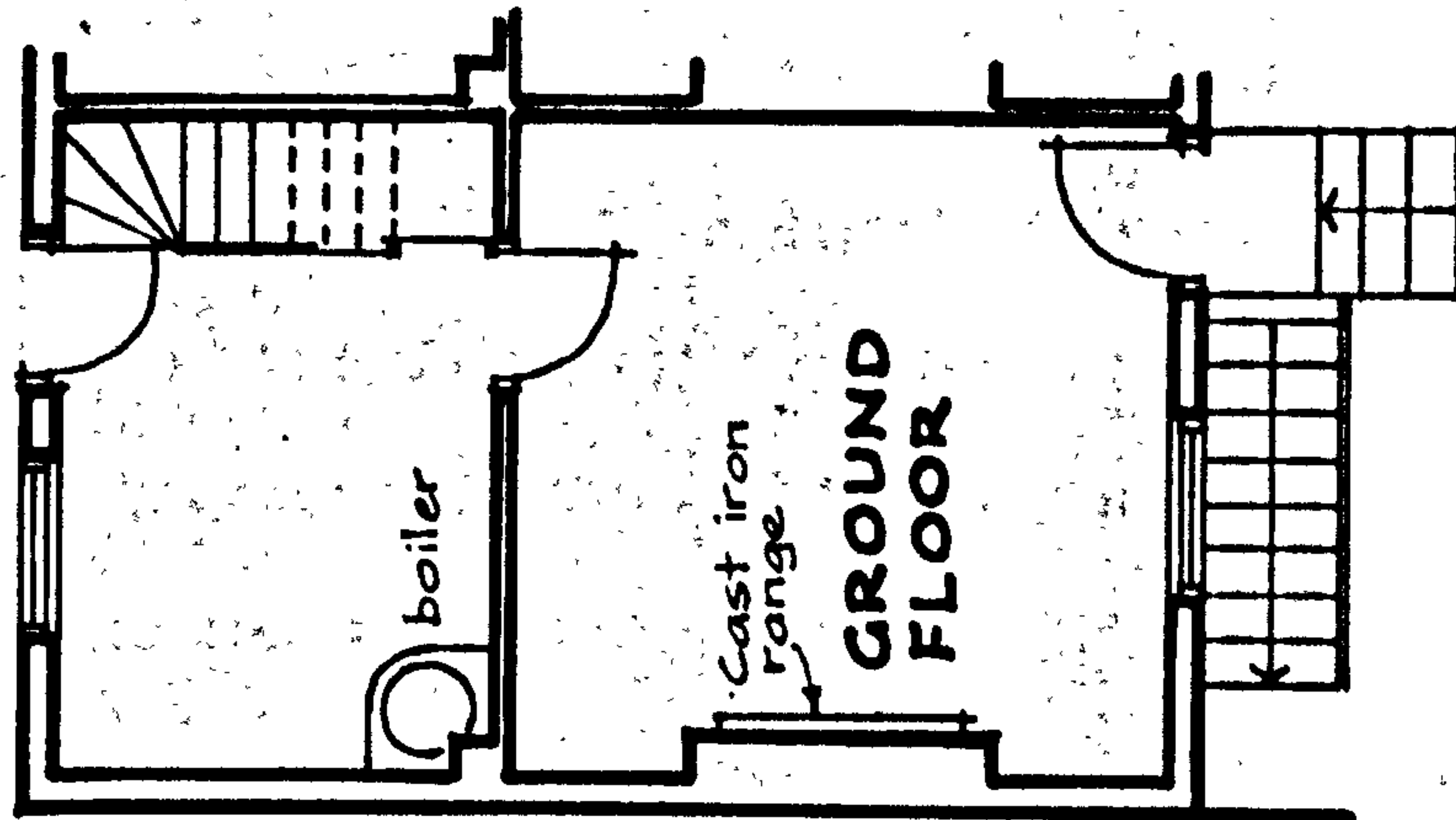
2. Shuttleworth was Greg's "footman" brought from Manchester to Styal in 1824. Greg Papers, General Memoranda (Manchester Ref. Lib., C5/3/1) p. 3.

3. Ibid., 110.

4. O. Ashmore, "Low Moor, Clitheroe, a Nineteenth Century Factory Community" Trans. L. and C. Antiqu. Soc. LXXIII-LXXIV (1966), 147.



Some cottages have external stairs at rear



* In 13 of these 27 cottages this dimension is 12'0"

SJ 834835

OAK COTTAGES, STYAL

$\frac{1}{8}'' = 1'0''$

Fig. 27.

(ii) Millowners' rent policy.

The view was put forward in a previous section that many industrialists turned to cottage property as an investment parallel to, but sometimes distinct from, their manufacturing activities. Cottages, it was pointed out, were frequently not built by owners of cotton mills for a number of years, sometimes several decades, after establishing their mills. A pecuniary gain in the form of improved management might ensue, but it is suggested that this was not a dominating expectation. One manufacturer built cottages without any thought that they might be of managerial value, and informed Edwin Chadwick that "he was surprised by a pecuniary gain in the superior order and efficiency of his establishment, in the regularity and trustworthiness of his workpeople, which gave even pecuniary compensation for the outlay of capital and labour bestowed upon them."¹ If, on the other hand, a managerial advantage was generally sought, one might well expect evidence of this expectation in a policy of charging rents below the commercial rate of return on capital.

The possibility of subsidised rents might arise more readily in earlier instances of industrial housing development. If housing was not regarded as a totally independent, self-justifying investment from the start. This possibility gives particular interest to the rents evidence at Darley Abbey, which survives for 1796. It has on occasions been considered

1. Sanitary Report, ed. Flinn (1962), 301.

that the Darley Abbey rents were subsidised. The idea that Evans and Company saw their housing as an integral part of their manufacturing concern tends to gain credibility from their advertisement for mill hands in 1787 tempting them with the offer of "comfortable houses".¹ Rents ranged from 3d to 3s 10d per week, though the maximum for ordinary cottages was set at 1s 6d.²

Table 31.

RENTS AT DARLEY ABBEY, 1796

Nominal weekly rent	Number of cottages
3s 10d	1 (Apprentice house?)
2s 4d	1 (Farm house?)
1s 6d	46
1s 0d	17
9d	11
6d	6
3d	1

It might be thought that at least the cottage rented at 3d per week could be instanced as one the rent of which was subsidised. It appears to have been a very small dwelling somewhere in the vicinity of Hill Square, though it cannot be identified amongst the surviving cottages. Its floor area was given as only 105 square feet, and 3d may well have been a fair commercial rent. Of the cottages rented at 6d, one was the smallest of four at Folly Houses, and four were small cottages probably in Darley Street. Rents of identifiable cottages still surviving include those of cottages in the Square, the

1. S. D. Chapman, The Early Factory Masters (1965), 159.

2. Evans Papers, "D" Ledger, folios 23 ff., 66 ff.

Four Houses, Mile Ash Terrace, and probably West Row, all at 1s 6d, it possibly being considered that this was the maximum which tenants would stand.

A group of cottages valued at £1,751 in 1792 (including the Square, built in 1788) yielded a gross rent of £103 in 1796, or just below 6% on probable outlay. The Four Houses, built in 1792 at a cost of £198, yielded an annual gross rent of £15 12s in 1796, or nearly 8%. Twelve other cottages built in Mile Ash Lane in 1796 for £837 yielded an annual gross rent of £46 16s or over 5½%. These different returns are of course due to the decision to apply a uniform ceiling of 1s 6d; the mean return is very close to 6%. These appear to be low rents by later standards, but fully up to the prevailing rate of interest.¹ Numerous examples of alterations and improvements recorded in the Company ledgers were also assessed at 6% for the purpose of calculating rent increases. It was exceptional for a tenant not to have rent increased upon improvements; as such an exception, in 1796, the Ledger records that John Baker, the tenant of a large cottage probably in Hill Square, was "to repair his house and his rent is not to be raised, as per agreement with Mr. Walter Evans".²

Amongst other examples of known cottage rents at a particularly date are those of Peel, Yates and Peel of Burrs Mill near Bury. Here a terrace of 20 back-to-back cottages existed in 1800, consisting of only two rooms each, one-up, one-down. These are almost certainly the 20 cottages³ mentioned

1. Yield on 3% Consols below 4% at that period.

2. "D", f. 59.

3. Sun CS 7/640035 (1795). Twenty cottages are listed with the Company's Elton property (item 39).

in the Company's insurance policy of 1795. If so, the sum insured on each was £30, which seems a fair valuation. Of these tiny cottages, Frances Collier reported: "In every case the rent comes to 1s 3d a week, but, on occasion, the firm appears to have allowed one or two families who were in difficulties to pay half the rent."¹ If these cottages cost £30 each, the gross return was approximately 10%. Rents of 1s 3d and 1s 6d were charged by Hinde and Company of Dolphinholme for cottages built shortly after 1795,² the higher rents being for the cottages nearer the factory. It is not impossible that there may have been an opinion held by industrial cottage proprietors in the 1790s that rents up to 1s 6d were appropriate. The cottages belonging to Robert Arkwright at Bakewell in 1830 were still only rented at 1s 6d per week, which Anthony Strutt, valuing them, mentions as "very low".³ These low rents by later standards may be more due to a failure to revise them than to any policy of deliberate subsidy. The cottages were built in the late 1780s for the most part, and, although their original cost is unknown, rents were perhaps set initially at 1s 6d, as an economic rent, and never increased.

In the post-war period both higher building costs and higher rents are found. Rents appear to have continued to be set at a level giving a commercial rate of return on

1. Collier, op. cit., 33.

2. P. P. Hall, "Dolphinholme - A History of the Dolphinholme Worsted Mill, 1784-1867" Trans. Fylde Hist. Soc. III (1969).

3. Arkwright Papers, "Valuation of Mill and Property, 1830" (Chatsworth Muniments, ARK/65).

investment. Evidence of cottage rent levels and returns at Styal indicate that the Gregs received a return of $7\frac{1}{2}\%$ on outlay on housing and improvements.¹ The Company paid Samuel Greg's personal estate at this rate, though they may have absorbed a small loss on their cottages account as $7\frac{1}{2}\%$ appears to have been the approximate level of their gross rent receipts also. It appears that a cottage and cellar, the outlay on which was about £140, were in many cases rented at 3s and 1s per week.² This would produce £8 10s annually, or 7.42%. Net returns are not likely to have been much below this level, as the company appears to have sustained almost no risk of cottages standing empty,³ and Greg personally paid for regular maintenance, except for repairs of damage deducted from wages.

The leading owners of cottage property among country millowners in the post-war period appear to have obtained high rent levels with ease. Thomas Ashton of Hyde charged 3s a week in 1835 for 2-up, 2-down terrace cottages with small back yards;⁴ in 1844 his rents were said to be from 3s to 3s 6d for cottages consisting of "a sitting room, a kitchen, and a back yard, and above ... two or three bedrooms."⁵ Ashton provided water, paid for repairs, and paid local rates. At Bank Top and Egerton in 1844 the Ashworth brothers charged from 1s 6d to 4s 3d per week, to include town rates and water; a

1. Greg Papers, Partnership Accounts 1825-31" (Manchester Ref. Lib., C5/1/2/4).

2. A full rental for 1872 in the Ledger (C5/6/4) and an earlier incomplete rental for 1837 in the Mill and Quarry Bank Memoranda (C5/3/1) indicate no substantial change in rents.

3. All the cottages and 19 cellars were occupied in 1841.

4. A. Ure, Philosophy of Manufactures (1835), 349.

5. L. Faucher, Manchester in 1844 (1844), 106-7.

recent calculation indicates gross returns from 7% to 10 % and net returns of 6% per annum.¹ Faucher, referring to their £120 cottages, put the return higher: "The rent of each house is not more than £10 per annum ... and thus yields 7 or 8 per cent."²

This evidence lends no support to the theory of subsidised rents, although largely drawn from firms who might have considered such a policy. Rents in the manufacturing counties were generally high, and millowners' rents were amongst the highest.

1. Boyson, op. cit., 120.

2. Faucher, op. cit., 112.

(iii) Housing improvement

Some early millowners had the reputation of being landlords of improved cottages, but there may have been some difference of opinion between landlords and tenants on what constituted improvement. The contemporary literature in which the leading employers' good name is preserved is largely the work of their social equals. There was no vox populi to indicate the preferences of cottage tenants and the extent to which they would feel inclined to sink a part of their earnings voluntarily, let alone compulsorily, in the improvement of their dwellings. With no security of tenure, one need not be surprised if they resisted what to them would be the equivalent of a precarious investment and preferred to accumulate wealth in more portable forms, or at least to consume it immediately before it had a chance to pass into other pockets. Edmund Ashworth showed a failure to appreciate his tenants' point of view when in 1839 he remarked regretfully that "it must be confessed that the manufacturing population generally have a much less knowledge of domestic comforts and happiness than might be expected from the amount of income which most of them enjoy."¹

Contemporary references to improved cottages are often so vague that it is unclear whether improvements were thought to be aesthetic, physical or administrative. Some contrast in constructional standard might be expected between the cottages

1. Sanitary Inquiry, Local Reports, E. and W., 336.

of manufacturers, who would usually see them as a long term investment, and those of fly-by-night speculators in the urban slums, as previously considered. Constructional differences might be of very little interest to tenants neither burdened with the structural maintenance of their cottages nor familiar with substantial construction. From the tenant's point of view the principal desirable features of a cottage would probably be size and facilities for heating and cooking.

The question of the optimum amount of accommodation to provide in a cottage was beginning to attract discussion in the landlord class. In 1781 the architect John Wood was perhaps the first to advocate "proportioning the size of the cottage to the size of the family that is to inhabit it;" there should, he considered, "be one lodging room for the parents, another for the female, and a third for the male children."¹ Wood claimed that he was the first architect to think it "worth his while to offer to the public any well constructed plans for cottages"² based on research into how tenants actually lived in their homes. Wood's proposed three bedroom standard was somewhat ahead of its time. Even in a cottage provided with two bedrooms, Plymley remarked in 1803 that where a family could crowd into one "they are tempted to forgo the advantages of health and decency, intended to be gained by the use of two chambers, and let the one of them, either to a constant lodger, or to keep it for the occasional tenancy of mendicant strollers, or those of even a worse

1. J. Wood, Plans for Cottages (2nd edn., 1781), 5-6.

2. Ibid., 3

description."¹ These remarks perhaps illustrate the difficulty with which persons in the landlord class tried to come to terms with cottagers lacking their ideas of a proper distinction of function between rooms.

The three bedroom standard appears to have been regarded as more realistic in the 1830s and 1840s, and some millowners took trouble to adopt it. W. R. Greg, of Lower House, Bollington, remarked that "much has been said on the subject of the small and crowded dwellings of the peasantry, and of the insufficient accomodation for the separation of the sexes, and the evils which result therefrom."² Edmund Ashworth's "benevolent intention" realised in the provision of three-bedroom cottages was not immediately appreciated by his tenants. It was, in the words of Léon Faucher, "too much in advance of the habits of his workpeople."³ His employees were said to have made "many droll remarks" about the "lonely and unsocial character" of cottages with more than two bedrooms.⁴

Greater size was probably an improvement which owners thought would be instrumental in improving living standards and welcomed by tenants for this reason. They may have been surprised to find their tenants taking a different view of the practical advantages of size, not by luxuriating in the extra space and privacy, or adopting the delicate custom of separating the children from the adults or those of either sex from each other, but by letting off their surplus floor space to lodgers.

1. J. Plymley, General View of the Agriculture of Salop (1803).
2. W. R. Greg, Claims of Labour (1844), 6n.
3. Faucher, op. cit., 112.
4. Boyson, op. cit., 112.

To judge from the evidence of multi-family occupation and crowding of cottages in a number of mill villages in the 1841 Census, it is improbable that many employers combatted overcrowding with great enthusiasm. They perhaps felt that the attempt would cause too much resentment. In 1842 it was remarked that in many cases "where the employers of labour have erected a better description of cottage containing three bedrooms ... the prospect of obtaining a lodger at 9d or 1s a week is too great a temptation, and boys and girls are immediately jumbled together to make room for the inmate,"¹ Many lodgers were also workers, whose removal might not be convenient to the employer.

An advantage of larger cottages was that they permitted more storage space to be included. The Ashworths at Bank Top and Egerton provided 20 feet run of shelving with every cottage, and added any cupboards and fittings requested by the tenants. The rents were then adjusted.²

Working people probably appreciated improvements in the heating of their cottages, even if they resisted the technically inseparable ventilation. Heating and ventilation were practical subjects which a managing millowner would find it to his advantage to understand, though few are likely to have had technical expertise approaching that of William Strutt of Belper, who was a leading authority on stove design, and heating and ventilation consultant to the Derby Royal Infirmary. Curiously, the Strutts were amongst the few who diminished the importance of this aspect of cottage design by providing their

1. Sanitary Inquiry, Local Reports, E. and W., 88.

2. Boyson, op. cit., 118.

workers with a canteen at the factory.¹ The new and efficient Rumford grates introduced in the 1790s amid considerable publicity are likely to have been very generally adopted. A Rumford grate in 1804 cost only 5s plus 10s 6d to install.²

In the post-war period, culinary improvements were probably common. Andrew Ure complained that by 1818 the operative spinners had forgotten the simple and wholesome stewpot cuisine of their forebears and pampered themselves into ailments by addiction to too rich a diet for their sedentary occupations.³ By 1835, Ashton of Hyde had installed improved grates with a boiler and oven combined in his cottage kitchens.⁴ The Ashworths' cottages at Bank Top and Egerton were provided with a boiler and oven by the fireplace in each cottage. Like other landlords, they provided coal in bulk cheaper than their tenants could purchase it individually.⁵ It is also said by present inhabitants of Darley Abbey that some cottages were provided with a stove and kitchener even in the upstairs rooms.

It is very difficult to detect evidence of attention to the ventilation of rooms, nor does it appear that many tenants would place much importance on well ventilated cottages. In 1842 Chadwick complained that many working people appeared "to be insensible to anything but changes in temperature, and there is scarcely any stench which is not endured to avoid

1. Ure, op. cit.

2. Reports of the Society for Bettering the Condition of the Poor IV (1805), 145.

3. Ure, op. cit., 298.

4. Ibid., 349.

5. Boyson, op. cit., 124.

slight cold."¹ A millowner remarked in 1816 on the impossibility of persuading workpeople to keep the mill windows open.² Perhaps resistance to ventilation was a matter of preference, and not merely the indirect result of a reluctance to spend money on fuel. As an extreme example of a millowner compelling his tenants to keep their cottages ventilated, Houldsworth at Anderston had an airpipe taken from the mill boiler house with a branch to each dwelling, to force them to be ventilated at all times when the engines were not required to power the mill itself,³ in other words, whenever the tenants were at home.

In many cases the essence of "improvement" probably lay in intangible advantages. Regular scavenging of streets in the case of the larger mill settlements, and a regular system of maintenance, chimneysweeping and limewashing would soon be perceived as desirable and add to the occupants' belief that they were receiving value for their rent payments. Where this was carried further, to the point of inspecting the interiors of cottages, there was more resistance. Robert Owen discovered at New Lanark that such inspections had to be conducted with the utmost tact. The women of his village at first reacted with some displeasure at being visited by his "committee of bughunters". Many refused them entry and bolted their doors. In time they were, it appears, persuaded to the view that inspections were intended to assist them, rather than hold them up to public censure.⁴ Comments

1. Sanitary Report, ed. Flinn, (1962), 297

2. S. C. on the State of the Children Employed in the Manu-
factory of the U. K. (P. P. 1816, III), 6

3. Ure, op. cit., 393-4

4. This initially hostile reaction was described by the
schoolmaster at New Lanark. M. Cole, Robert Owen of New
Lanark (1953), 58-9.

on housing maintenance elsewhere in 1833 suggest that in many cases the initiative in maintenance matters was largely left in the hands of committees of cottage tenants.¹

It was Edwin Chadwick's considered view that the educative process by which cottage landlords possessing the additional authority of employers of their tenants sought to encourage improved domestic habits was largely successful. Mill employees frequently came to value improved conditions and acquiesce in the payment of high rents. "The extent to which these improved tenements are sought, and the manner in which an improved rent is paid, afford gratifying evidence of an increased disposition prevailing among artisans to avail themselves of such improvements."²

1. See p. 269 f.

2. Sanitary Report, ed. Flinn (1962), 297.

Part 5. Housing and industrial public relations

- (1) The public relations problem raised by industrial tenant communities.

Contemporary opinion on the social consequences of the growth of manufacturing industry in rural parishes may at first have been largely favourable, but a vociferous hostility soon arose. The extent of the challenge to millowners which might give rise to a concern to improve appearances calls for examination.

During the early period when there was heavy investment in spinning mills, particularly in the 1780s, it was widely expected that pauper labour would be absorbed and controlled by mill employment in a manner of great benefit to host parishes. Many people saw mills as complementary to workhouses. The great importance of the employment they afforded, directly and indirectly, was strongly argued by the representatives of the millowners in their submissions to the Board of Trade in 1788.¹ Millowners were not alone in this opinion, and their chief spokesman in 1788 was the Chief Magistrate of Glasgow, Patrick Colquhoun, who was not himself a millowner. In 1789 the Rev. Pilkington described the impoverished and uncivilised state of the poor of the Peak District, and commented with great approval on the improvement

1. (P. Colquhoun,) An Important Crisis in the Callico and Muslin Manufactory in Great Britain, explained (1788). This pamphlet is an abridged version of the millowners' official submission of evidence.

in prosperity and morals due, amongst other causes, to the opening of many cotton mills.¹ The early euphoria did not last. It soon became clear that the rise of manufacturing industry had bad consequences as well as good. Almost from the start, much of the benefit created by the new cotton mills in employing the surplus poor went, not to host parishes, but to distant parishes better able to supply labour by contract; pauper immigrants from the parishes and foundling hospitals of the cities thus started gaining a legal right of settlement in their new parishes of employment. Parish apprentices were able to acquire legal settlement with a residence of only 40 days in their period of apprenticeship.² Individual immigrants were followed by families. Kennedy later referred to the "children of indigent people (already employed in a similar way) who had already moved from different parts of the kingdom, often at the expense of their respective parishes, who were thus relieved of the charge of supporting them."³ Host parishes were confronted with the risk of having to support alien paupers in any failure of trade. In 1791 the parish of Cheadle tried unsuccessfully to gain an indemnity from Philips and Company against the burden of their employees' legal settlement.⁴ Even in 1834, a witness on the administration of the Poor Law stated his opinion that "in some parts of Lancashire (and Lancashire ranks high amongst the best administered counties)

1. J. Pilkington, A View of the Present State of Derbyshire (1789), 52. Pilkington received a prize from the Society for the Encouragement of Arts, Manufactures and Commerce for this work. See Derby Mercury, 27th May, 1790.

2. Poor Law Report (1834), "Settlement".

3. J. Kennedy, "Rise and Progress of the Cotton Trade" Trans. Manchester Lit. and Phil. Soc. (1819), 122-3.

4. R. Plant, History of Cheadle (1881), 56.

the practice pursued systematically is to bind the parish apprentices into out townships in order to shift the settlement, so that the binding parish may be rid of them."¹ Manufacturing industry thus became less welcome socially than economically. Its neighbours found that they could not benefit from the stimulus it gave to local trade and the increase in land values without also having to come to terms with great risks of local unemployment. The disastrous consequences of mill failures or the turning off of surplus labour kept local hostility concentrated on the immigrant community. The agricultural writer Dr. Dickson complained in 1815 of the cotton industry that "the very fluctuating nature of this manufacture renders it frequently injurious to the agriculture of the districts, by the great number of persons who are so often thrown out of employment."² He concluded that, in this respect, the cotton industry was a far worse neighbour than the woollen industry.

Competition for labour at times of flourishing trade also caused resentment by generally raising wages. In 1796 it was observed that in part of Staffordshire "labourers' wages have lately advanced so much ... that it is not easy to ascertain the average price; female servants in particular can hardly be hired at any price; this [is attributed] to the number of women employed in the cotton mills lately erected."³

1. Evidence of Mr. Henderson, Poor Law Report, loc. cit.

2. R. W. Dickson, General View of the agriculture of Lancashire (1815), 628.

3. W. Pitt, General View of the Agriculture of Staffordshire (1796), 156-7.

The decline of the rural branch of the cotton industry in the post-war period gave added cause for resentment. Malthus pointed out in 1817 that despite a history of "wages sufficiently above the price of common country labour" the manufacturing poor had been so conditioned to consider parish assistance as a right that they treated savings with contempt. The failure of a great manufactory inevitably threw large numbers of its former dependants onto the funds of the unfortunate host parish.¹ Malthus sought to stimulate public awareness of the bad consequences stemming from the unreformed state of the Poor Law, but many are likely to have taken the simpler view that employers were to blame for not training their workpeople in habits of thrift and industry.

Local feelings of hostility were accentuated by the numbers of poor handloom weavers attracted to manufacturing districts in addition to the numbers of poor in potentially better managed mill communities. Even as late as 1815 it was said of the increase of weavers' cottages in the manufacturing districts of Lancashire that "these sorts of cottage houses are now become so prevalent in many situations as to throw a most dreadful and oppressive burden on the parishes or townships to which they belong, and unless some effectual check can be speedily devised, must inevitably involve them in considerable distress, if not ruin; particularly in times when the manufacturing spirit of the country is depressed by war or other political causes."² Millowners might claim that their rate contributions exceeded the claims of their ex-employees on

1. T. R. Malthus, The Principle of Population (8th edn., 1878), 304.

2. Dickson, op. cit., 106.

parish funds, but other property owners might foresee a time when this would not be so, and generally take a wider view of the disadvantages of encouraging industry. The "dreadful and oppressive burden" seemed more unbearable when, after 1815, it was found that the manufacturing spirit was still more depressed in time of peace.

Even a firm with the reputation of model employers, Samuel Greg and Company of Styal, were at one time called upon to justify themselves by demonstrating to their parish that they and their community were net contributors to the Poor Rate fund. They reported in 1833 that "70 to 100 apprentices for 40 years have gained settlements", and sought to prove that over the last three years the township benefitted by the excess of mill rate payments over their ex-employees' claims by an amount of about £74 per annum. It is worth note that the profit to the parish depended entirely on the fact that the mill itself was within its boundaries. The rates charged on the cottages alone were not sufficient to compensate for paupers settled as Greg employees, quite apart from the expense of paupers indirectly attracted, which the calculation ignores:

Table 32.

BURDEN AND CONTRIBUTION OF GREG AND COMPANY TO THE PARISH OF STYAL AND POWNALL FEE, 1831-3.

(a) Burden to the parish of paupers settled as Greg employees	£	s	d
Relief paid in 1831	22	4	10½
Relief paid in 1832	34	13	5
Relief paid in 1833	16	0	7
$\frac{1}{3}$ total = annual burden:	24	6	3½
(b) Greg & Co. rate contributions			
Rate on mill, 1831 @ 3s in £	75	12	4½
Rate on mill, 1832 @ 3s in £	75	12	4½
Rate on mill, 1833 @ 3s 6d in £	88	4	5½
Rates on cottages, 1831-3	56	5	9
$\frac{1}{3}$ total = annual contribution:	98	11	7¾
Average net contribution	74	5	4½

The relief paid to former Greg employees exceeded the rates on the Greg cottages by £5 11s 0½d a year.¹

The point has previously been raised that many millowners tended to turn to cottage proprietorship in the early nineteenth century at a time when rural manufacturing industry was beginning to show signs of stagnation. Their entry into the housing market tended to occur at a time when parish officers were beginning to become alarmed at the possible failure of employment. Under the threat of numbers of poor immigrants taking advantage of the settlement laws, many parishes in this period were pursuing an active policy of demolishing cottages. The reason why this policy appears not to have been followed with as much vigour in the manufacturing counties as elsewhere is evidently the considerable subdivision of land ownership, with the consequent difficulty of getting all property owners to act together for what some conceived to be their common good.² Manufacturers, like many lesser owners of the freehold of cottage property, were seen to be investing in cottages in defiance of the long term fears of their parish officers and other rate payers. This conflict of interests helps to explain the eagerness with which some early nineteenth century rural millowners sought to impress public opinion with the orderly, moral and healthy character of communities under their ownership or patronage. In 1816, for instance, John Bott and Company took the opportunity to burden the Select Committee on Children in Manufactories with a glowing, but arguably irrelevant, report

1. Greg Papers, Notes by S. Greg, 25 May 1833 (Manchester Ref. Lib., C5/8/17).

2. Poor Law Report, loc. cit.; Sanitary Inquiry, Local Reports, E. and W. (P. P. 1842, XXVII), 337.

on the welfare of the poor of Tutbury, of whom they were the principal employers: "At one period, within the last 30 or 40 years, Tutbury was notorious for intemperance and the greatest excess of almost every common vice; but the superior order and morals of the people in general are now frequently observed and spoken of by those who contrast them with the manners and habits of those of other parts of the country, and particularly with the neighbouring villages, which are strictly agricultural. Since the introduction of the cotton manufactory [in 1781], Tutbury has by degrees overcome its former character of drunkenness and brutality, and the persons now employed by Messrs. Bott and Company are equal, and in many cases greatly superior in point of conduct to those of the lower class in the parish engaged in farming, and in other pursuits ... It would be improper to ascribe the moral effects altogether to those concerned with the cotton manufactory, as others have undoubtedly aided in accomplishing them, and still labour incessantly to support and improve that character of the working manufacturers as well as the parish at large, which the proprietors of the factory have such satisfaction in expressing. It is however undeniable, that the manufactory has not only not retarded that progressive improvement in the manners and morals of the people, but that from its very nature, under the judicious management that has been constantly observed, those desirable ends have been very much promoted. The health of the persons in the manufactory has been equally as good as those commonly employed in farming purposes, and they have been

equally free from infectious diseases."¹

The Old Poor Law caused parishes to compete with each other in avoiding the burdens of pauper settlement. The greatest resentment of the presence of manufacturing labour probably therefore arose in cases in which a mill and its associated settlement, or worse still its apprentice house, were in different parishes, though this does not appear often to have been the case. When complaint was raised in evidence to the Poor Law Commissioners about the prevalence of attempts by agricultural employers to use labour but settle it on neighbouring parishes it was admitted that "the instances of similar practices on the part of the manufacturers are comparatively few."² The witness apprehended that manufacturers would soon discover their advantage in planting their cottages in adjacent parishes where they owned no other property, thus keeping rates low in the parishes containing their mills. The siting of an apprentice house in the earlier period would naturally raise a similar complaint. At Litton Mill the apprentice house appears to have been in the neighbouring parish of Brushfield,³ and at Backbarrow it was in the adjacent parish of Colton. In 1816 the former master of the Backbarrow apprentice house gave evidence that the children on being discharged belonged not to Cartmel parish where the mill was situated, but to Colton; ratepayers of the latter parish complained "very much" of the burden.⁴ In general, Tithe Survey evidence strongly

1. Select Committee on the State of the Children employed in the Manufactory of the U. K. (P. P. 1816, III): "Report obtained and made by John Bott and Company."

2. Poor Law Report, loc. cit.

3. F. Nixon, Industrial Archaeology of Derbyshire (1969), 265.

4. Select Committee, op. cit., 182.

suggests that the contingency of future rate liability evasion played little or no part in determining the siting of cottages or apprentice houses.

The abuse of the Poor Law gave rise to a way in which the external appearance of cottages affected public attitudes to their owners. A landlord of the lowest class could, provided his cottages were of sufficiently wretched appearance, be certain of securing good rents subsidised from parish funds. His tenants, if not supported with outdoor relief, would have to be admitted to the workhouse, and so become a greater expense to the parish. Provided he could calculate matters to a nicety, therefore, a cottage owner could hold the parish to ransom to guarantee exorbitant rents. Slightly exaggerating, perhaps, a witness reported to the Poor Law Commissioners: "It is evident that when the landlord has such an easy remedy for securing his claims, he can command any rent he chooses to ask, which the poor man does not scruple to agree to pay, provided the outward appearance of the house is suitable to a person in his condition, for the parish is particular in this point."¹ The authors of the Poor Law Report in 1834 agreed that this abuse of the system of granting outdoor relief was a major evil. The same problem was later found to exist under the New Poor Law. As late as 1862 an authority on cottages reported that "medical men could point to rows of cottages from which came all the fever which infected a neighbourhood, and into those cottages the mass of the money went, which was expended from the poor rates every week; and in

1. Evidence of Mr. Stuart, Poor Law Report, "Outdoor relief of the able-bodied".

some cases the owner of the houses, living at one end of the row, would watch for the visits of the relieving officer, and pounce upon the money for rent."¹ A better class of cottage landlord, as industrial proprietors are usually considered to have been, would not wish their cottages to be associated in the public mind those of other small landlords indulging in practices of this kind.

The hostility of those whose opinion mattered was particularly directed towards communities of immigrant labour. It is likely to have been clear to most rural industrial proprietors that any public relations effort they felt inclined to make would be of greatest effect if applied to the visible improvement of the appearance and behaviour of their tenant communities.

1. R. Rawlinson, reported in The Builder, 27th Dec. 1862, 925.

(ii) The appearance of millowners' housing.

The visual language of architecture, used to convey a flattering image of the proprietor, is sometimes found in the mansions and larger industrial buildings of the earliest millowners, but rarely in their cottages. This appears something of a paradox, because the social pressures on a country millowner would surely make him wish to create the best possible effect with his cottages. He would wish the public to see that they were the property of a man of wealth and importance, unlikely to fail in business; and they could, under correct architectural dress, show him to be a person of taste on a par with the established members of the educated classes.

Although much industrial housing appears neatly designed and regularly laid out, it is a neatness and regularity which could be regarded as no more than what follows from simple repetitious design. There might have been an intention that neat and regular design should suggest the good social order of the industrial community under wise patronage, but in general the use of cottage architecture in the service of public relations appears to have been very restrained. One problem may have been that the early nineteenth century possessed no architectural forms specifically suggesting the socially harmonious community of master and workpeople. The Gothic idiom had not yet acquired this meaning, although later in the century it was to be employed

in this way at Ackroydon, Copley, - West Hill Park and Halliwell. Nonetheless, some early millowners were fully conscious of the use of architecture.

The sense of social inferiority of a number of important early mill and factory owners led them to disguise cotton mills, potteries or other works in what they thought would be regarded as architecturally refined dress. Dr. Tann has written particularly of the architectural affectations of Arkwright, Oldknow, Unwin, Wedgewood and Enoch Wood.¹

Although an outdated style, some attempted to build in the Palladian manner, with its socially ambitious country house associations; but this was a temporary phase which could not survive the growth of political hostility between the landed and manufacturing interests. The ideas which manufacturers in the early years attempted to copy were themselves fluid; Arkwright attempted to be at the forefront of Taste in his choice of Gothick for Willersley Castle, but would have been less than pleased by the reaction of the aristocrat Colonel Byng, who, while praising the Cromford works as "magnificent cotton mills" dismissed their master's mansion as "an effort at inconvenient ill taste" and "the house of an overseer".²

Persons who considered the acquisition of good taste in architecture to depend on careful thought and study were not surprised at its failure to flourish in the industrial quarter. In 1798 James Malton remarked that "a nation deriving the chief of its affluence from commerce and bold enterprise is certainly not likely to be activated by a general and pure

1. J. Tann, Development of the Factory (1970), Chapter 10.

2. J. Byng, The Torrington Diaries (new edn., 1934-8), II 40.

taste in the elegance of art." The cultivation of taste depended on leisure to study, and even persons with wealth at their disposal required lengthy acquaintance with polite education and the fine arts if they were to acquire discernment. "The good taste and nice discernment that directs individuals to a just appropriation of objects will not affect the many who are continually, and, I may say, momentarily, rising to independence by the possession of immense wealth from fortunate adventure, or who have been constantly engaged in the superintendence of their various manufactures; these in their manumission from servile toil, often credit their country as little, in any other way in the disposal of their wealth, as in the construction of their new fancied dwellings."¹

The adherence of manufacturers to a form of Palladianism did not last. Even from the first the industrial architecture of the Peel family was uncompromisingly free of architectural embellishment, though this firm came to own the largest business empire in the cotton industry.² Manufacturers in general appear soon to have become indifferent to conventional architectural affectations. The most obvious social model for the design of an architecturally refined mill, the Palladian country house, became increasingly impractical to follow as mills increased in size, and less relevant as industry migrated to the towns. When William Fairbairn looked back to the aesthetic qualities of cotton mills before 1829, the affected buildings of the very earliest beginnings had paled into insignificance. He remarked that the great majority

1. J. Malton, Essay on British Cottage Architecture (1798), 10-11

2. Tann, op. cit., 157.

of the early mills had been no more than "square buildings without any pretensions to architectural form ... building with bare walls was for many years the distinguishing feature of a cotton mill."¹

The early rejection of traditional architectural language was hastened by the rise of the Picturesque movement. Any attempt to dress buildings up could only weaken their sublime effects, and "searching after effects", both sublime and picturesque, was pronounced by William Gilpin to be "the general intention of Picturesque travel."² The response of the pictorial arts and cultivated opinion to the sublime effects of some raw looking utilitarian industrial buildings has been traced in detail by F. D. Klingender.³ Although moral and aesthetic disgust and opposition later arose over the effects of industry in the landscape, the beginnings of the Picturesque movement at the turn of the century were marked by some uncritical enthusiasm. An earlier generation had treated architecture critically, but the new school of thought preferred the illusion that great industrial works were part of the landscape, and found in them a new stimulus to self-centred aesthetic hedonism. Mills seen at night with every window blazing with the light of the new gas burners, or ironworks reddening the sky became familiar subjects in pictorial art and attracted tourists in pursuit of Romantic views. Many informed people viewing the great new mills felt an added fascination in the hope that industry would

1. W. Fairbairn, Mills and Millwork (1878), II 113-4.

2. W. Gilpin, Three Essays on Picturesque Beauty (1794), 41.

3. F. D. Klingender, Art and the Industrial Revolution (1947).

solve many pressing social problems. An industrial historian writes: "many a traveller to the Lakes would visit a cotton factory on the way north, or, after a visit to the great country houses of the Midlands, he might round off his tour at the Potteries, or at the Derby Silk Mills."¹ A topographical historian writes: "A patriotism which delighted in the sight of the country's manufacturing and engineering achievements went hand in hand with an imagination which was nurtured on discussions on the distinction between romantic and picturesque, and sought for gloom and terror as conducive to true emotions."²

Even without this justification, political influences were at work causing manufacturers to lose interest in conventional architectural ideas with their strong association with the traditions of the landed classes. By the mid-nineteenth century, the pride of industrialists had been entirely diverted to the ingenuity of their machinery and the perfection of their management of production. An observant visitor to Manchester in 1844 remarked: "Everything is measured in its results by the standard of utility; and if the BEAUTIFUL, the GREAT and the NOBLE ever take root in Manchester, they will be developed in accordance with this standard."³ This view was also summed up by Cooke Taylor in 1842: "No nobleman ever took more pride in a huge estate than a genuine Lancastrian does in a large business; he would rather have your admiration of his mill than of his mansion, and if you happen to be pleased with any of his peculiar mechanisms or contrivances

1. Tann, op. cit., 157.

2. E. A. L. Moir, The Discovery of Britain: The English Tourists, 1540-1840 (1964), quoted by Tann, loc. cit.

3. L. Faucher, Manchester in 1844 (1844), 24-5.

his admiration is complete."¹ Architecture, as traditionally understood, became for a time an irrelevant and useless art in the manufacturing districts, at least until new Italianate, Egyptian or other styles not associated with landed traditions arose in the Fairbairn era. Textile manufacturers did not even have the stimulus of product design connections with architectural motifs. Urns, chinoiserie, classical ruins or sometimes a rustic cottage embosomed in umbrageous foliage occasionally appear in printed textile designs, but these unreal subjects were in much less demand than floral or wild life subjects.²

*

In the earliest period, before the rejection of conventional architectural aspirations by industrial leaders, cottages were not yet at the centre of public concern. Mills and mansions might be praised by some and condemned by others, but cottages went unnoticed. Even the Rev. Butcher, who made a long tour of the manufacturing districts in 1805, and who indulged in lengthy moral, as well as Romantic and Picturesque, observations, failed to pass any remark on the dwellings of the assembled poor to whom he occasionally preached. Butcher spent some time as a guest of the Shores of Lea Mills, but had no observations to make

1. W. Cooke Taylor, Notes of a Tour in the Manufacturing Districts of Lancashire (1842), 45.

2. (P. Floud,) English Printed Textiles, 1720-1836 (V. and A. Museum, 1960).

on the nearby village of Cromford.¹ The "architecture" of millowners' cottages, it appears, did not become a live issue until the time in the early nineteenth century when social problems drew attention to the failings of industrial employment, and country millowners found themselves being challenged for the first time on the subject of their tied communities.

If manufacturers' cottages first came under public scrutiny and hostility during the later part of the war period, the question of their architectural quality might be seen against the background of ideas in the Picturesque copybook literature which was by that time firmly established.² There can be little doubt that some industrial proprietors, though rejecting fashionable ideas, saw the usefulness of at least basic architectural qualities in the cause of public relations, and cottages were often neatly laid out and given such little refinements as pannelled doors and sash windows. Despite this, the response of industrial masters to the great quantity of copybook literature appears at first sight to have been

1. E. Butcher, Excursion from Sidmouth to Chester (1805), I 277 ff., II 233 ff.

2. Cottage plans were of such technical simplicity that it would probably not be justifiable to regard anything other than the cottage shell as at all fixed in design. External appearances apart, it would probably not be justified to search architectural copybook literature or the agricultural handbooks of the period for the originals of cottage designs. Internal arrangements were flexible. Although some cottages had masonry partitions, e. g. those of the Ashworths at Egerton (see fig. 23, p. 179), more commonly partitions were of timber studs with lath and plaster or boarding. The extreme cheapness and flexibility of partitioning of this type is illustrated in 1797, when a carpentry contractor charged Evans and Company of Darley Abbey only 2s 6d per 100 square feet of stud partitioning (see Evans Papers, Ledger "D", Thomas Raworth's account for work at 'new houses' (Brick Row). Derby Borough Lib., 162-2-70).

negligible. Picturesque industrial cottages seem almost rarer than would-be Palladian ones.¹ Architectural design is usually found to have been neat but simple, as in Peel's Coleshill Street cottages in Fazeley, dating from 1816 (fig. 28, p. 229), or at most marked by trifling refinements as in Evans's cottages at Darley Abbey (fig. 29, p. 230), or the cottages in the mill yard at Tutbury (fig. 30, p. 231). The neatness is usually no more than what follows from repetitious planning. A contrasting rare instance of Picturesque industrial cottage architecture appears at Cressbrook (figs. 31 and 32, pp. 232-3), where some were arranged picturesquely on the hillside to be seen to the best advantage from the master's mansion. The master, Newton, appears to have been almost alone in thinking that his cottages should be in a fashionable style.

As the great majority of millowners' cottages in the period of the Industrial Revolution were of the terrace type, the eighteenth century town-house provides a more obvious model for their architectural appearance than the theoretical designs in architectural literature. Many builders of industrial cottages may have consciously imitated the simplest urban terrace housing, for instance the fourth rate London housing or its equivalent in many provincial towns. If any attempt was made to meet the wishes of tenants, an urban style of housing would be more likely to accord with their social

1. Some of the cottages of Philips and Company at Tean might be regarded as vaguely Palladian; at least, a central pediment was added to the front eaves line of their block of eight back-to-back cottages at The Island, reminiscent of that on the New Tean Hall Mills. Echoes of Palladianism are common in copybook literature.

COLESHILL STREET, FAZELEY

SK 204017

$\frac{1}{8}'' = 1'0''$

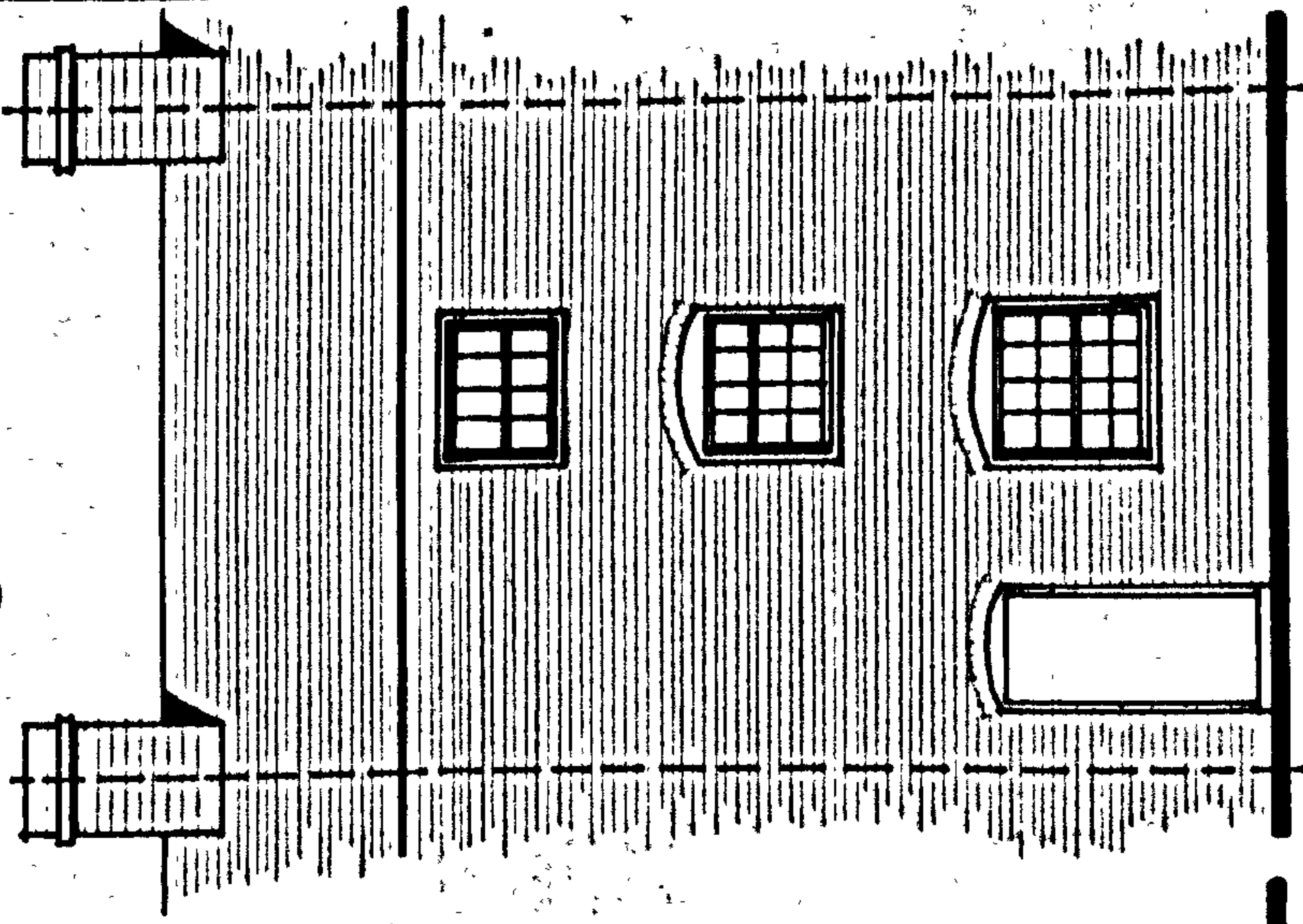
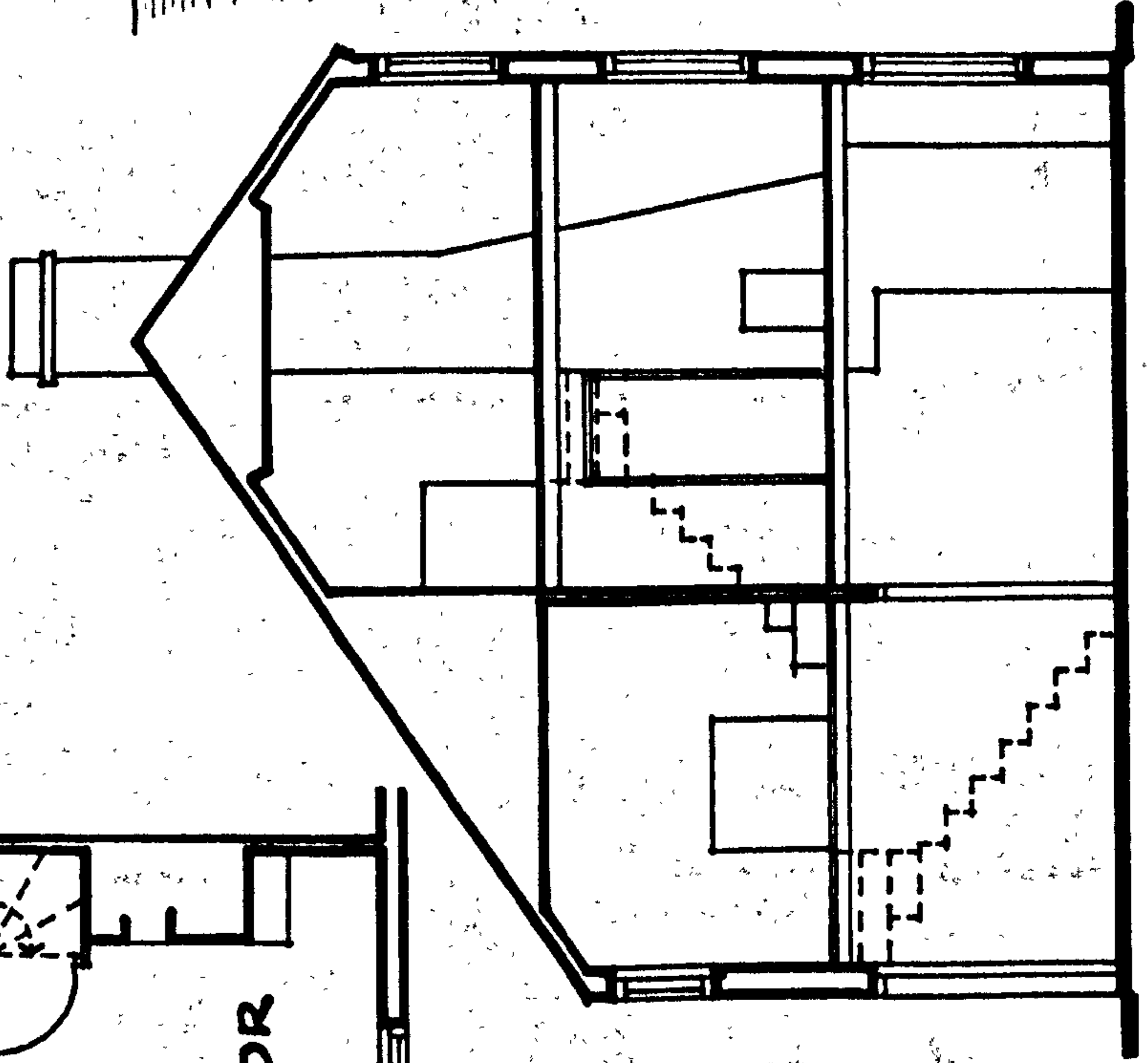
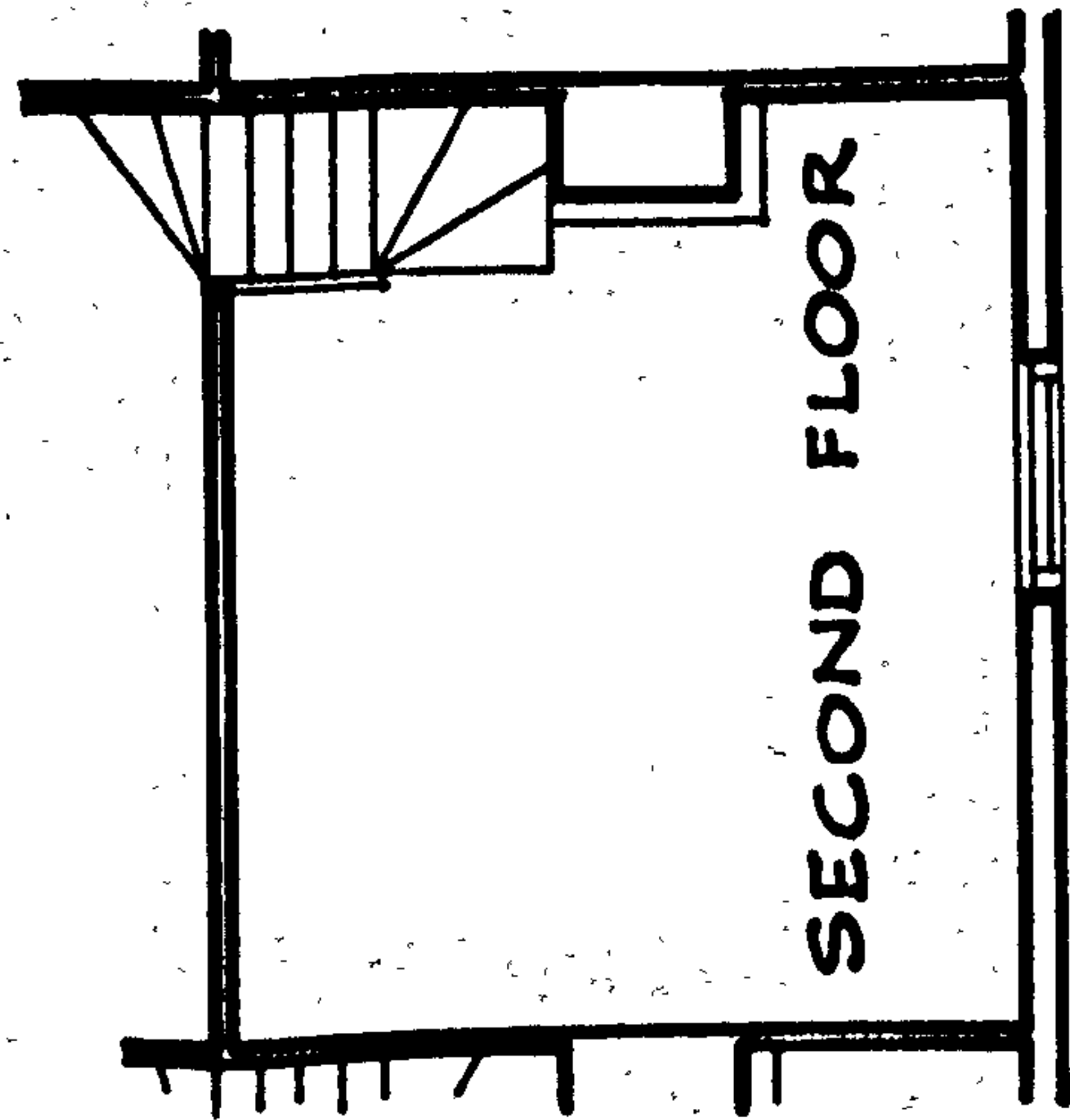
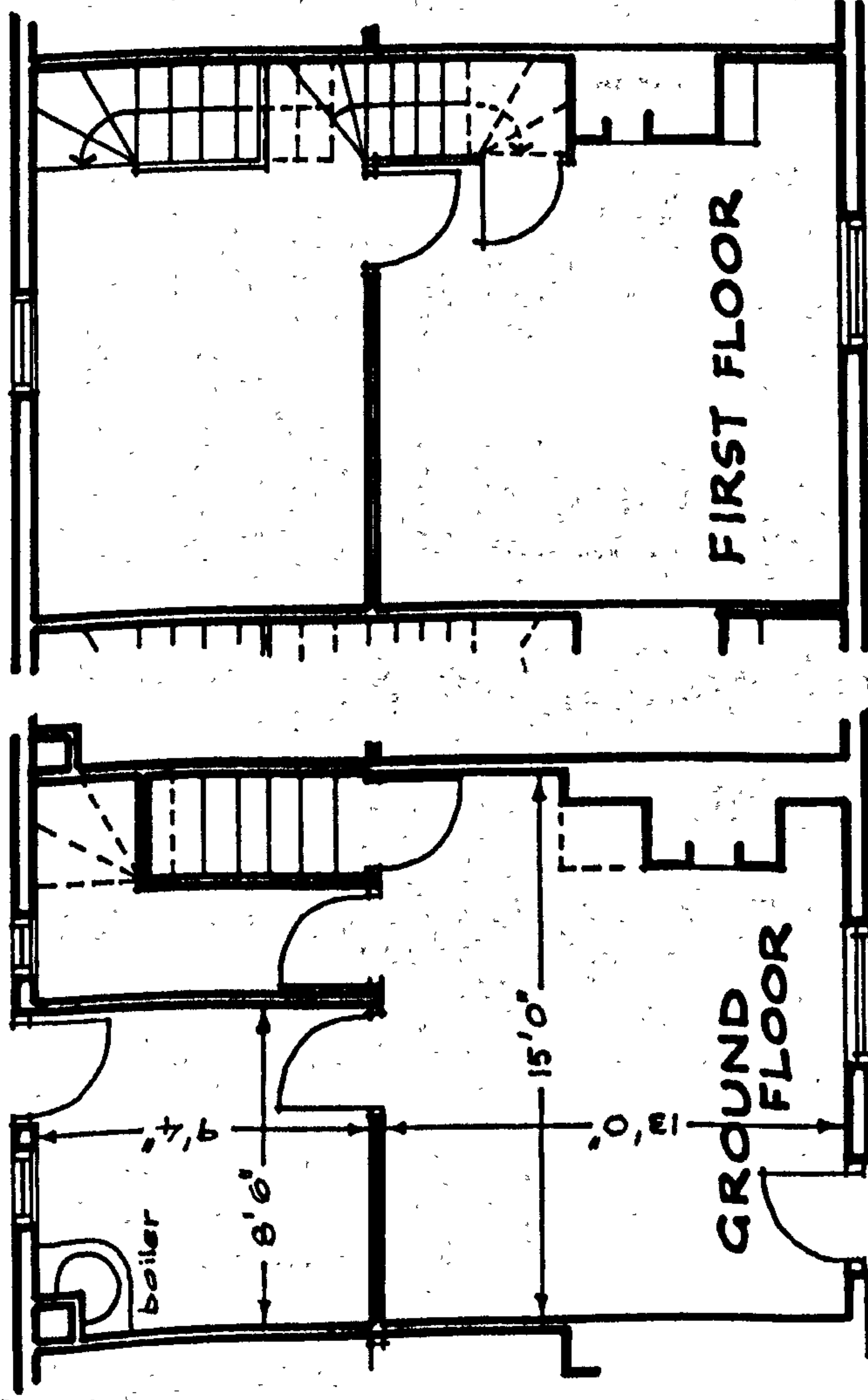


Fig. 28.

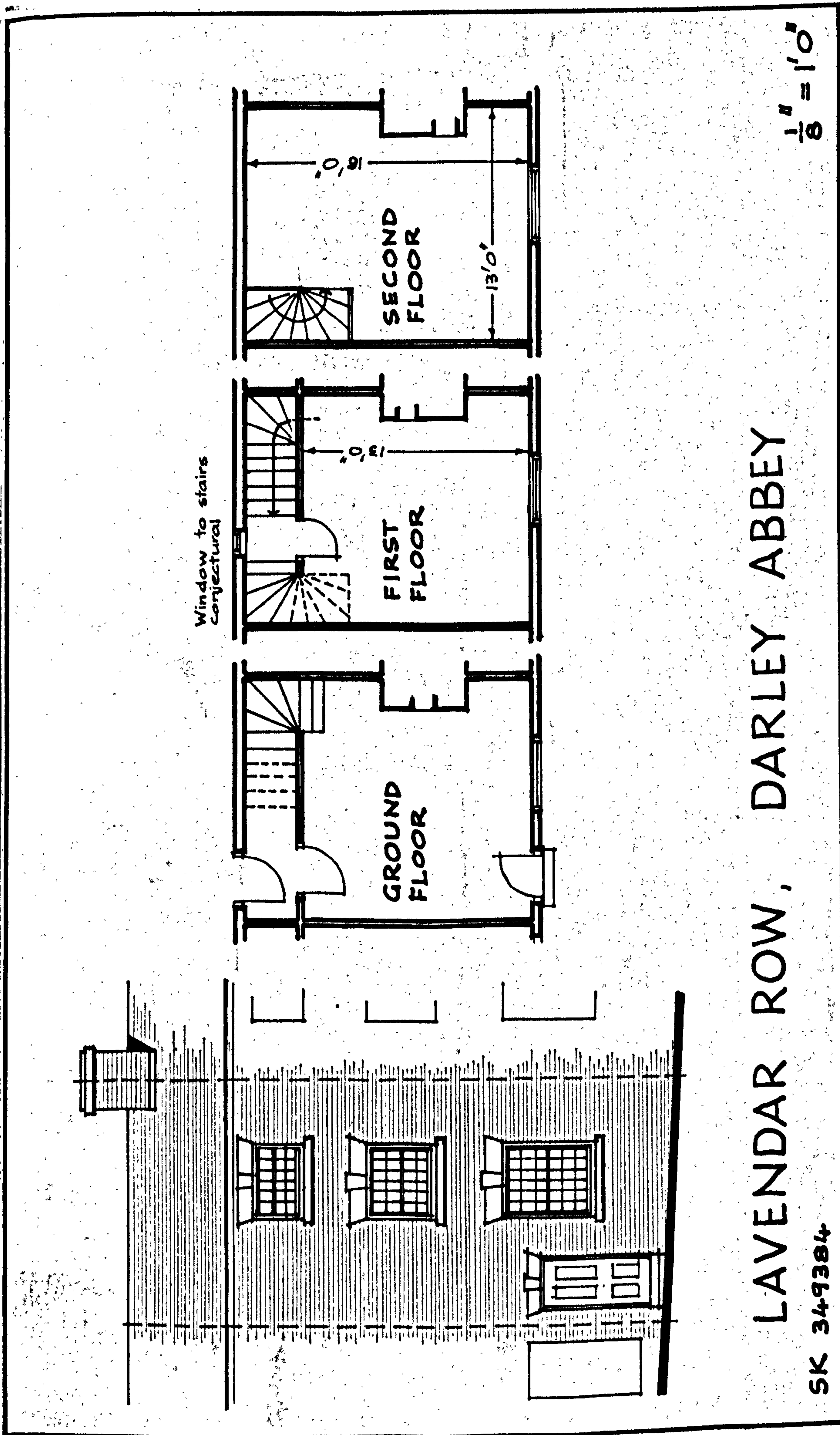


Fig. 29.

COTTAGES IN MILL GROUNDS, TUTBURY

SK 213293

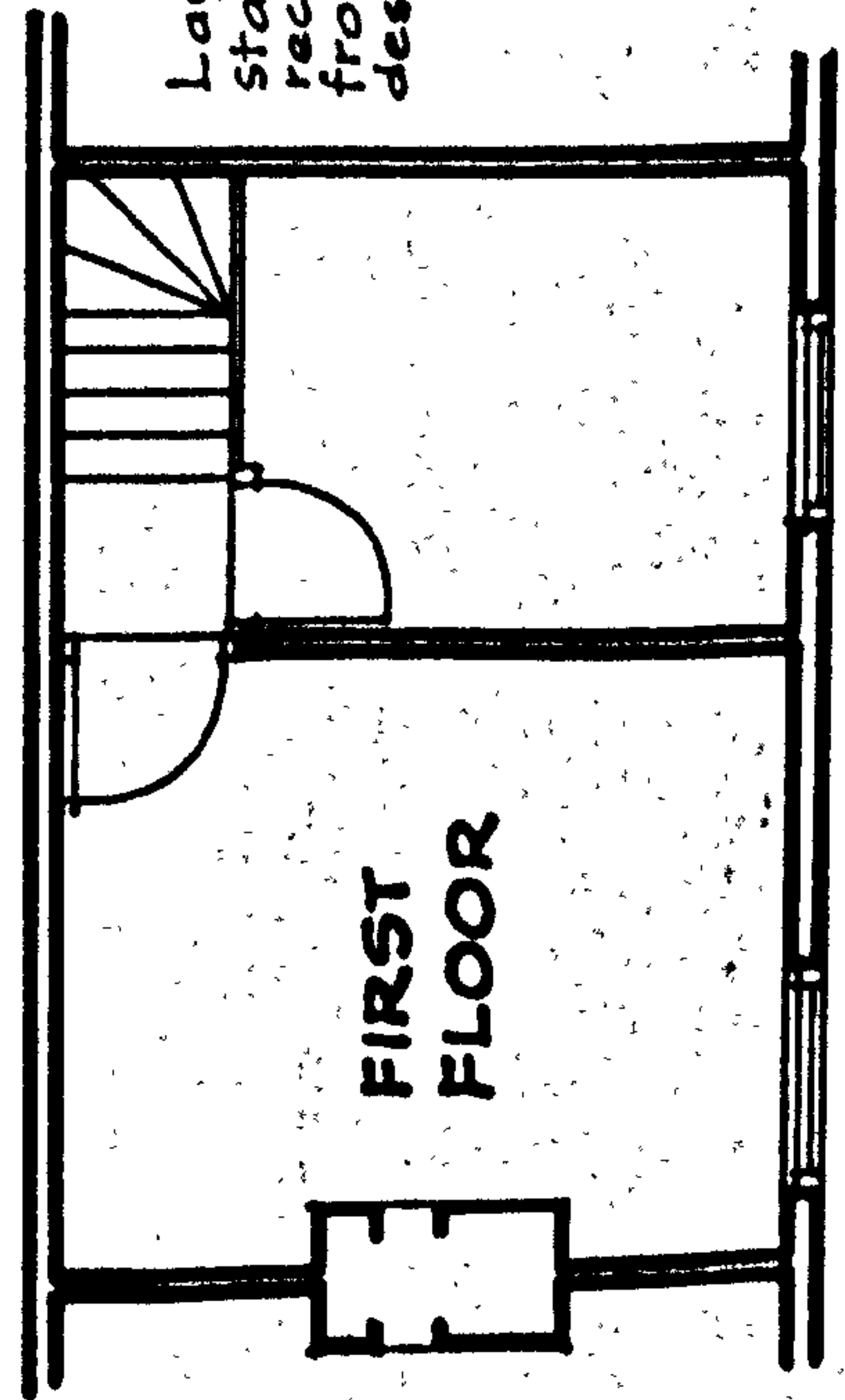
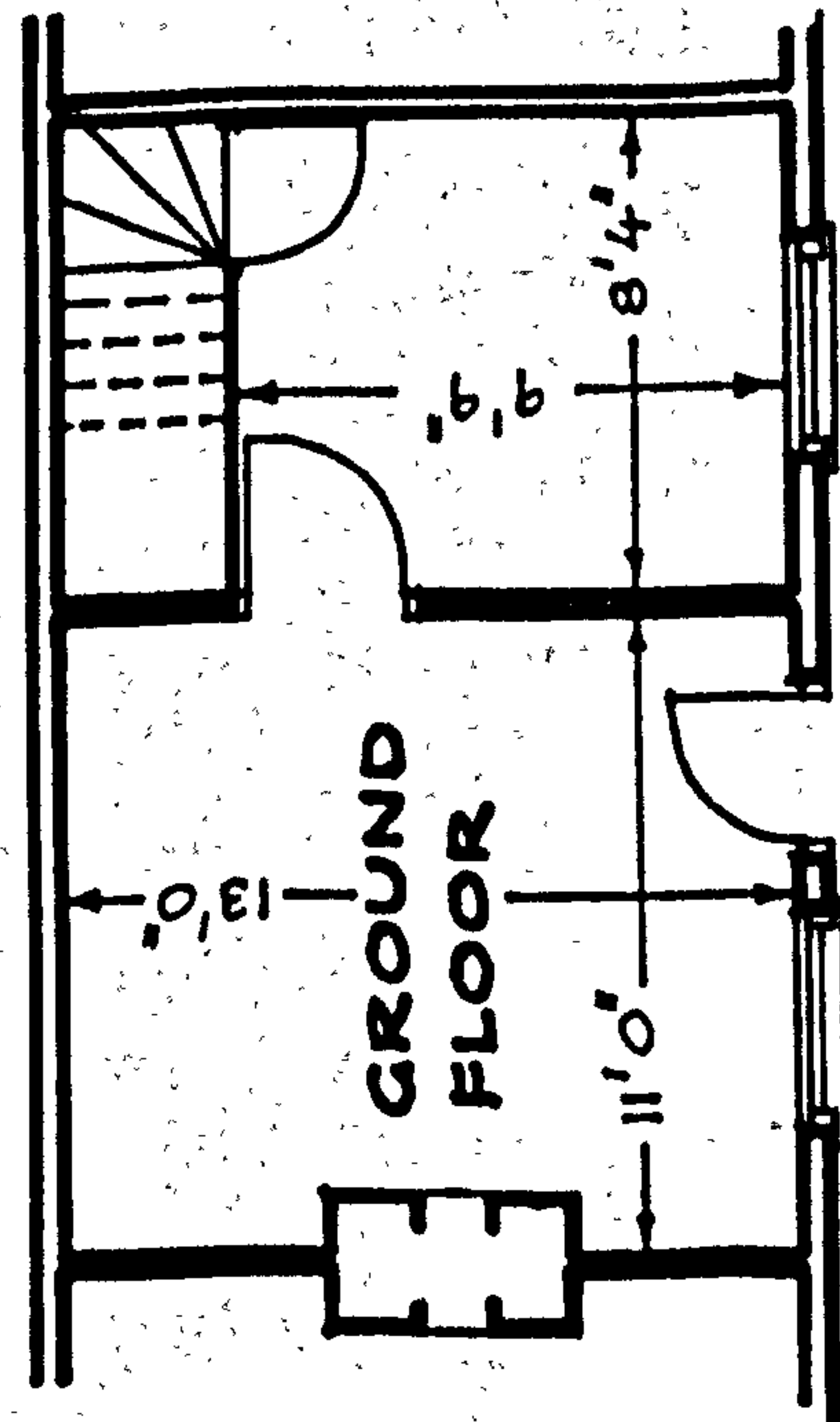
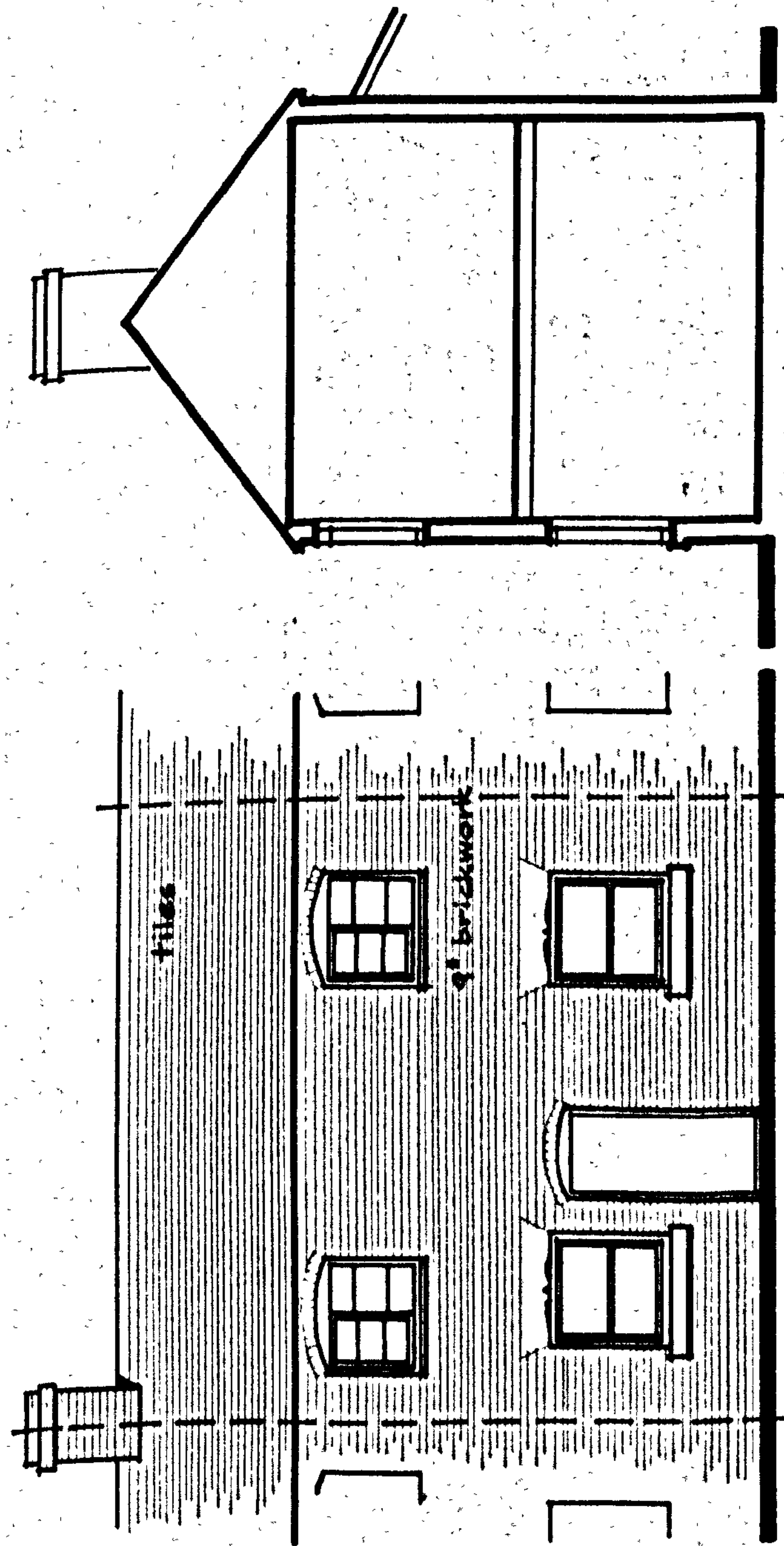
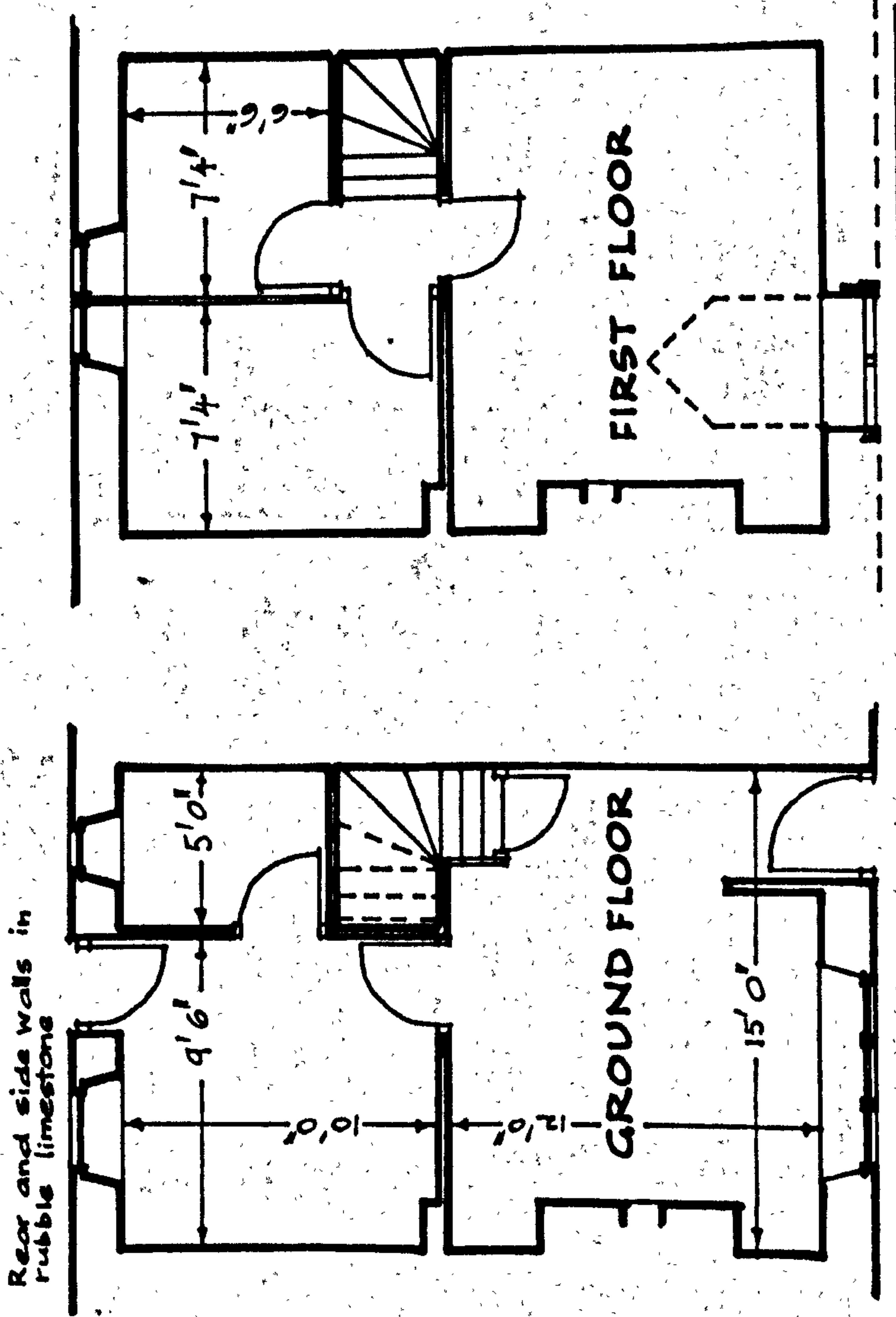
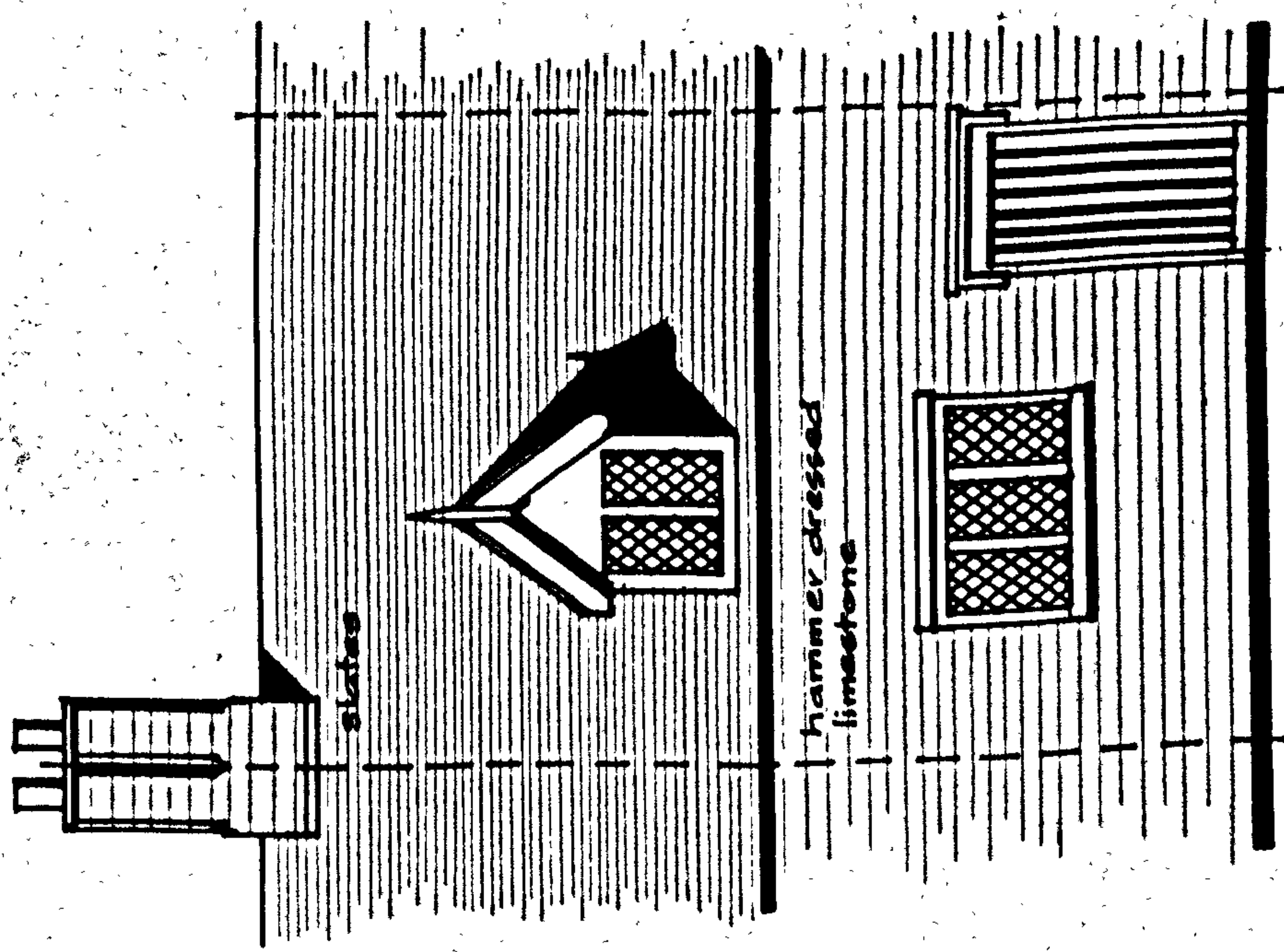

 $\frac{1''}{8} = 1'0''$

Fig. 30.

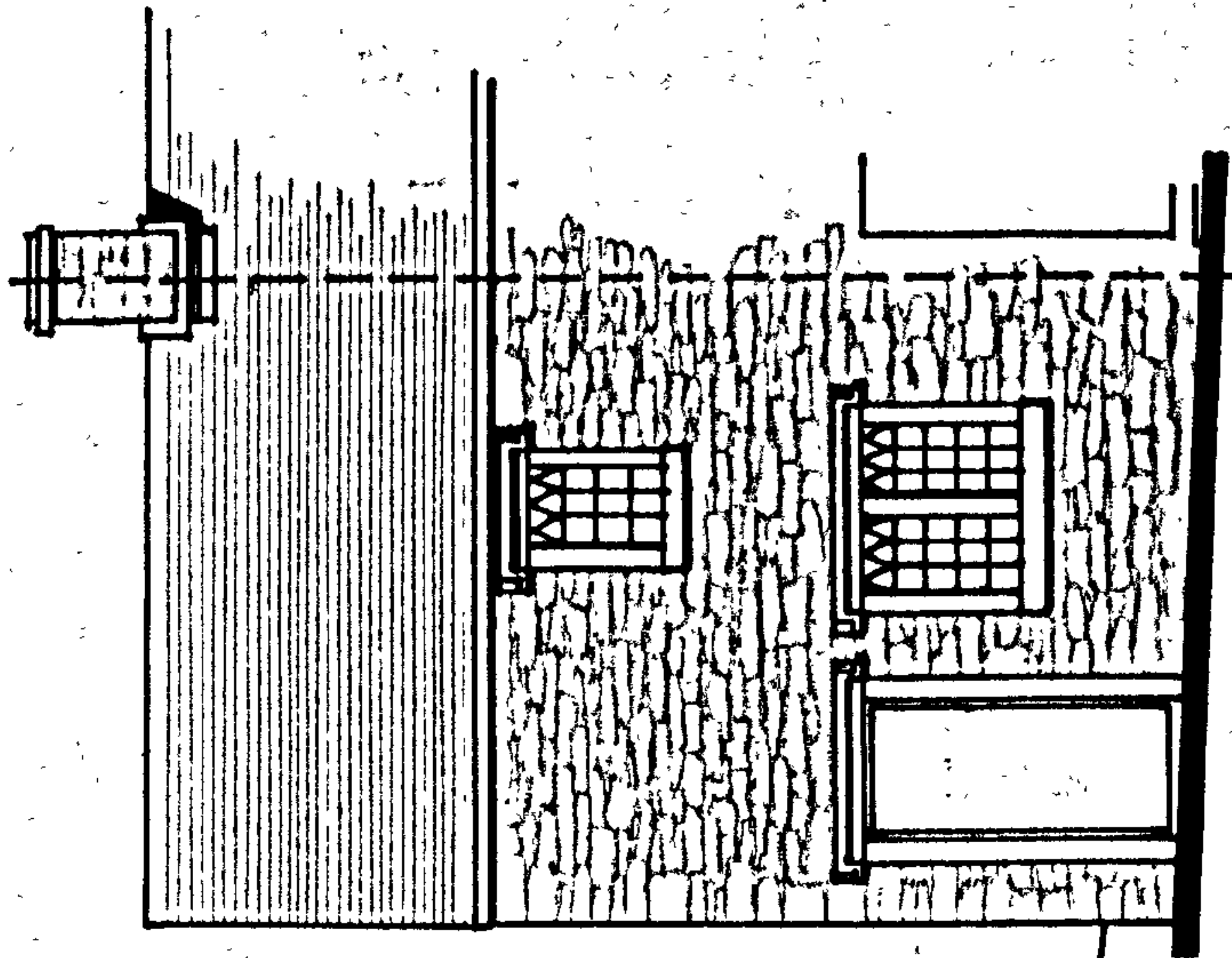


COTTAGES IN TOP TERRACE, CRESSBROOK

$\frac{1}{8}'' = 1'0''$

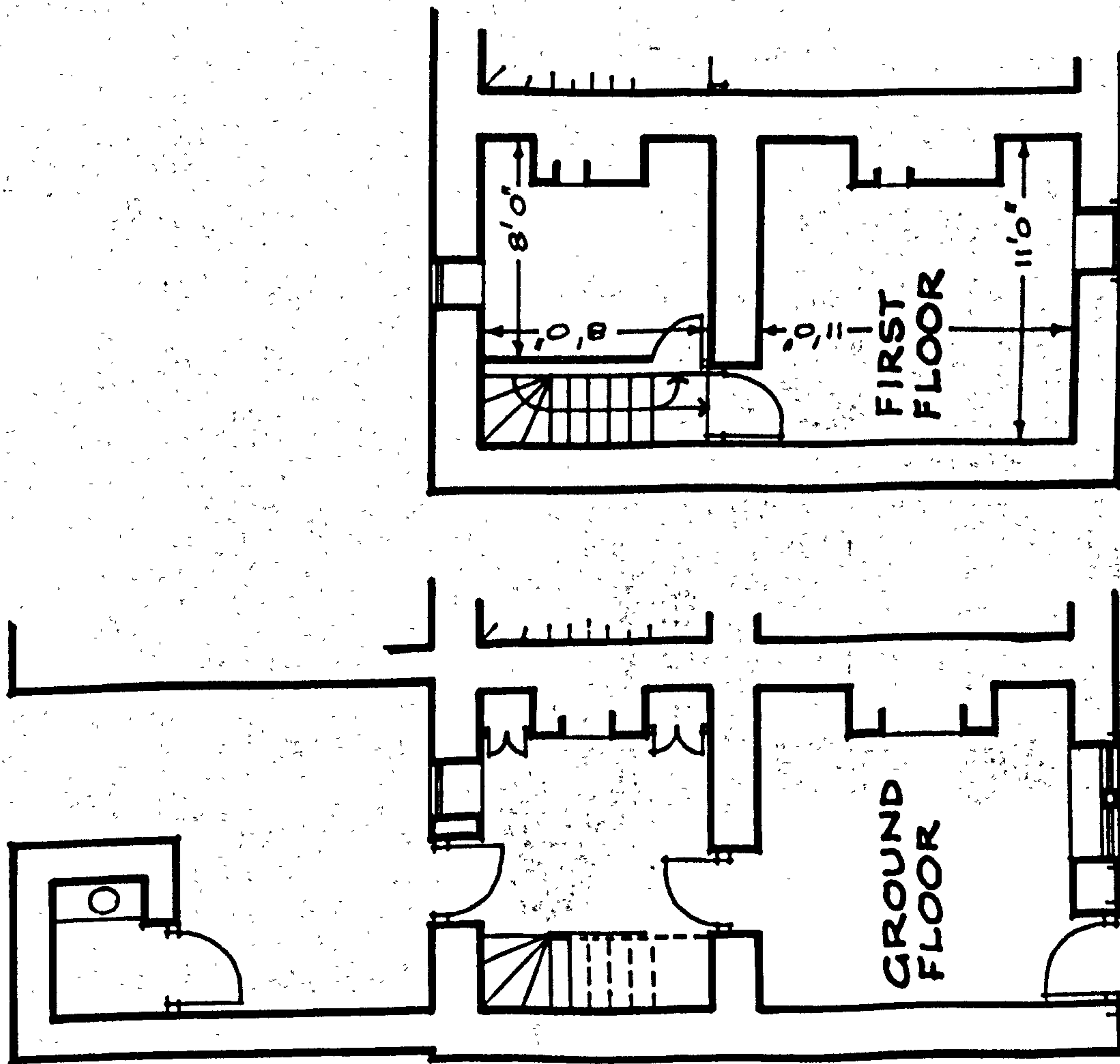
SK 169732

Fig. 31.



RAVENSDALE
COTTAGES,
CRESSBROOK

$\frac{1}{8}'' = 1'0''$



SK 172737

Fig. 32.

ambitions than housing designed on a rural model. Industrial cottages and the smallest town housing were often alike in the use of sash windows on their front elevations, aligned vertically with diminishing heights. Both the smallest size of town housing and the industrial cottage were very close to the utilitarian minimum.

Orderliness in repetitive cottage design was frequently carried to an extreme which seems to reflect Loudon's remark that "the part played by the cottager in the great drama of life, though important when viewed collectively, is nevertheless, as to the operations of the individual, scarcely discernable."¹ It was no function of cottage design to make the individual cottage appear distinct from the mass. Most large scale schemes for industrial cottages reveal a barrack-like regularity of fenestration. If this regularity is of any aesthetic significance, it may be worth noting that similar regularity is characteristic of the plans for utopian communities and home colonies from Rowland Vaughan's "Supplication of Beggars" in 1610² to James Silk Buckingham's plans for the visionary new city of Victoria in 1849.³ When the planning unit was the entire community, the little holding of the individual became indistinguishable. An industrial master could scarcely hope for a better public judgement than that his community looked like a little home colony.

Utilitarian appearance without ornament may even have been

1. J. C. Loudon, Treatise on Country Residences (1806), I 124.

2. R. Vaughan, His Booke (1610, republished by E. B. Wood, 1878).

3. J. S. Buckingham, National Evils and Practical Remedies (1849).

viewed positively by popular opinion favouring the manufacturing interest, as a hallmark of industrial prosperity, even long before the great manufacturers became reconciled to it. Wadsworth and Mann pointed out that in the mid- to late eighteenth century, "a robust pride shone through the local literature, which, with an enthusiasm which had its counterpart in the exuberant local patriotism of the newer America, became turgidly rhetorical on the fineness of the new buildings and squares, and complacent over the opulence which they revealed."¹ Some looked to the creation of a new post-aristocratic social order marked by intelligent organisation, in the severe appearance and grid plans of the expanding industrial towns such as Ashton (though in the case of Ashton the grid plan was created by the conditions imposed in Lord Stamford's ground leases). Regularity suggested importance. "Hadfield," wrote Butterworth in 1827, "is very irregularly built, or it would appear a more pleasant or considerable place."² Dr. Kay similarly condemned "wretched abodes in confused groups" and advocated regular layout of housing in streets which should relate to the size and height of the houses.³

The unadorned architecture and regular planning of the suburb of Belper built by the Strutts earned particular praise from Andrew Ure. "Under their auspices, the handsome town of Belper has arisen, built of hewn stone, with streets flagged

1. A. P. Wadsworth and J. de L. Mann, The Cotton Trade and Industrial Lancashire 1600-1780 (1931), 241

2. E. Butterworth, History and Description of Stockport (1827).

3. J. P. Kay, The Moral and Physical Condition of the Working Classes (1832), 105-6.

with the same, in regular houses on the most commodious plans, where the operatives with their families pass the tranquil tenour of their lives ... This manufacturing village has quite the picturesque air of an Italian scene, with its river, overhanging woods, and distant range of hills."¹

It is remarkable that these undistinguished cottages, like those at Darley Abbey, have earned such praise (see figs. 33 and 34, pp. 237-8).

*

Advice to the cottage designer in contemporary architectural literature was by no means confined to decorative effects, though to attract the book-buying public these effects were often prominent in copybook illustrations. The texts of the better specimens of this class of literature are not so limited. Writers often considered the architectural means whereby an impression favourable to the owner might be created, but the means suggested were often as valid for plain as for ornamental cottages.

Many writers regarded "humility" as the most important quality in a cottage, not using the word in its later disagreeable sense but as suggestive of "the simplicity and repose that is imagined to reside within".² It was often felt that historically inspired stylistic detail was contrary

1. A. Ure, Philosophy of Manufactures (1835), 343-4.

2. E. Bartell, Hints for Picturesque Improvements (1804), 45.

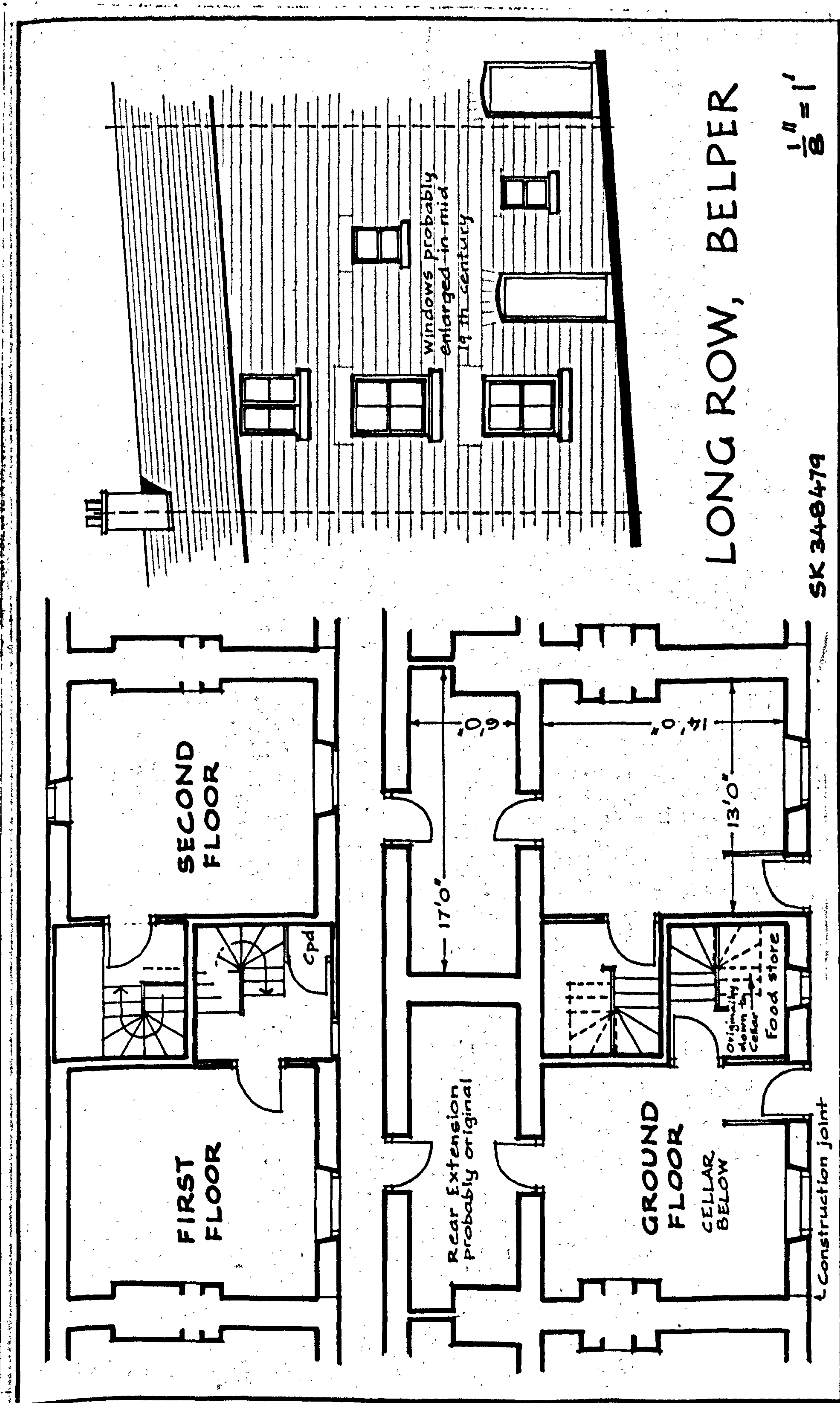


Fig. 33.

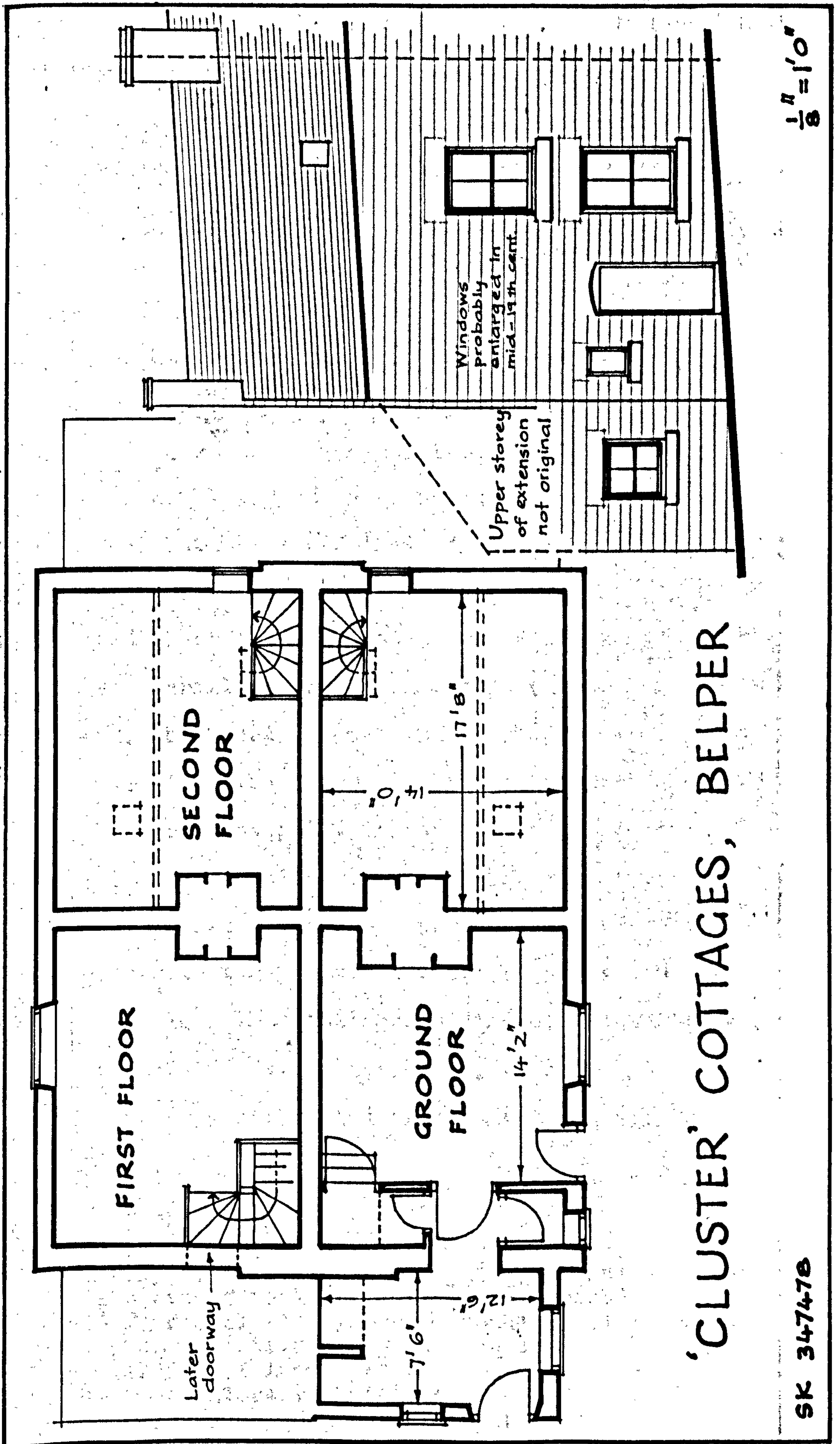


Fig. 34

to humility, though some tried to compromise by, for instance, designing thatched pediments or other classical details rendered rustic.¹ Bartell dismissed the work of such rivals as "totally incongruous".² "The moment that dressing commences, simplicity is invaded." He would, on the other hand, allow pointed windows to be used, to give variety to an otherwise uninteresting elevation.³ It was thought essential that cottages should be built of materials which could be seen to be inexpensive. Bartell was prepared to use thatch or slate, but not, because of their glaring colour, tiles; but he warned that if slates were to be used, there was a danger that in some districts they would be recognised as an imported and probably expensive material. "Unless the material can be commanded at a moderate expense, and, when used, appear in its proper place, it ought to be rejected."⁴ The eagerness with which pisé was advocated by architectural writers⁵ probably owed as much to its cheap appearance as to its actual low cost. Sash windows were also considered to infringe proper humility of appearance, except possibly in the principal rooms of a cottage.⁶

It is not clear that builders of industrial cottages took this architectural "advice" seriously, although it is hard to find instances of money wasted on ostentatious design.

1. e.g. J. Malton, op. cit.

2. Bartell, op. cit., 24.

3. Ibid., 11, 26.

4. Ibid., 21.

5. Particularly J. Plaw, Ferme Ornée (1795), and H. Holland, "Pisé, or the art of building strong and durable walls, to the height of several storeys, with nothing but earth, or the most common materials" in Communications to the Board of Agriculture (1797), I Appx. 387 ff. Both authors base their accounts on F. Cointeraux, Maison de Pisé (Paris, 1791).

6. R. Elsam, Essays on Rural Architecture (1803), 6.

Equally little attention appears to have been given to the widespread advice in architectural copybooks on the use of colour, which was considered to be equally important in achieving humility. Bartell went so far as to say that "the characteristic mark of a cottage is humility, as if, conscious of its inferiority, it should appear to retire beneath the shelter of its friendly woods; which it would not do, if it were not fabricated of glaring colours and costly materials."¹ Most writers, assuming like Bartell that rural cottages would generally be required to blend with a background of foliage, vehemently condemned the use of red brickwork. Humphrey Repton described red brick houses of any class as "scarlet sins against good taste".² In Atkinson's opinion, "bricks, for the most part, are of a fiery red colour, which is very disagreeable to the eye."³ The same author also objected to their smallness. Pocock condemned both red and white as external colours, preferring something more "congenial to the verdure".⁴ In Papworth's view, red bricks should be painted or rough-cast, because they were "at variance with the green tints of the scenery, particularly if they are the red wood-burned bricks of the country".⁵ Red tiles met with similar disapproval. Bartell considered that "tile, particularly the red sort, is always out of harmony".⁶ Even red ashes laid on paths were condemned.⁷ Where bricks

1. Bartell, op. cit., 11

2. H. Repton, Landscape Gardening (1840 edn.), 440.

3. W. Atkinson, Views of Picturesque Cottages (1805), 13.

4. W. F. Pocock, Architectural Designs for Rustic Cottages (1807), 7.

5. J. B. Papworth, Rural Residences (1815), 14.

6. Bartell, op. cit., 120n.

7. Loudon, op. cit., II 437.

were locally the cheapest of available durable materials, on the other hand, industrial cottage owners appear not to have hesitated to use them, despite this advice. In many places the cottages of cotton mill owners were built of the millstone grit, which when freshly hewn is often of a yellowish or pink colour.

Manufacturers may have been generally indifferent to architectural ideas, but an examination of the ideas in contemporary architectural literature may show that the popular reaction to industrial cottages of utilitarian appearance may not always have been hostile. If the opinion of many architectural writers that ostentation and the use of costly materials were inappropriate was widely shared, the failure of most industrialists to rise above strict economy of construction may have been considered acceptable. It is at the level of underlying, basic ideas that the architectural writers and the manufacturers were in agreement. Rather than advocate things which would not be suited to the social station of the cottager, writers tended to press for neatness, cleanliness and order. It was believed that these desirable qualities would not only reflect credit on the cottage landlord, but would exert a beneficial psychological effect on the cottage tenant. In Elsam's opinion, poor people were strongly influenced by living in well ordered surroundings. "Whatever has a tendency to improve the general appearance of the country has likewise a tendency to improve the general morals, manners and condition of the people ... as neatness, cleanliness and love of order is particularly conducive towards improving their habits, too much pains cannot be taken to

inculcate such principles."¹ Bartell also discussed in detail the effect which neat and orderly cottages would have on their occupiers.² Bartell wrote as if by designing architecturally unostentatious cottages he intended to give visual expression to the already existing social deference of the cottager, though he did not expect an attitude of grateful resolution to reform their bad ways to follow immediately in every case. When orderly looking cottages were provided, Bartell expected the tenants' first reaction to be one of resentment, though he advised the owner not to allow the "spectre ingratitude to haunt his imagination and prevent a trial."³ Bartell advised cottage owners to choose their tenants carefully, and to reinforce the expected beneficial moral effects of the improved appearance of cottages by imposing rules for behaviour and cleanliness. These precautions having been taken, environmental improvements might then be expected to exert their due psychological influence. He had no doubt but that tidy cottages "would be the means of reforming many a family from filth, wretchedness and rags, and turning their thoughts to decency and comfort."⁴ Joseph Gandy agreed that "a habit of neatness, attention to cleanliness, does more towards forming the dispositions of the labouring class, than those who are not accustomed to consider the great effects produced by comparatively little causes would at first be inclined to believe."⁵

1. R. Elsam, Improving the Condition of the Peasantry (1816), 14.

2. Bartell, op. cit., 91, 111-12.

3. loc. cit.

4. loc. cit.

5. J. Gandy, Designs for Cottages (1805), vi.

Part 6. The management of building construction

(i) The employment of technical management staff

The implementation of proprietors' decisions to invest in the construction of cottages depended on the availability of certain skills of management. In larger organisations a lower stratum of managerial staff translated their employers' orders into practical instructions to building workers; in smaller firms a proprietor might have to undertake his own technical management. Lacking these technical skills, a proprietor might be less keen to involve himself in the supervision of building work. The availability of technical management skills has a bearing on the types of manufacturing firm likely to take an interest in housing and on the chronology of housing investment. It is not beyond the bounds of possibility that, in a few larger firms, cottages may have been built during periods of slack trade as an occupation for technically useful maintenance staff who might otherwise have been turned off.

The prime importance of industrial proprietors' attitudes to the supervision of work in person has been made clear by the researches of Prof. Pollard, who has stressed the variety of methods devised by proprietors both before and to a lesser extent during the Industrial Revolution to avoid personal involvement in detailed management. The burdens of practical work supervision created by industrialisation might have held

fewer fears for proprietors contemplating adopting the factory system if they had felt able to rely on employing adequate managers and foremen. Unfortunately, the reputation gained by managerial employees in the service of the old joint-stock or privileged companies for dishonesty and incompetence engendered pessimism.¹

In the short period in which the factory system was becoming established in the cotton industry a class of proprietors distinguished from their predecessors in the merchant class by their willingness personally to direct and evaluate artisans' work of many types came to the forefront; Arkwright himself was a leading example.² A generation or two later the principle of delegating management to salaried staff and of letting artisan work out on contract tended to reassert themselves as a division of managerial labour within the factory system permitted proprietors to revert to a predominantly financial rôle like their merchant forebears. This contrast of attitudes between the founding generation and its successors appears in the history of many of the larger firms. Robert Hyde Greg, Richard Arkwright junior, Sir Robert Peel, W. E. Nightingale, and doubtless many lesser examples exhibit a second generation diversion of interest away from the affairs of the mill to the new attractions of finance, landed estates, or politics.

It was perhaps inevitable, both in the careers of first generation industrial proprietors and more particularly in the change of policy brought about by their successors, that

1. S. Pollard, The Genesis of Modern Management (1965).

2. J. Tann, "Richard Arkwright and Technology" History LVIII (1973).

proprietors should gradually relinquish the personal supervision of their workers. There are signs of a class of professional salaried managers coming into existence almost from the start, particularly in the larger firms whose owners tended from the first to emphasise their aloofness from practical affairs by referring to themselves as "merchants". It is perhaps to the smaller firms principally that one should look for the most complete temporary fusion of ownership and management. The ability of a small millowner to direct work personally, including new building, to value it and to detect bad workmanship, could affect the survival of his business.¹ The larger firms gave the lead in bringing a technical managerial class into existence, a class which took several forms.

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Large mill proprietors like David Dale of New Lanark were enabled in some ways to affect the manner and status of merchants by employing technically skilled junior partners as managers. "Mr. Dale's principal advocations," Robert Owen

1. "The chief characteristics of a small industrial entrepreneur are ... his capacity to lead other men in a common industrial undertaking, and his inclination to introduce technical innovations; and, in the early stages of industrialisation, the vast bulk of these innovations are of a technological nature requiring the direct and immediate participation of the entrepreneur." Hoselitz, in Industrialisation and Society (1963), 23, quoted by Pollard, op. cit.

wrote, "were at a distance from the works, which he seldom visited more than once for a few hours in three or four months."¹ Managers like the young Robert Owen under David Dale, given partnerships to guarantee their loyalty, cannot always be distinguished from aspiring proprietors in their own right. The largest of the early millowners were able to adopt the luxury of delegating executive duties in this manner because there were many aspirants to the same status not as yet in command of sufficient capital or knowledge of the trade to venture on their own, who saw managership in a leading firm as a valuable first step in their own careers.

It might be argued that in the conditions of the early years of the Industrial Revolution a good manager could automatically be regarded as a potential proprietor, as only weak managers would make lasting careers of their avocation. The improving quality of managers found in the later years of the Industrial Revolution may be as much due to the closing of proprietorship opportunities as to any improvement in the class of persons commencing as managers.

The careers of men in the highest levels of management illustrate the difficulty of drawing a firm line between management and proprietorship. Peter Ewart's career might be described as technical managership in the form of professional junior partnership. After a period of apprenticeship and training in engineering under Rennie and having worked with Boulton and Watt, Ewart was taken into junior partnership with Oldknow shortly before the disastrous turn in the latter's

1. R. Owen, New View of Society (1813), Essay II.

fortunes in 1792. Ewart later joined Samuel Greg at Styal. He took a quarter share in the profits of Styal Mill but owned no share in Greg's non-mill property. This partnership terminated in 1810 in accordance with the partners' original agreement. Greg and Ewart were also partners in a Manchester mill, which Ewart later retained as sole proprietor until 1835. He then gave up cotton spinning and took a post as Chief Engineer and Inspector of Machinery at the Royal Dockyards, where he continued to work until his death in 1842.¹

At Darley Abbey, Walter Evans and Company employed a general manager, Moses Harvey, with authority over the various branches of their manufacturing business. Harvey was already in their employment before 1800, and his signature or initials frequently appear in the Company ledgers approving accounts. He was one of the few members of the staff to sign letters in his own name. In 1814 he was taken into partnership but continued in management, taking a three-eightieths share in the annual dividends. From this date to his death in 1827 Harvey received annual dividends averaging £840.²

Other examples may be quoted of men of high managerial capacity trained in larger establishments who went on to become proprietors themselves in later years. Archibald Buchanan was trained by Arkwright, and later became a partner

1. W. C. Henry, "Biographical Notice of Peter Ewart" Memoirs of the Manchester Lit. and Phil. Soc. VII (1841); see also Greg Papers, Partnership Book, 1796-1811 (Manchester Ref. Lib., C5/1/2/2).

2. Evans Papers, Cotton mill stock book, 1815-26 (Derby B. Lib., 162-4-70).

with James Finlay and Company of Ballindaloch.¹ Richard Bridden joined Arkwright in 1771, and was taken into partnership by Richard Arkwright junior at Bakewell, and subsequently at Rocester where he owned a third share of the capital. He attempted to become sole proprietor at Rocester, but did not finally succeed in buying out his senior partner.² Amongst other examples, Richard Thompson was trained by Peel, Yates and Company at Burton, and later set up business independantly at Newcastle under Lyme.³ James Thompson of Primrose Mill, Clitheroe, was also trained under the Peels, at Church Bank.⁴ Thomas Barton, though a person of private means, served Samuel Greg at Quarry Bank as manager, following the departure of Peter Ewart, from 1810 to 1822. Barton subsequently went into partnership with Garside at Stockport.⁵ Many of Samuel Oldknow's managers appear to have advanced themselves similarly.⁶

Even a manager at the artisan foreman level might have aspirations to partnership. The Newton family at Cressbrook and Litton mills rose in this way; William Newton, a country carpenter, became a mechanic at Cressbrook for a salary of £50 a year, but lost everything in the fire of 1785. The mill was restarted by new owners, who offered Newton a partnership for £200.⁷

1. S. C. on the State of the Children employed in the Manufactory of the U. K. (P. P. 1816, III), 5.

2. Trial of a Cause (1785), 127-8, 130; Rocester Mill Deeds (Staffs. C. R. O., D. 640).

3. S. D. Chapman, The Early Factory Masters (1967), 71.

4. O. Ashmore, Industrial Archaeology of Lancashire (1969), 259.

5. G. Lazenby, "Social and Economic History of Styal" M.A., Manchester (1947), 173.

6. G. Unwin, Samuel Oldknow and the Arkwrights (1924), 116.

7. Chapman, op. cit., 92

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Larger firms also acted as training grounds for a class of manager not aspiring to partnership, whose status fell between that of financially responsible partners and foremen. Evidence collected by Prof. Pollard shows that in the period from 1790 to 1830 the annual salary of managers at this level, a grade above clerks, bookkeepers or cashiers, would fall normally in the range from £100 to £250.¹

A young man with relatives able to bring their influence to bear could become a manager in a leading establishment by undergoing a period of apprenticeship. In 1785, Samuel Oldknow was persuaded to take John Yates on his uncle's recommendation as an apprentice manager for six years "or till he is of age". It was normal for a master to require a premium, but Oldknow made it clear that the handsome terms he demanded were to be regarded as generous: "I confess the sum appears large," he wrote, "and I profess to say that if it had been any other person besides Mr. R. Yates I should not accept of a larger sum in like circumstances." For a fee "half to be paid in six months after he comes and the other half the first month of the last year of his time" Oldknow engaged to provide his apprentice manager with "every necessary, cloaths and wash^g excepted, and give him every opportunity of learning to manage a concern [and] become habitual in all its extents."²

1. S. Pollard, "Genesis of the managerial revolution" in Studies in Romanticism (1965).

2. Oldknow Papers, Draft of a letter endorsed on one received 12 Oct. 1785 (John Rylands Lib., Engl. MSS 751).

John Yates thus obtained his position with Oldknow through his uncle's influence, but he proved to be unfitted for it. Three years later Oldknow considered dismissing him. Yates's superior, Horsfield, then wrote to Oldknow: "Mr. Yates will write to you tomorrow of John, but there is no doubt of him choosing to continue here, but as to him being usefull its wel known how usefull he ever was in assisting anybody but if he is to continue here I should be glad when you write to him to give him a caution not to assume to much authority over the workpeople nor treat them with bad language not letting him know I have mentioned it and I'll do my best with him."¹

The negotiation between Samuel Oldknow and Thomas Parkes in 1797, when the latter was seeking the post of manager of Oldknow's Lime Works, throws some light on the recruitment of a manager of mature years, who would be expected to be in complete day to day control over the skilled and unskilled workers in his department. Parkes was a man of some education, according to his own claim, with a mind "cultivated both for business and other pleasures", and with daughters who considered themselves sufficiently genteel to contemplate opening a boarding school, if only "some friends would step forward with an additional capital to what they are capable of advancing." Parkes expected a salary of at least 100 guineas a year, and pointed out that in his present engagement with Duncumb and Company of Birmingham he was earning commission equal to £130 yearly. Accordingly he met Oldknow's offer of £50 with some protest. "Our uniting," he replied, "depends upon

1. Letter from T. Horsfield to S. Oldknow, quoted by Unwin, op. cit., 53.

your offering me such a salary as will enable me to live, and do something for my children." Parkes requested Oldknow to "specify what will be the routine of employment" and stated that for the salary he required he would "with all readiness undertake the superintending of your lime concern, respecting books, contracts, collecting moneys, etc."¹

In addition to recruiting salaried technical managers from persons with commercial experience, it seems not improbable that some may have been drawn from the tenant farmer stratum in rural society. Many country millowners, as has been shown elsewhere, were interested in land ownership and many leased farmland to tenant farmers. In their ability to turn their hands to any practical tasks confronting them, including building, farmers have a great deal in common with emerging industrialists. Tenant farmers absorbed into a millowner's estate, and sharing the local resources of labour with their landlords, would be amongst the most obvious classes from whose more promising younger members to recruit managers. The employment of the brothers Matthew and George Faulkner by Samuel Greg at Styal was perhaps an early example of this, except that Greg possibly knew George Faulkner even before coming to Styal and acquiring the Faulkners' farm there. Their father was Thomas Faulkner, "yeoman", who first obtained his tenancy at Styal under the Earl of Warrington in 1747.² Matthew was born in 1751 and George in 1754.³ In 1786, a few years after setting up his cotton mill, Greg absorbed the

1. Oldknow Papers, Letter from Parkes to Oldknow (John Rylands Lib., Engl. MSS 751).

2. Stamford Leases (John Rylands Lib., J. R. Charter 4156).

3. J. R. Charter 4253.

Faulkner land into his own property,¹ and by 1790 Matthew Faulkner was described as a cotton manufacturer and his younger brother as a bookkeeper, of Balbriggan, an Irish hosiery manufacturing town, in a lease in which their names were linked with Greg in a term of lives.²

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The lowest level of manager employed by the proprietor of a cotton mill might be "little more than an illiterate workman who received little more than the other hands."³ The rivals with whom Robert Owen competed to obtain the managership of Drinkwater's mill in Manchester following Lee's departure in 1792 were all evidently of this type. Drinkwater's low opinion is clear from his second question to Owen, "how often do you get drunk in the week?"⁴ Similarly, when Evans and Company of Darley Abbey sought a journeyman "that has management" in 1787 they did not expect to pay him more than £40 a year, and had no anxiety about waiting for applicants. Concerning one applicant they wrote to Whitfield and Company of Manchester: "Unless Walter Acheson is very much recommended [and] you judge from his manner and appearance that he has management and that he had a general

1. J. R. Charter 4312

2. J. R. Charters 4253, 4278.

3. Unwin, op. cit., 126.

4. R. Owen, Life, written by Himself (1857), 37-8.

knowledge of the business, we had better wait a week or two longer, in hope a better man may apply ... 16s a week are very handsome terms for the place we want a man for, and would [be] £41 12s per annum in lieu of £40." With further recommendation, Acheson secured the appointment for 40 guineas.¹ The wages of mill employed workmen at this period appear to have averaged about 10s per week.²

1. Evans Papers, Letter Book, 29th Oct 1787, 5th Nov. 1782 (Derby B. Lib., 162-1-70).

2. Bakewell Mill Wages Books (Chesterfield P. Lib.). This figure is an approximate mean for workmens' wages in 1787.

(11) Labour and materials

J. Hole complained in 1866 that "an Arkwright is wanted for the building trade."¹ Although it was a fair observation that the Industrial Revolution produced no factory system in the assembling of buildings, Hole might in fairness have admitted that Arkwright and his imitators had indeed made a contribution to the emergence of new methods of building organisation through the innovation of the permanently employed direct labour force.² The need to preserve the secrecy of industrial processes in the earliest years also discouraged the employment of outsiders. Many eighteenth century industrial employers anticipated Thomas Cubitt's system of employing workers of all trades on their "own premises and subjected to the laws and system of the place."³

The building requirements of industrial proprietors tended to discourage craftsmanship and profit-remunerated single-trade contracting. They preferred to employ a permanent staff of labourers who would learn to exercise adequate utilitarian skills whether or not their skills were recognised by the public at large. The formal apprenticeship and journeyman status of building workers were of little interest to an industrial employer. Workers lacking

1. J. Hole, Housing of the Working Classes (1866), 57.

2. On the unusualness of a permanently retained direct labour force see H. M. Colvin, Biographical Dictionary of English Architects (1954), 5. Arkwright's use of this innovation at the time of the building of the Cromford mills is discussed by R. S. Fitton and A. P. Wadsworth, The Strutts and the Arkwrights (1958), 67.

3. H. Hobhouse, Thomas Cubitt, Master Builder (1971), 8.

recognised trade qualifications could more readily be moved from skilled to unskilled work as occasion required.

Industrial employers had less use than other employers of building workers for the traditional master craftsman who contracted for both labour and materials. The larger industrial proprietors generally had some control of local supplies of building materials, and required therefore only labour. The traditional building craftsman was in danger of becoming an anachronism in the manufacturing counties, and industrial employment tended to reinforce the loss of status which had gradually affected the building crafts since the beginning of the eighteenth century.¹

When Arkwright established his first mills at Nottingham in 1769 he circumvented many of the problems of finding building labour by employing Samuel Stretton, who, on the evidence of his later career, appears to have been an embryonic general contractor, materials merchant and developer. Although Arkwright did not take Stretton into partnership (and Stretton later established mills of his own competing with Arkwright²), the early collaboration probably set a precedent for an integrated organisation of building trades serving industrial requirements. Arkwright showed similar judgement in choosing his millwright, Lowe, who performed a similar function in timber merchanting and general carpentry.³

1. Colvin, op. cit., 8, discusses the diminishing design responsibilities of master craftsmen in the eighteenth century.

2. W. Stretton, The Stretton Manuscripts (1910), esp. the introduction. For Stretton's later specialisation in industrial buildings, see pp. 180 ff. S. and W. Stretton were also contractors for the Nottingham Barracks in 1781.

3. Information kindly communicated by Dr. J. Tann.

Samuel Oldknow employed masons and other workers at Marple, and the names of 37 of these workers are known from a list of "men at work at and for the lime kilns etc." in March 1797 and later months.¹ That these men were permanent employees and not merely casual or itinerant labour is evident not only from the constant repetition of their names from one list to another in the kilns construction records but also from the fact that in the tenancy lists for Oldknow's cottages in 1799 and 1801² many of the same names appear. Of 37 names, Christian name and surname, 18 appear exactly in the tenancy lists; 12 other men had surnames occurring in the lists; and only seven surnames do not appear at all. As the names in the tenancy lists were doubtless heads of households, it is probable that virtually all of Oldknow's masons and similar workers were his tenants and in all probability, therefore, his permanent staff. The masons' foreman, Thomas Pott, was amongst those with a cottage tenancy in his own name. In March 1800 T. Pott and Company, about 25 men, built new lime kilns, and from August to October they built a bridge. The closing months of the year was then spent on repairs and other work to the cottages.³ From other evidence Prof. Unwin counted 57 general, non-mill workmen in Oldknow's employment.⁴ It appears that at the end of the century Oldknow had a large number of permanent building or similar labouring staff, of whom about a half or two thirds were capable of working as masons or masons' labourers.

1. Oldknow Papers. (John Rylands Lib., Engl. MSS 817 III.) The first lime was burned in 1797: Unwin, *op. cit.*, 215.

2. Marple Land Tax (Ches. C. R. O., QDV 2/280).

3. Oldknow Papers "Building Wages only, 1800" (Manchester Ref. Lib., MF 731). See above, p. 155.

4. Unwin, op. cit., 168.

An exact number cannot be put on Oldknow's building workforce because there was evidently some interchange of workers between building labour and colliery, lime kilns and farm labour. It is also not possible to draw a firm line of distinction between permanently employed labourers on types of work normally paid by the piece and independant labour contractors who happened to be predominantly engaged by Oldknow. Just as in farm work it was usual for such tasks as ploughing or haymaking to be performed as piecework,¹ and not for fixed wages, so, in building, such tasks as sawing or brickmaking were the subject of invoices submitted by the labourers. Invoices survive in the Oldknow Papers for glazier's work, sawing, painting, and brickyard labour. A large manufacturer's direct labour force would appear to have been a spontaneous rather than a planned organisation, simply a group of workers drawn together by the chances of continuous employment for themselves, mill work for their women and children, and perhaps a cottage. A systematic and uniform method of payment might take decades to achieve.

The composition of a direct labour force employed by a large manufacturer would probably cover most of the recognised building trades, but the workers would tend to be of inferior skill or unskilled labourers. The "masons" employed by Oldknow at Marple and Mellor would be unlikely to be called on to execute ashlar work, as the local stone is only suitable for hammer-dressed rubble masonry. Alternatively, they would build in brickwork or perform general labouring.

1. F. M. Eden, State of the Poor (1797), I xxvi-xxvii.

Not only did local building materials in most of the areas of the early cotton industry not lend themselves to highly skilled use, but the demand of industrialists for other than utilitarian construction was very limited.

The main reason for preferring unskilled workers was probably the desirability of transferring them from one type of work to another as the need arose. Prof. Unwin has thus described the employment of two typical labourers at Marple: one "began as a cotton spinner, became in turn a coal miner, a farm labourer, a road mender, a builder, a gardener and a woodman." Another worked at "hanging of gates, quarrying, building, potato getting, roadmaking, 'soughing',¹ and repairing walls." In neither case did the change in work affect the man's pay.² At Belper, the Strutts were so disinclined to respect skilled workers' notions of the proper demarkation between crafts that they made it a matter of policy only to employ labourers. As Andrew Ure reported, "Mr. Anthony Strutt, who conducts the mechanical department of the great cotton factories at Belper and Milford, has so thoroughly departed from the old routine of the schools that he will employ no man who has learned his craft by regular apprenticeship."³

The size of the direct labour force employed by Evans and Company at Darley Abbey is unclear, but in building a number of

1. i.e., drainage work

2. Unwin, op. cit., 169-70.

3. A. Ure, Philosophy of Manufactures (1835), 21. This policy may have commenced since 1816, when it was stated that apprentice mechanics were employed (see Select Committee on the State of the Children employed in the Manufactory of the U. K., P. P. 1816, III, 217).

cottages between 1803 and 1806 £431, 20% of the total expenditure, was paid for work not specifically associated with materials supplies. Of this, £102 was demonstrably for direct labour, £13 paid to labourers evidently hired for specific work, and £216 paid to what appear to have been four gangs, led by Wright, Addison, Walker and Cockayne. Some of these might have been gang labour contractors offering their services to other employers also.¹

It would not be practical for an industrial proprietor to carry all the building workers he might require. The tendency to concentrate on employing labourers would make it occasionally necessary to call in a craftsman for work of a higher standard. Thus, in 1814 the trustees under the will of Peter Nightingale of Lea Mills were unable to provide skilled masons for the construction of Lea Chapel, and turned to an outsider. "You may well be surprised that we have been so long about the chapel," John Alsop, the managing trustee, wrote to his colleague; "The mason that William Stone engaged lost near a month at the beginning and when they had begun neglected day after day having engaged themselves at so many places and running from place [to place] trying to keep each party quiet."²

Even among the better workmen whose craft skills were recognised it may not always have been possible to distinguish between habitual contractors and employees paid by piecework. Some of Samuel Greg's employees rose in time to the status of

1. Evans Papers, "D" ledger, folios 98 etc., "E" ff. 3 etc., 4 etc.: accounts for "New Houses in Darley", "New Houses in Croft" and "New Houses near Orchard". (Derby B. Lib., 162-2-70, 162-3-70.)

2. Nightingale Papers, Letter from John Alsop, evidently to William Shore. (Derby B. Lib., 092127).

independant craftsmen. Lazenby refers, for instance, to Daniel Marsey and John Ashcroft, "both of whom first appear in the early wages lists," and who appear again after 1836 "in the accounts as those who are paid for work done as small businessmen."¹ As mill employment might lead a young manager to proprietorship, so a young workman might advance under mill patronage to gang leadership or trade contractor status.

*

If the record of the correspondence on building matters entered into by Evans and Company of Darley Abbey in the late 1780s and 1790s is tolerably complete, as it appears to be, and if the building organisation of this important firm was at all similar to that of large manufacturing concerns generally, it may be reasonable to conclude that despite the close personal attention of the partners even to the details of materials purchases and orders, their contractual agreements were very informal. It was usual for an agreement between a supplier and the Company to commence with the visit of a partner to the supplier's yard to inspect materials. An exchange of letters would normally follow, confirming the order. Probably the inequality of size between the Company and their local suppliers made more formal orders or contracts superfluous; at least, no such contracts are referred to in

1. Lazenby, op. cit., 106-7.

the letters. Suppliers would have little cause to fear that the Company would not honour its debts. The prices of materials or workmanship to be supplied were rarely mentioned in the Company's letters, it being apparently presumed that old prices remained in force until specifically cancelled.

The tacit agreement on prices between an industrial proprietor and his longstanding suppliers was accompanied by an understanding that he would not take his custom elsewhere without due reason. On one occasion Walter Evans breached this convention, and when found out, wrote in irritation to his new timber supplier: "You or Mr. Oakden have been blabbing to Mr. Fearn that we would buy timber from you, and the consequence is they are so affronted they will not sell us any of any sort, which puts us to some inconvenience."¹

Very little use appears to have been made of drawings, except, perhaps, for small scale plans and elevations. Plans and elevations for cottages intended to be built for the Soho Manufactory in Birmingham survive in the Boulton and Watt Papers, but these may not be typical. This firm was necessarily involved in extensive drawing office work as a service to its customers; it usually supplied plans and elevations of engine houses. Textile firms, on the other hand, are unlikely to have had the requisite types of drawing office skills at their command. They are more likely to have relied on outsiders for their technical drawings. Even in the mid-nineteenth century the copying of drawings was a laborious and time consuming matter, and superfluous copies would not be

1. Letter from W. Evans to R. Cooper, 21st July 1788.

ordered. If any drawings existed they would almost certainly be kept on the building site rather than retained to gather dust in the proprietor's study or the counting house. As they were useful documents, the rarity of their survival as archives need cause no surprise. It was the custom of Boulton and Watt to produce coloured best drawings to send to customers, marked "property of Boulton and Watt, to be returned after use". Copies for their own reference were kept, in the form of reverse duplicates. In very many cases the fair originals appear never to have been returned.¹

It would hardly be possible to construct buildings absolutely without drawings, however slight, but for details of joinery it appears that craftsmen were capable of working from a verbal description of requirements. In 1788 Walter Evans ordered a pair of gates for his own house by verbal description.² His requirements are perfectly clear, down to the details of timber sizes, and it was presumably up to the joiner what workshop drawings he wished to produce for his own use. Earlier in the eighteenth century it was a recognised part of the duties of master carpenters or other craftsmen to produce any drawings required.³

It was possible for building work to proceed without any advance planning in detail because suppliers of materials were apparently capable of providing their wares at very short notice. The Evans correspondence shows that the supplies of floorboards and nails were immediately available; tiles could be obtained in two or three days; simple iron castings

1. Information on Boulton and Watt kindly communicated by Dr. Tann.

2. Letter to R. Cooper, 1st Nov. 1788.

3. Colvin, op. cit., 2.

like sash counterweights could be ordered to be delivered "by the first waggon"; and ironmongery, locks and keys could be expected to be sent from London to Derby within a month. Some allowance must naturally be made for the fluctuating state of demand, but the correspondence in which these and similar orders appear ranges from the late 1780s to the end of the century, and ready delivery appears to have been the norm.¹ The Company's letters frequently stress the urgency of receiving supplies, too frequently, perhaps, for the urgency always to be believed.

1. e.g., letters 21st July 1788; 18th Sept. 1788; 18th Nov. 1788; 15th Sept. 1790; 1st July 1799; etc.

CHAPTER 4.

HOUSING MANAGEMENT

Part 1. Sanitary management.

The available evidence is insufficient to indicate whether the sanitary management of industrial cottage property tended to become more or less intensive during the period of the Industrial Revolution. Superficially it suggests that management became less intensive, and that the minute care for which the pattern was set by Robert Owen and some of his contemporaries contrasts with the lax management indicated in more general evidence available for the period around 1830. On the one hand one might expect management to have become more intensive as sanitary knowledge increased and as industrialists found themselves less able to hide their tenant communities from public gaze; on the other hand one might expect the progress of education and sanitary habits among the workpeople to have rendered them more capable of managing their own living conditions in the later period.

The early evidence of good management tends to be found in the communities of those who were the best publicists among industrial proprietors. The measures taken by Robert Owen to regulate the health and behaviour of his workpeople were evidently well known to his fellow manufacturers. Owen claimed to have been on close terms with Richard Arkwright junior, Oldknow, Samuel and Peter Marsland, Simpson, McConnell and

Kennedy, Gott, Banks, Goodman, Cawood, Baines and others,¹ but this underestimates his circle. His measures for practical sanitary management undertaken at New Lanark were probably regarded with curiosity throughout the manufacturing class. He claimed that his policy at New Lanark was that which he had "successfully commenced with the workpeople of Mr. Drinkwater's factory" in Manchester in the 1790s,² and his writings give no credit to the prior achievements of David Dale. Nonetheless, the community he took over at New Lanark in 1800 was one already exceptionally closely and well governed by the standards of the time. A report written before his arrival describes "the healthy and pleasurable appearance" of Dale's 1,500 employees, of whom a third were apprentices. "Peculiar regulations, adopted by Mr. Dale for the preservation of the health and morals of those under his protection, have made this striking difference between his manufactory and many other similar undertakings in this kingdom; so that while some other mills must be regarded as seminaries of vice, and sources of disease, those at Lanark are so peculiarly exempt from these objections, that out of near three thousand children employed in these mills during a period of twelve years, from 1785 to 1797, only 14 have died; and not one has been the object of judicial punishment." Dale even employed ten schoolteachers for the children, and instructors in sewing and music.³ Owen probably went further than Dale, and commenced sanitary

1. R. Owen, Life, written by Himself (1857), 202.

2. Ibid., 6-7.

3. T. Bernard, "An Account of Mr. Dale's Cotton Mills at New Lanark, in Scotland" Reports of the Society for Bettering the Condition of the Poor II (1800), 365.

inspections of the cottages, probably before this innovation had suggested itself to any other millowner. He supported this with a policy of street scavenging and tidying around buildings, and gave his workpeople lectures on "the blessings of cleanliness".¹

The Ashworth brothers of Egerton and New Eagley stand out amongst later millowners with a reputation for intensive sanitary management. Léon Faucher said of Henry Ashworth in 1844: "he holds strictly to rule and has everything defined and reduced to writing, - the duties of the master as well as those of the workman."² According to the account of his brother Edmund, the Ashworths were at first reluctant to interfere in the private affairs of their cottage tenants. Perhaps, in 1830, proprietors of rural industrial communities could feel that the sanitary battle had been won, and no interference was necessary. The Ashworths' optimism on this point was shattered by the outbreak of a malignant fever amongst the occupants of their new cottages, which "went from house to house, till we became seriously alarmed for the safety of the whole establishment."³ They discovered that "the cottages were in so filthy a state that it was apparent we should not long be free from a recurrence of the same evil unless we took some active measures to effect a change in the habits of these people." They overcame their reluctance and decided as a matter of urgency to inspect "every cottage ... as regards cleanliness and ventilation, as well

1. M. Cole, Robert Owen of New Lanark (1953), 58.

2. L. Faucher, Manchester in 1844 (1844), 111.

3. Sanitary Inquiry, Local Reports, E. and W. (P. P. 1842, XXVII), 338.

as bedding and furniture". Once having commenced the practice of inspecting cottages, the Ashworths intensified it into a very intensive régime. "The state and cleanliness of their rooms, their bedding and furniture, are very minutely examined, and the condition of their children, their income and habits of life, are carefully inquired into, and remarks thereon are entered in books which are kept for the purpose."¹

A régime not unlike that of the Ashworths at Egerton and New Eagley was probably followed by the Whitehead brothers at Hollymount, Samuel Greg junior at Bollington, and others; though the literary evidence for sanitary management was so very politically motivated that little confidence can be placed in glowing accounts of model communities. One would expect the history of sanitary management to be different at the hands of every industrial cottage proprietor. Variables would include the character of the owner, the type of manufacture involved and the composition of the workforce, the newness of the community, the state of opinion locally among influential persons on the desirability of encouraging manufactures, and the state of education of the cottage tenants. Possibly the size of the community would affect matters, the larger ones being more under public notice: thus Lord John Manners, though an opponent of the factory system, concluded that "nothing can be better than the state of the people under the large millocrats."²

1. Answers of Manufacturers to Queries (P. P. 1834, XX).

2. Letter, 31st Oct. 1841, quoted by Boyson, The Ashworth Cotton Enterprise (1970), 98.

Improved working class literacy would perhaps suggest to later proprietors the advantage of providing written or printed sets of rules governing conduct not only at work but at home. The replies to the Factories Inquiry in 1833 include examples of printed rules in some Scottish mill villages indicating the sorts of sanitary matters covered. James Aytoun, flax spinner, of Abbotshall, required his tenants, whether employees or not, to "observe a set of printed regulations in regard to cleanliness about their homes and doors."¹ The rules of McGregor of New Kilpatrick cotton mills included the prohibition of such domestic abuses as the keeping of dogs or poultry "under the penalty of leaving the house without the usual warning", harbouring vagrants, or using their cottages for the sale of spirits.²

Some larger proprietors saw working class temperance as a part of their sanitary management, and attempted to prevent the sale of intoxicating beverages on their estates. Mere exhortations to temperance might be thought ineffective. English millowners may not have been as strict on this point as their Scottish counterparts, their communities being usually smaller and less isolated. Amongst English millowners, the Ashworths "bought an extensive plot of ground, and thus gained the power to exclude public houses from their village."³ Likewise, Evans and Company at Darley Abbey earned the praise of a visitor to their village: "No inn or place of public resort is licenced within its boundaries. Thus no temptations

1. Answers of Manufacturers, op. cit.

2. Ibid.

3. Faucher, op. cit., 113.

are held out to lead the light hearted or social spirit into any excess; and the sobriety of the village, so essential to the preservation of its morality, is fenced and guarded round with the most prudent care and forethought."¹ It is also probable that no public house was permitted at Low Moor near Clitheroe.² This is one respect in which the precedent set by Cromford was not generally followed. There were five or six public houses at Cromford in the early years, including the Greyhound Inn, built by Arkwright to take advantage of the coaching trade between Wirksworth and Buxton.

It appears in answers to the Factories Inquiry in 1833 that it was not uncommon for the everyday management of industrial housing and even the inspection of cottages to be delegated to a committee of the "more respectable" tenants. Sanitary management was usually thought to consist of no more than the regular limewashing of the cottages, and most owners thought their duty was adequately discharged by providing free quicklime, brushes and "encouragement". Hardly any answers mentioned such tasks as scavenging, painting, or even the cleansing of privies.³ The policy of delegating management was well illustrated by the reply of a Headingley worsted spinner, the management of whose seventy cottages was

1. Lady's Newspaper, 16 Aug. 1862, 108.

2. O. Ashmore, The Industrial Archaeology of Lancashire (1969), 151.

3. Millowners were asked by the Factory Commissioners to report what superintendence they exercised over their cottages and what arrangements were made to enforce domestic cleanliness (Answers of Manufacturers, op. cit.; see also Appendix C, p. 426). The replies were generally brief, and it is evident that few were inclined to be informative. There is likely to be a bias in this evidence in favour of those manufacturers who had something creditworthy to report.

entrusted to "a committee of some of the more respectable of the cottagers whose duty it is to see from time to time that the whole are well ventilated, and whitewashed, and in every respect clean." An industrial landlord could thus save himself the trouble of detailed administrative interference. He could give passive support to his tenants' committee by making materials available or occasionally releasing labour when required for maintenance work. A woollen spinner, Priestly of Sowerby, gave a particularly full description of such passive maintenance measures: "With a view to promoting cleanliness and comfort, water is plentifully supplied to all; and a person is employed, as occasion requires, to remove the dirt and filth which accumulates about the cottages; and quicklime is given to whitewash the cottages, or make any trivial repairs they require, when applied for; and whenever a cottage is relet, we always have it whitewashed before it is taken possession of by the new tenants, at our own expense."

Prizes given for clean houses appear to have been somewhat uncommon. A Scottish cotton spinner, Finlay of Deanston Mills, reported that "premiums have sometimes been given to those who kept the cleanest houses, but the general mode of inducing improvement is by occasional visiting, and by bestowing praise on those who keep the most cleanly houses."

The routine tasks of the cottage proprietor included the supervision of the sanitation, limewashing and regular repair of his property. These are unlikely to have been expensive tasks. The construction of a necessary house would, at the turn of the century, cost about five pounds;¹ probably

1. Evans Papers, "D" ff. 18, 61, etc. give examples.

less in the post-war period. Limewashing could be covered at about a halfpenny a week per cottage. The cost of repairs is more indefinite, but culpable damage would be charged to the tenant.

The removal of night soil was profitable. Beatson drew attention to this in 1797.¹ The use of this valuable resource by Samuel Oldknow was described by Farey: "Mr. Samuel Oldknow, from the kitchen of his cotton mill apprentice house, the privies of his works, etc., has laid drains to a cesspool or well, whence a chain pump lifts the soil into water carts, which distribute it onto his grasslands, or into landers which convey it to irrigate such as are properly situated for it."² The Strutts at Belper, with characteristic ingenuity, laid "common sewers from the several common yards, pumps, wash-houses, privies, etc., with a view to collect and render the rich liquid manures from them useful, and these (from fifty cottages) centre in a cesspool in the upper end of Mr. Gratian's garden, and whence he runs it in small trenches, during the winter, over every part of the beds, intended to be planted in February or March with early dwarf or Yorkshire cabbages, which in May and June prove uncommonly large and fine."³ Other millowners in the early cotton industry with

1. "A ready supply of labourers is not the only advantage a farmer may reap from cottages. He will have, at an easy rate, all the manure they make, except what they themselves may require for their little gardens." Communications to the Board of Agriculture (1797), I 104.

2. J. Farey, General View of the Agriculture and Minerals of Derbyshire II (1813), 454.

3. *Ibid.*, 209.

a reputation for scientific contributions to the application of night soil in agriculture included Smith of Deanston Mills, who was an advisor to the Metropolitan Sewage Manure Company,¹ Thompson of Primrose Mills at Clitheroe, a trained chemist, formerly employed by Peel, who researched into the fertilising properties of sewage water,² and Robert Hyde Greg, an enthusiast for the advanced agricultural practices in use in the vicinity of Edinburgh.³ These were early contributors to what Prof. Flinn has described as the effort "to close the utilitarian circle of Public Health."⁴

Night soil was thus a marketable commodity, although lesser cottage owners not having undertaken the investment in drains and cesspools may have experienced some difficulty in taking advantage of it through their tenants' reluctance to trouble with the cleansing of privies. The simplest expedient was to leave the cleansing work to the tenants themselves, and, if they failed to attend to it, to do it for them and withhold a fine from their wages. James Adshead of Longdendale reported in 1833 that his tenants were "required to clean the offices which we attached to the cottages once a week; should they neglect this, they know we would send a person to do it, and charge them with the expense of the person's time." The most insanitary tenants were evicted.

The second major routine task was the sanitary limewashing

1. G. D. Dempsey, Rudimentary Treatise on the Drainage and Sewage of Towns and Buildings (1849), II, 28 ff.
2. Ibid., 31-2; Report to the General Board of Health (Clitheroe) (1850), 22-3; Langshaw, A Child's Guide to Clitheroe.
3. R. H. Greg, Improvements in Agriculture (1844).
4. "From food, through excreta, flush closets, egg-shaped sewer pipes, main outfall sewers, and back to food again - by inserting sewage irrigation schemes into the end of this cycle to bring the product into profitable agricultural use." Introduction to M. W. Flinn's edition of Chadwick's Sanitary Report (1962).

of cottages, which many owners appear to have carried out on a regular basis. The price of lime was so negligible that the expense of limewashing consisted almost entirely in labour. Most industrial cottage owners confined their contribution to the supply of lime and insisted that the cottage occupants perform the work themselves. In Manchester in 1797 a horseload of quicklime, sufficient for the limewashing of twelve cottages, cost 1s 2d; a cottage might be limewashed twice a year for materials worth 2½d. The average materials price for two limewashings of a cottage ranged from 2d to 3d in districts near natural limestone deposits, and was said to be no more than 1s anywhere in the country.¹ In 1796 the Evanses of Darley Abbey paid £1 11s 6d for limewashing cottages, at a time when they possessed 88.² If this included all 88, the charge can only have been for materials, averaging 4½d per cottage. In later years it was their policy to have their cottages limewashed twice annually, and the thick accretion of lime on the cottage walls is a matter of remark to present occupants.

The main cost in limewashing was in labour. Prof. Rimmer quotes the instance of cottages in Leeds given two limewashings a year for a rentcharge of ½d a week.³ A single limewashing therefore cost 1s 1d. William Emm estimated the labour cost

1. W. Emm, "Expense and Benefit of the frequently whitewashing the rooms of a poorhouse" in Reports of the Society for Bettering the Condition of the Poor I (1798), 120 ff.

2. The Evans's ledgers record the price of Crich lime at 5d per strike (i.e., bushel), and lime from other unspecified sources at 7½d to 10d per strike.

3. W. G. Rimmer, "Working Men's cottages in Leeds" Thoresby Soc., XLVI (Misc. 13) (1957-61), 185.

in poorhouses to be 6d per room.¹ In most of the replies to the Factory Commissioners in 1833, the landlord appears only to have provided the lime and brushes. J. Middleton of Cheadle Bulkeley reported: "they are required to whitewash [their cottages] twice a year, I finding them lime." Randall Hibbert of Godley similarly replied: "tenants are obliged to whitewash several times a year, for which purpose I give them quicklime." Ainsworth of Stayley provided lime for his tenants and also for those of his workpeople living under other landlords or in their own cottages: "Those under our employ have whitewash and brushes found any time when called for." Ashton at Apethorn mill also left the initiative largely to his tenants, but provided materials: "In our houses lime and brushes are provided whenever the tenants want for the purpose of whitewashing, and when requisite we insist upon the use of them."

Medical opinion held that limewashing twice annually was desirable. A subcommittee of the Fever Institution appointed in 1802 to "direct the whitewashing, with quicklime, of those dwellings of the poor in which infection has lately subsisted" took this view.² Manufacturers' attention was drawn to the subject of limewashing by the requirement of the 1802 Apprentices Act that workrooms must be "whitewashed" twice every year.³ In the case of common lodging houses the practice survived to be written into the Public Health Act of 1875, which ordered keepers to "limewash the walls and ceilings ...

1. Emm, loc. cit.

2. Reports of the Society for Bettering the Condition of the Poor III (1802) Appendix III.

3. 42 Geo. 3 c.73.

in the first week of the months of April and October in every year."¹ Of 41 proprietors of rural English cotton mills in the water powered sector who also possessed housing, 26 made no mention of limewashing in their replies to the Factory Commissioners. Seven reported that they required their cottages to be limewashed but did not specify how often; one replied that he required limewashing to be done once every year; three twice a year; one "several" times a year; and one frequently. Only three were specific that they did not require limewashing. One urban millowner reported that his cottage tenants were "enforced to whitewash with quicklime six times in each year, and lime is given to them for that purpose, and examined by one of the masters to see if they are done, and in a clean state."

Less evidence is available on other aspects of regular cottage maintenance. A Leeds cotton and silk spinner, James Holdforth, claimed to sell his tenants hot suds for washing and cleaning at $\frac{1}{2}$ d a pail. At Darley Abbey a workman was sent round regularly to mend broken windows.² The Ashworths painted the window frames and doors of their cottages every second year.

Slight though they may appear, it is an unanswerable question whether the sanitary precautions reported in 1833 were new measures in response to the recent outbreaks of cholera and typhoid. It is difficult to escape the conclusion that very few industrial cottage owners, either earlier or later in the period of the Industrial Revolution, tackled sanitary management with any enthusiasm.

1. 38 and 39 Vict. c.55 Section 82.

2. Evans Papers, Letter (memorandum) to John Chadderton, 16th Dec. 1805.

Part 2. Employment of cottage tenants.

Very little good evidence earlier than that of the 1841 census is available to judge the extent to which mill-owned cottages were occupied by mill employees. Even evidence drawn from the census returns of known mill villages may be misleading. A census taken at a time of severe trade depression may record many persons as possessing no occupation who would normally be in employment. Enumerators do not appear to have been given any clear guidance how to record the occupation of a person possessing a trade or habitual occupation but currently out of work. Other difficulties arise from the ambiguity of enumerators' instructions, and from motives which might lead some householders to give false answers. Earlier evidence than that of the census, though fragmentary, may provide useful information on the employment of families, adult females, and elderly persons. The emphasis on the employment of women and children in textile mills must make the relationship between tenancy of mill-owned housing and mill employment more complex than other forms of tied housing. It might be expected that the tenancy of mill-owned housing would be conditional on the employment of some household members, but tied cottage policy may have varied in stringency in different periods and places.

The surviving wages books for Arkwright's mill at Bakewell from 1786 to 1811¹ contain valuable evidence illustrating the

1. Wages Books for March 1786 to May 1788, August 1793 to March 1796, May 1804 to March 1808, and March 1808 to March 1811, in Chesterfield Public Library.

employment of families in an early, water-frame spinning mill, though there exists no tenancy list before 1821¹ and it cannot therefore be ascertained which families were occupants of the firm's 47 cottages in Bakewell. Arkwright appears to have experienced difficulty in obtaining parish apprentices, and the evidence for Bakewell mill may show a higher proportion of child labour in families than would be found in many other mills.² Separate lists in the wages books record the names of day spinners, night spinners (in the early years) and workmen, in addition to reelers, pickers and outworkers. In the largest department, the day spinners, groups of persons constituting parts of families are clearly indicated throughout the whole period of the books. In the first week of 1787, for instance, the day spinning department employed 266 persons, of whom only 61 (32 males, 29 females) were without relatives working in the same department.

Table 33.

FAMILY GROUPS EMPLOYED IN THE DAY-SPINNING DEPARTMENT
OF LUMFORD MILL, BAKEWELL, IN 1787

		Number of females					
		0	1	2	3	4	5
Number of males	0	-	29	8	3	2	
	1	32	14	5		2	
	2	13	9	2	2		1
	3	5	4	2			

1. 1821 list of tenants in Arkwright MSS (Chatsworth Muniments, ARK/60).

2. S. D. Chapman refers to Arkwright's advertisements seeking parish apprentices, but gives no evidence of any success with this policy: see The Early Factory Masters (1967), 156; Cf. evidence against his having made substantial use of this class of labour in An Account of the Cotton and Woollen Mills and Factories in the U. K. (H. of L. Papers, 1819, III, 48-9.).

As many of the day spinners must have had relatives employed as workmen, reelers or pickers elsewhere in the mill or as outworkers, it is clear that at Bakewell the employment of families was a strong feature. The ages of employees at Bakewell mill are not directly known, but the juvenile age of the great majority of the day spinners is evident from their wage rates. The wages of adult women reelers in this period might be of the order of 5s to 5s 6d per week;¹ the concentration of wages at substantially lower amounts reflects the high number of young children present:

Table 34.

WAGE RATES PER WEEK OF EMPLOYEES IN THE DAY-SPINNING DEPARTMENT OF LUMFORD MILL, BAKEWELL, IN 1787.

Wage rates:	1s 3d to 1s 10d	2s to 2s 9d	3s to 3s 9d	4s to 4s 9d	5s to 5s 9d	6s to 6s 9d	7s or over
Number of employees	31	68	63	55	24	12	13
	12%	26%	24%	21%	9%	5%	5%

The extent of children's employment in mule-spinning mills may be underestimated in much of the available evidence because of the tendency for them to be employed as subcontractors under adult spinners rather than directly by the master. The names of subcontracting hands would not necessarily appear in the pay lists of a company. Some doubt may therefore hang over the evidence of juvenile employment in mills published in 1816,² in which the employment of

1. Evidence of wages at Papplewick Mill in 1784 kindly provided by Dr. Tann.

2. Select Committee on the State of the Children employed in the Manufactory of the U. K. (P. P. 1816, III), 240-1, 374-5.

persons under ten years of age in Scottish and Manchester mills appears strikingly low:

Table 35.

AGES OF SOME MILL EMPLOYEES REPORTED TO THE SELECT COMMITTEE ON CHILDREN'S EMPLOYMENT, 1816.

Ages of employees	Employees in Scottish mills: 41 firms				Employees in Manchester mills: 43 firms	
	m.	f.	total	(%)	total	(%)
under 10	191	224	415	(4%)	793	(6%)
10 to 18	1179	2810	3989	(40%)	5460	(42%)
over 18	1776	3816	5592	(56%)	5167	(52%)
			<u>9996</u>	<u>(100%)</u>	<u>12940</u>	<u>(100%)</u>

The 1816 Select Committee on children's employment was also informed that "the spinning men and women, whichever they are, have the privilege ... generally to employ children of their own selecting; and if they can get a child to do the business for 1s, or 1s 6d, they will take that child before they will give 3, 4, 5, 6 or 7s to an older one."¹ Very young children may therefore have formed a high proportion of the subcontracting labour force; and subcontracting children are said to have constituted 40% of the workforce of McConnell and Kennedy in 1833.² In Andrew Ure's view, subcontracting children were usually close relatives of the spinner employing them.³

1. Ibid., Evidence of George Gould, 100.

2. C. H. Lee, A Cotton Enterprise, 1790-1840: A History of McConnell and Kennedy, Fine Cotton Spinners (1972), 128: "In 1833 they directly employed 932 people, and a further 621 were employed by the operatives themselves."

3. "Nearly the whole of the children 14 years of age and under, who are employed in cotton mills, belong to the mule spinning department, and are, in 49 cases out of 50, the immediate servants and dependants, often the offspring or near relations, of the spinner." A. Ure, Philosophy of Manufactures (1835), 290.

Some indication of the extent of children's employment may be obtained from census evidence of known mill villages in 1841, but the entering of children's occupations may not always have been truthful. Census instructions were vague on the question of children assisting a head of household; enumerators were instructed that "profession of wives, sons or daughters assisting the head but not receiving wages need not be set down."¹ In an enumeration district more or less co-extensive with a mill community the natural choice for enumerator would fall on the company bookkeeper, who, knowing that the company did not directly employ or pay the children, would perhaps be tempted to regard them as family employed children within the meaning of his instruction. It is possible, for example, that the inconsistent census evidence for the Low Moor community near Clitheroe in 1841 arose from the decision of the two enumerators John and Richard Isherwood (Richard being the company bookkeeper) to ignore the employment of children subcontracting under their parents. At Low Moor almost no children were reported in employment. Parents, furthermore, may have been less than truthful in admitting to their children's employment. The 1833 Factories Act forbade the employment of children below 13 years of age for more than 48 hours in the week;² parents were probably as anxious to revert to the previously permitted 69 hours as millowners. To the extent that they were encouraging their children to be employed for longer periods than the law allowed, they might be wary of admitting the truth to the census

1. Directions appear inside the covers of the Enumerators' Schedules.

2. 3 and 4 Wm. 4 c.103, Section 8.

enumerator. More children may therefore have been employed than the census evidence, discussed below, would suggest.

The 1841 census is probably more reliable on the employment of young adult women, the prevalence of which was much debated by contemporaries. Some maintained that women were forced to neglect their families by an over-strict compulsion to attend their mill work, and there could have been a motive for enumerators themselves involved in the affairs of a company to minimise the evidence of young mothers in employment. Nonetheless, the availability of outwork and the ties of a young family might lead many women to prefer domestic outwork such as cotton picking rather than work within the mill. In 1816 a Select Committee member examining Henry Houldsworth assumed without question that cotton picking was always performed by women at home, "in their confined dwellings, in which they take it."¹ In the 1830s and 1840s the question of young women compelled to work attracted increased attention, opinion on the rights and wrongs of such employment dividing on the familiar lines of support or opposition to the factory system. It is clear that contemporaries possessed no unanimously agreed information on this point. Amongst contributors to the argument whose views have been studied by Miss Pinchbeck, Peter Gaskell and Lord Ashley were at the forefront of those accusing millowners of obliging young women to desert their domestic duties. The consequence of a premature return to the mill was supposed to be a serious neglect of their very

1. Select Committee, op. cit., 249.

young children. Supporters of the factory system replying to this accusation included John Bright and the Factory Commissioners. In Bright's opinion, "after that period, which might be termed a marriageable age, the women are to a very large extent withdrawn from factory employment, and remain at home." The evidence collected by the Factory Commissioners likewise indicated that "in the cotton factories of Lancashire, the woollen mills of the north and west, and in flax, silk, and lace mills generally, the greatest number of female operatives were aged from 16 to 21, and that there was a 'prodigious diminution immediately after' during the period when most factory women married."¹ The housing of proletarian ex-employees would only be regarded as a breach of the strict principle of the tied cottage by the most shortsighted of employers.

Support for the view that masters in English cotton mills allowed young adult women to leave employment but remain as tenants is provided by Baines, who commented on the consequently much lower proportion of women found to be employed in English mills compared with those of Scotland.² Cooke Taylor also noted that the availability of outwork enabled women to remain at home while their daughters went to the mill. He noted at one mill that "there were some processes connected with the cotton manufacture which the women were permitted to execute

1. I. Pinchbeck, Women Workers and the Industrial Revolution (1930), 197-8, quoting Hodder, Life of Shaftesbury (1886), 237; Hansard, 15 March 1844, 1144-6; Factories Commissioners' Supplementary Report (P. P. 1834, XIX), 33-9.

2. E. Baines, History of the Cotton Manufacture (1835), 440.

in their own homes. 'The pay,' said one of the women, 'is not much, but it helps to boil the pot.'¹

The comments of the Factory Commissioners, Bright, Baines and Cooke Taylor are well borne out by the 1841 census evidence for a number of rural mill settlements to be discussed below. In some cases, census evidence shows a sharp reduction in the proportion of females stated to be in mill employment after reaching their twenties. This is particularly noticeable at Darley Abbey, Broadbottom, Styal, Milford, Rocester, Cressbrook and Scorton, amongst examples which will be considered in detail. If these seemingly unemployed women were picking cotton or performing other domestic outwork, the enumerators may not always have regarded their employment as being worth recording.

Children and young married women both had a usefulness either to the mill or to the increase of its community, but the same could not always be said of elderly people past their labour. The decision to allow elderly persons to remain in mill-owned housing would constitute a clearer breach of the strict principle of the tied cottage, although their removal, particularly if they were able to continue to pay rent, might cause resentment generally. The problem of tied cottages wasted on elderly tenants might not arise for a considerable period after the date of initial influx of population into a new mill settlement, because of a preference originally for the recruitment of large young families. Many persons past their labour in later decades would be likely to live with

1. W. Cooke Taylor, Notes of a Tour in the Manufacturing Districts of Lancashire (1842), 32.

younger relatives. There is very little evidence in the 1841 census returns of isolated elderly persons as tenants of cottages in mill-owned settlements. Where older people were found to have no younger relatives, one suspects that they were often allowed to remain on condition of subletting part of their cottage to a new family.

Other ways might be found to prevent the unemployed elderly from being a drain on a proprietor's charity. A practical solution was to encourage workpeople to set up sick funds and so insure themselves. As early as 1809, Marshall referred to the promotion of a spirit of independance and encouragement of provident societies or 'box clubs' as "a now trite subject".¹ The burden of supporting the elderly could thus be made a charge on the employed population, particularly if employees later in the period of the Industrial Revolution tended to lose the migratory habits of which many earlier masters complained, and to become more fixed in their settlements. Workpeople may have welcomed the idea of forming box clubs, which gave them a measure of independance. G. A. Lee, asked in 1816 about funds for his aged and worn-out ex-employees, replied: "the workmen have sick funds, distinct from the fund of the mill; they have club boxes distinct from that;... they enter into any club they think proper; it is a very delicate matter to interfere with workmen, more than the occasion absolutely requires, in the management of their funds."² The workpeople themselves evidently preferred to decide whom to regard as fit recipients, and it could be argued that they were in a better position to distinguish between

1. W. Marshall, Review and Abstract of County Reports to the Board of Agriculture (1818 edn.) II, 116.

2. Select Committee, op. cit., 365.

decline and malingering.

Special cottages for the aged were most rare. Robert Owen at New Lanark proposed to provide dwellings for old persons "who shall have paid for them by their subscriptions throughout working life".¹ At Cromford, six almshouses were included in the Arkwright property; they were established under the will of a seventeenth century benefactress, Dame Mary Armyne, and vested in the Manor of Cromford. In 1789 Arkwright purchased the Manor, subject to a rentcharge of £16 10s per annum which provided a small benefit to six poor widows or widowers "past their labour by age or impotency". The trust required each recipient to be given £2 plus a gown worth 15s annually. By 1829, Richard Arkwright junior was paying benefits reduced to £2 plus only 6s 8d for a gown, totalling only £14. It had been decided at some point that the Land Tax on the almshouses, then £2 10s, should be paid out of the trust fund.² By 1841, fifteen persons were found occupying these six almshouses. Three were occupied by elderly women living alone, who may well have been widows; the other three were occupied by families. One gains the impression that the Arkwrights cared little for the spirit of the trust.

*

1. R. Owen, A New View of Society (1813), Essay III.

2. S. Glover, History and Gazetteer of Derbyshire I (1829), 326.

(1) The settlement.

It will be useful to consider the employment utility of a mill-owned settlement as a whole, before considering the utility of the tied cottage. Owen Ashmore has made very extensive use of employment evidence in the 1851 and 1861 census returns for the village of Low Moor near Clitheroe,¹ but has not based any conclusions on the admittedly very much less satisfactory 1841 evidence. Nonetheless, the 1841 evidence is not without its value and a great deal can probably be learned from a comparison of the 1841 census returns for a number of mill settlements. As a completely isolated settlement, Low Moor is readily distinguishable in the enumerators' books, but other mill settlements are rarely so easy to distinguish. For present purposes, 15 mill-owned settlements, or substantial parts of settlements, have been identified in the 1841 census returns, mainly with the help of tenant lists reconstructed with the help of the Tithe Survey. This basic evidence is set out in Appendix B (see p. 409).¹

1. The following extracts from the 1841 census Enumerators' Schedules in the P. R. O. have been analysed: BELPER: H.O. 107/180 (3, 4), extracts of ten schedules indicated as Strutt property by comparing with the Tithe Survey, but excluding Hopping Hill (271 occupied dwellings + 2 void); CROMFORD: H.O. 107/198 (14), two schedules in entirety except Peter Arkwright's household (261 + 4); LOW MOOR (CLITHEROE): H.O. 107/507 (5), two schedules in entirety except Roe Field and Mill Yard (205 + 38); DARLEY ABBEY: H.O. 107/188 (2), entire schedule except Darley Abbey, Darley House, Park Field House, Derwent Bank, High Field, The Leylands (161 + 3); BROADBOTTOM: H.O. 107/100 (12), entire schedule except Harewood Lodge and a part of the schedule under the name Bostock Fold (118 + 2); DOLPHINHOLME: H.O. 107/528 (17), part of schedule under the name Dolphinholme (98 + 5); MARPLE: H.O. 107/112 (2), parts of the schedule covering Brick Row, Stone Row, Pedder's cottage, Goyt Cliff Torr, Lime Kilns, Canal Buildings (97 + 15); STYAL: H.O. 107/115 (38), parts of the schedule covering

The settlements to be considered here are of many types; some are isolated villages, as Cromford or Low Moor, others are fragments of mill-owned property scattered amongst the property of other landlords, as the mill cottages at Tutbury or Rocester. In many respects the Low Moor evidence in 1841 stands out as untypical, which may be good grounds for Ashmore's neglect of it. Some uniformity in the employment of tenants nevertheless appears in the range of settlements considered.

The proportion of persons aged ten years or over in thriving rural mill settlements who appear also to have been the employees of their landlords was generally between 40 and 60 per cent, the median figure being 53%. The highest proportion of a housed population aged ten or over found to have been their landlords' employees appears at Dolphinholme, where out of 479 such persons recorded as occupants of Hinde and Derham's housing, 61% were, in all probability, employed in their landlords' worsted spinning mills. This high

Farm Fold Cottages, J. Colston's house, Oak Farm, Lundy (=Laundry) House, Oak Cottage, Oak Cottages, Oak Cottages (second list = cellars). (85 + 13) MILFORD: H.O. 107/180 (7, 9), extracts of two schedules covering Hopping Hill, indicated as Strutt property by comparing with the Tithe Survey (81 + 1); ROCESTER: H.O. 107/1007 (12), extracts indicated as Houldsworth or Bridden property by comparing with the Tithe Survey (56 + 0); CRESSBROOK: H.O. 107/187 (1), parts of the schedule under the names Ravensdale and Cressbrook, except Cressbrook Hall (42 + 7); SCORTON: H.O. 107/495 (5), extracts indicated as Fishwick property by comparing with the Tithe Survey (42 + 3); FAZELEY: H.O. 107/981 (6), part of the schedule under Mill Lane (42 + 4); TUTBURY: H.O. 107/976 (25), extracts indicated as Webb property by comparing with the Tithe Survey (36 + 0); TANSLEY: H.O. 107/194 (14), extracts indicated as Unwin property by comparing with the Tithe Survey.

proportion reflects the comparative isolation of Dolphinholme, and the consequent reduced availability of alternative employment. A similar situation appears at Milford, affording an interesting contrast with Belper. There is good reason to believe that the Belper and Milford evidence is particularly reliable on this point, as the enumerators for the Duffield and Belper districts covering these settlements were careful to enter the word "cotton" over the employment details of many clerks, filers, turners and others whose place of employment might otherwise have been conjectural. Furthermore, the census evidence is closely confirmed by that of the Tithe Survey of 1840 and 1842. Among persons in Strutt housing at Milford not taken to have been mill employed, there were 24 labourers of unspecified type, a lead miner, an agricultural labourer, four woodmen, two nailmakers, 14 building workers of various trades, eleven persons in other artisan trades, seven retailers, two domestic servants and five professional people. At Milford, 60% of persons aged ten or over appear to have been Strutt employees; at Belper, by contrast, the proportion was only 44%, reflecting the greater opportunities for alternative employment in the town. Non-mill employees in Strutt housing in Belper included a large number of nailmakers, and various artisan trades as at Milford.

In other thriving isolated mill villages the proportion of the employable housed population probably employed by the landlord (excluding, similarly, all doubtful cases) is generally found to have fallen above the median. 55% of the employable tenants occupying Evans cottages at Darley Abbey, another isolated settlement, were evidently employed at their landlords' works; at Styal, also comparatively isolated, 60% of employable

Greg tenants were employed at the Quarry Bank cotton mills; but the exception amongst isolated settlements is Low Moor, with only 25%. This latter result must be regarded with the utmost caution. Rocester, Tutbury and Scorton, where the mill-owned cottages were mixed with those of other employers and landlords, show a return of employees per hundred tenants of employable age well below the median.

Table 36.

EMPLOYMENT OF TENANT POPULATION AGED 10 OR OVER IN
MILL SETTLEMENTS, 1841.

Settlement	Population occupying mill owned housing					TOTAL PERSONS (10+)
	Presumed employed by landlords		Otherwise employed or independant		No employment stated	
Belper	547	(44%)	289	(23%)	413	1249
Cromford	78	(8%)	322	(32%)	617	1017
Low Moor	264	(25%)	106	(10%)	693	1063
Darley Abbey	415	(55%)	108	(14%)	237	760
Broadbottom	300	(54%)	25	(5%)	230	555
Dolphinholme	293	(61%)	39	(8%)	147	479
Marple	236	(54%)	70	(16%)	134	440
Styal	223	(60%)	68	(18%)	81	372
Milford	279	(60%)	71	(15%)	114	464
Rocester	119	(47%)	64	(25%)	70	253
Cressbrook	107	(53%)	31	(15%)	64	202
Scorton	79	(40%)	62	(31%)	56	197
Fazeley	40	(24%)	38	(22%)	91	169
Tutbury	67	(42%)	44	(28%)	49	60
Tansley	33	(57%)	11	(19%)	14	58

The atypical results appearing in the cases of Cromford and Fazeley might be disregarded, as the mills in each of these places were on the point of closing.

A preference for female labour may be a general feature of employment in textile mills, but it does not necessarily appear in every specimen housed and employed population examined. The difficulty arises that the part of a mill workforce drawn from the proprietor's cottages may have a different composition to that drawn from the surrounding, outlying districts. The youngest and oldest hands may have been disinclined to walk long distances, and a disproportionate number of such hands have been drawn from close proximity to the mill. On the other hand, unattached youths might also tend to migrate to lodge close to the mill. An analysis of the age and sex structure of the population housed, in 1841, in a number of mill settlements (see Appendix B) indicates that although little difference appears in the structure of the total tenant population considered, the structure of the employed part of those populations varied considerably from place to place. In some cases male employees predominated, as at Low Moor (an extreme and suspect case), Broadbottom (by a small margin), Dolphinholme (in this case, almost twice as many males employed as females), and Tansley. Elsewhere the female employees predominated: at Belper (by a small margin), Darley Abbey (unexpectedly, as the works included paper mills and other branches of industry besides cotton spinning, but the evidence may be unreliable as many hands were absent from the village¹), and also at Marple, Styal, Milford, Rocester, Cressbrook, Scorton and Tutbury.

1. A reduction of 111 persons in 1841 compared to 1831 was explained by "a temporary stoppage of the mills and the workpeople who lodge in the village going to see their friends." See H.O. 107/188 (2), page 28: 'Computed decrease'.

In all the instances examined, the commencement of admitted employment with children in the 10 to 14 age group is strongly marked, but the pattern of employment amongst older age groups varied widely. The peak of male employment generally occurred a little earlier than that of the females. Amongst what may be more trustworthy examples of mill employed populations, the peak age of male employment at Belper, Broadbottom, Mellor and Rocester was in the age range 10 to 14; at Styal, Cressbrook and Scorton it was 15 to 19. The peak of female employment only occurred in the 10 to 14 group at Rocester; at Belper, Broadbottom, Cressbrook and Scorton it was at 15 to 19, and at Mellor and Styal 20 to 24. The diminution of employment in older groups followed rapidly in all cases, particularly among females.

Few enumerators made fine distinctions between mill occupations; the term "cotton spinner" against a name usually signifying no more than that the person was employed at a cotton mill. The ages and sexes of persons performing specific mill trades are rarely clear. In one exceptional instance, the enumerator for the village of Broadbottom was very meticulous. His evidence illustrates a male predominance in the spinning department and a female predominance in manufacturing. The evidence might be distorted by selective laying off of female hands during poor trade. Broadbottom was too large a village for these perhaps unexpected results to be merely due to statistical inadequacy. In 1833 the village was reported to house nearly a half of the total workforce of the mill,¹ and its population aged ten or over was 555 in 1841. The majority of spinners were young adult men, with a few women spinners. An

equal number of males and females were stated to be employed as piecers, the males generally between the ages of ten and 19, the females generally between 15 and 19. Frame feeders, tenters and reelers recorded were all female, and all but one of the strippers were males. In the manufacturing department, the weavers were nearly all female, the stretchers, dyers and printers mostly male.

Table 37.

OCCUPATIONS AND AGES OF MALE EMPLOYEES IN THE TENANT POPULATION AT BROADBOTTOM MILL VILLAGE, 1841.

Occupation	Quinquennial age groups:											
	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 or over
(i) Preparation and spinning:												
carder						1	2			1	1	
card room			1									
card stripper		1	2	1				1				
piecer	1	23	5	1		1						
roller coverer												1
rover					1	1				1		
rover tenter		1										
spinner			4	12	10	10	4	4		2		
stripper			1	2	1		1					
(ii) Manufacture and printing												
blue dyer				1								
calico bleacher					1							
calico dyer								1				
calico printworks		1		4	1	1						
calico tearer		1										
cotton stretcher					2		2	1	1			
cotton weaver			3			1						
dresser			1					1				
yarn dresser							1					
(iii) Others												
cotton works	1	7	3		1	1				2		
engineer								1				
manager								1				
mechanic			1	1		1		2				
overlooker					1	1	1	1	1	2		
warehouseman						1		2	1	2		1
watchman								1				

Table 38.

OCCUPATIONS AND AGES OF FEMALE EMPLOYEES IN THE TENANT POPULATION AT BROADBOTTOM MILL VILLAGE, 1841.

Occupation	Quinquennial age groups:											
	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 or over
(i) Preparation and spinning												
card room		1	1	4								
card stripper				1								
card tenter							1					
frame feeder		1		1								
frame tenter			10	4	2	1						
feeder			2	3								
piecer	1	10	19	1								
reeler			2	6	2	3	3		1			
sorter			1									
spinner			1		1	2		1				
(ii) Manufacture and printing												
calico printworks			1									
calico tearer	2	3										
cotton printworks			1									
cotton weaver		2	7	7	6		1					
warper				1								
(iii) Others												
cotton works	1	16	7	3				1				

Female immigration or male emigration may have affected the proportion of the sexes present in mill communities. Distortions of the tenant population caused by the requirements of mill employment may be seen in the evidence for the tenant population of 9,627 persons attached to the 15 rural mills here considered, though in some cases, possibly including Broadbottom, the full extent of normal female employment may not have been recorded. A small excess of females over males is apparent in the mill-housed populations in 1841, females amounting to 53.3%, compared with 51.1% for the County of Lancaster as a whole. The excess of females in mill settlements

is noticeable particularly in the employable groups between 10 and 39 years of age:

Table 39

PROPORTIONS OF SEXES IN MILL SETTLEMENT POPULATIONS, 1841

Quinquennial age group	Total population in 15 mill-owned settlements	Percentage of each cohort	
		male	female
85 and over	11	45.5%	54.5%
80 to 84	14	35.7%	64.3%
75 to 79	43	48.8%	51.2%
70 to 74	81	44.4%	55.6%
65 to 69	103	41.7%	58.3%
60 to 64	197	44.2%	55.8%
55 to 59	180	46.1%	53.9%
50 to 54	418	47.4%	52.6%
45 to 49	402	47.3%	52.7%
40 to 44	560	50.7%	49.3%
35 to 39	491	42.2%	57.8%
30 to 34	623	45.6%	54.4%
25 to 29	697	45.1%	54.9%
20 to 24	1008	43.9%	56.1%
15 to 19	1261	44.3%	55.7%
10 to 14	1323	47.5%	52.5%
5 to 9	1081	49.9%	50.1%
under 5	1134	49.6%	50.4%
Total	9627	46.7%	53.3%

A proportion close to equality up to the age of about 10 appears to be followed by an influx consisting predominantly of females of employable age. As already discussed, the surplus females then tend to remain in the mill settlements. This evidence does not include the inmates of apprentice houses; the examples still surviving in 1841 appear to have been

occupied almost entirely by females.¹

A second distortion in the tenant population is the sudden jump in numbers of persons at about 10 years of age, in both sexes. The published population totals for the Counties of Nottingham, Chester and Derby in 1841 show descending numbers in each quinquennial group for each sex; but in the case of the County of Stafford the females of 20+ exceed those in the next younger cohort, and in the case of the County of Lancaster the females of 15+ and 20+ both show a rising trend, particularly the latter. Against this background, and assuming no extraordinary recent local change in the birthrate, the population evidence for a number of mill settlements seems to show, in very pronounced form, the youthful and predominantly female immigration into manufacturing communities of which slighter evidence can be seen in the Lancashire population in 1841 as a whole.

(ii) The household.

The mean household size found in the census evidence for a number of mill settlements in 1841 is 6.11 persons, providing the landlord with a mean of 2.13 employees. The difference in mean household sizes is small, from 5.05 persons at Cromford to 7.25 at Milford. These mean household sizes do not appear

1. The apprentice house at Styal, run by George Henshall as governor and four female servants, also housed 67 female apprentices, whose ages ranged with one exception from 9 to 19 years (H.O. 107/115 (38)). A smaller apprentice house in the township of Caton was run by John Holmes, a blacksmith, and Agnes Holmes, the Mistress of Apprentices. One female servant and 21 female apprentices made up the rest of the establishment. In this case the apprentices were aged between 12 and 19 (H.O. 107/554 (11)). Occasional very high concentrations of young females are also found in cottages in close proximity to mills; in a terrace of nine cottages at Litton Slack near Litton mill the census appears to record 19 single young women as lodgers in addition to the normal households in each cottage (H.O. 107/187 (2)).

to relate to the sizes of cottages. In one instance, Darley Abbey, the enumeration is known to be low (see p. 290, footnote 1). The correct mean number of persons per household at Darley Abbey should be at least 6.82, assuming no decrease of population since 1831. Greater variability between settlements appears in the number of presumed employees per dwelling, from a mere 1.30 at Low Moor to a high figure of 3.53 at Milford, among the thriving examples.

Table 40

TENANTS AND EMPLOYEES PER DWELLING IN MILL SETTLEMENTS, 1841.

Settlement	Mean number of persons per dwelling	Mean number of persons presumed employed by landlord per dwelling
Belper	5.85	2.09
Cromford	5.05	0.29
Low Moor	6.73	1.30
Darley Abbey	6.14	2.57
Broadbottom	6.33	2.58
Dolphinholme	6.46	2.98
Marple	5.78	2.47
Styal	5.75	2.62
Milford	7.25	3.53
Rocester	6.14	2.14
Cressbrook	6.21	2.54
Scorton	6.14	1.88
Fazeley	5.33	0.95
Tutbury	5.36	1.86
Tansley	5.27	2.20
Arithmetic mean:	6.11	2.13

A very large variation between settlements appears in the numbers of heads of households presumed to have been employed by their landlords. The median figure in the evidence considered appears at Cressbrook, where 42.9% of heads of

households (as recognised by enumerators) were mill employees. As in most cases the heads in census returns are likely to have been the true rent paying heads of families, it appears a fair conclusion that few masters made the employment of the head a condition of tenancy. Any tenancy condition could be satisfied by other household members.

Table 41

EMPLOYMENT OF HEADS OF HOUSEHOLDS IN MILL SETTLEMENTS, 1841.

Settlement	Number of households	Number of heads of households presumed employed by landlords	
Belper	271	90	(33.2%)
Cromford	261	40	(15.3%)
Low Moor	205	111	(54.1%)
Darley Abbey	161	85	(52.8%)
Broadbottom	118	68	(57.6%)
Dolphinholme	98	62	(63.3%)
Marple	97	67	(69.0%)
Styal	85	39	(45.9%)
Milford	81	30	(37.0%)
Rocester	81	13	(16.0%)
Cressbrook	42	18	(42.9%)
Scorton	42	11	(26.2%)
Fazeley	42	12	(28.6%)
Tutbury	36	12	(33.3%)
Tansley	15	10	(66.7%)

Ashmore has shown in the census evidence for Low Moor in 1851 and 1861 that in nearly all cases in which the head of a household was not a mill employee there was at least one other household member at work at the mill.¹ This clearly points to a policy of making cottage tenancies subject to employment, though not necessarily that of the head. A probable

1. O. Ashmore, Industrial Archaeology of Lancashire (1969), 145.

employment condition may be detected more readily in the 1841 evidence for Low Moor than in any of the other mill settlements here considered. At Low Moor, 49% of households provided one employee each, compared with a maximum elsewhere, amongst not obviously suspect examples, of 33% at Tutbury, and as low as 7% at Tansley. A possible underutilisation of households from the viewpoint of the employer-landlord may be seen in the median of only 62% of households returning two or more employees:

Table 42

EMPLOYER'S UTILISATION OF HOUSEHOLDS IN MILL SETTLEMENTS, 1841.

Settlement	Number of households	% not providing employees	% providing one employee	% providing two+ employees	void dwellings
Belper	271	16%	30%	54%	2
Cromford	261	76%	19%	5%	4
Low Moor	205	20%	49%	31%	38
Darley Abbey	161	15%	22%	63%	3
Broadbottom	118	14%	22%	65%	2
Dolphinholme	98	2%	16%	82%	5
Marple	97	9%	18%	73%	15
Styal	85	7%	16%	62%	13
Milford	81	11%	21%	70%	1
Rocester	56	18%	20%	62%	0
Cressbrook	42	21%	17%	62%	7
Scorton	42	26%	21%	52%	3
Fazeley	42	44%	36%	21%	4
Tutbury	36	33%	33%	33%	0
Tansley	15	13%	7%	80%	0

As 1841 was a year of trade depression, larger numbers of employees per household may have been usual.

It might be expected that proprietors would take a wide view of their tenant communities and see advantages in a liberal

interpretation of tied-cottage policy. They might think of their tenants as fixed populations from which to draw employees readily at times of good trade, and recognise that at all times a proportion of non-employees would help to create a thriving village economy which would help to reduce the effects of an isolated situation and their administrative burdens. The evidence may be slight, but it appears to point in this direction. It might be too much to hope that clear conclusions would emerge from a study of 15 specimen mill communities, as, by 1841, local factors had had ample time to create wide differences, and the proportion of non-employee households appears to bear no relation to the size of settlements or even to their isolatedness.

Part 3. Control of cottage occupancy.

As the 1841 census does not indicate the relationship of persons to the heads of their households, unlike the 1851 and later censuses, heavy reliance must be placed on the comparison of surnames. The head of a household, at least, may be identified with confidence; enumerators were instructed to "set down one after another those who have the same surname, beginning with the heads of the family, and put no others between them." They were also instructed to put a diagonal mark "at the end of the names of each family."¹ In theory, therefore, families could be reconstructed; but in practice one can have no confidence in the enumerators' indications of families. They were given no definition of 'family' other than the use of one surname. The central staff processing the census information evidently disregarded these family indications, perhaps having found too wide a variation in enumerators' interpretations. Their family brackets superimposed on the schedules simply follow surnames. In analysing the 1841 information, it appears sensible to adopt the same practice, distinguishing a net household sharing the head of household's surname, and a gross household including all other-surname members, whether in-laws, lodgers, or second families.

In most of the 15 examples here considered, the proportion of households containing persons of more than one surname generally fell between 50 and 65 per cent of the total. Only

1. "Directions to Ennumerators" inside covers of ennumerators' schedules.

two smallish settlements, Tutbury and Fazeley, produced results outside these limits. As the class of persons not sharing the surname of the head of household must include a substantial proportion of in-laws, it appears that families taking unrelated lodgers must generally have been in a minority. Furthermore, the proportion of households in which the net, single surname, family was outnumbered by other-surname members was generally less than 10%. The mean net family consisted of 4.93 members with one surname, and 1.02 others were added to make up the mean gross family.

Table 43.

FAMILY COMPOSITION (BY SURNAME) IN MILL SETTLEMENTS, 1841.

Settlement	Mean number of persons sharing the surname of the head of household, per household	Mean number of other-surname persons present per household
Belper	4.71	1.13
Cromford	4.40	0.87
Low Moor	5.36	0.96
Darley Abbey	5.37	0.75
Broadbottom	5.16	1.16
Dolphinholme	4.36	2.09
Marple	4.39	1.39
Styal	4.97	0.77
Milford	5.93	1.30
Rocester	4.89	1.25
Cressbrook	5.03	1.19
Scorton	5.09	1.04
Fazeley	4.80	0.52
Tutbury	4.13	1.22
Tansley	4.46	0.80
Arithmetic mean	4.93	1.02

Very few cottages appear to have served as lodging houses. The census evidence for Belper shows that one of the "cluster" cottages (the south-west cottage, number 2197 in the Tithe Survey, illustrated bottom left in fig. 34, page 238) was occupied by seven individuals, each with a different surname; the head of the household was entered as Anne Kerry, aged 35, who was presumably related to a family of seven persons of the same surname in the adjacent cottage (bottom right; number 2194). Four of the six "lodgers" were males, two being stonemasons, one a carpenter, and one a framework knitter. The females' occupations, if any, were unstated. Two possible examples of lodging houses also appear in the village of Broadbottom. One was occupied by William Peel, a labourer aged 40, and Elizabeth, aged 33. There were nine other men in the household with eight different surnames. All the "lodgers" were labourers. Elsewhere in Broadbottom, the family of Robert and Sarah Hyde, both aged 20, and Sarah, aged one, shared their cottage with three male labourers and two female cotton workers, all of different surnames. Such examples as these are quite exceptional; it is most unusual for households in mill-owned cottages not to have the appearance of families, albeit including in-laws and a small minority of lodgers.

The possibility exists that in some cases lodgers may have been allocated to cottages, not through the enterprise of the head of the household or his wife seeking pin money, but as part of a billeting policy enforced by the master. Although mean household sizes do not vary widely from settlement to settlement, there was a considerable variation of size

between individual households, which might lead a master to think that he was not getting the optimum value from his cottages. He might seek to correct this, and to improve the sanitary condition of his housing, by obliging lodgers and other less-attached persons to concentrate on the under-used cottages. The consequence of such a policy would be to produce a more even spread of population throughout the cottages than would otherwise occur.

The basic evidence to be considered here is set out in the first three tables of Appendix B (pages 409-10). Some strange contrasts appear between settlements in the statistical information for gross, all-surname, household sizes in Table (A). In the mill owned housing at Scorton, the number of persons per cottage varied widely. A fifth of the dwellings housed less than three persons; almost as many housed over ten. The Scorton evidence may illustrate what happens if no occupancy policy is imposed, and tenants are allowed to crowd together or live in isolation in their cottages according to individual preference. At the other extreme, the evenness of distribution of population seen in the mill owned housing at Tutbury or Tansley might imply some administrative interference in its achievement. In the latter cases, there were no cottages housing less than three or more than ten persons.

It will be useful to consider how the evenness of size of net, single surname families in Table (C), measured by the standard deviation, is affected by the addition of other-surname persons to create the gross households of Table (A). In five

instances out of fifteen considered, an improvement in evenness, or lower standard deviation, results; in ten instances there is a worsening:

Table 44

CONTRAST IN STANDARD DEVIATIONS OF NET AND GROSS
HOUSEHOLD SIZES IN MILL SETTLEMENTS, 1841.

(i) Instances in which gross households (all surnames considered) show more even population distribution than net households (persons of head's surname only considered).

Settlement	Standard deviation of net household sizes (see Table (C), p.410)	Standard deviation of gross household sizes (see Table (A), p.409)
Darley Abbey	2.588	2.304
Styal	2.474	2.448
Cressbrook	2.755	2.492
Tutbury	1.980	1.828
Tansley	2.362	1.948

(ii) Instances in which gross households (all surnames considered) show less even population distribution than net households (persons of head's surname only considered).

Settlement	Standard deviation of net household sizes (see Table (C), p.410)	Standard deviation of gross household sizes (see Table (A), p.409)
Belper	2.326	2.475
Cromford	2.236	2.489
Low Moor	2.502	2.625
Broadbottom	2.298	2.908
Dolphinholme	2.429	2.882
Marple	2.054	2.503
Milford	2.881	3.094
Rocester	2.309	2.701
Scorton	3.273	3.420
Fazeley	2.341	2.775

With no datum available to indicate what contrast in standard deviations would occur through the action of householders and lodgers in determining their own lodging preferences, and

no way of assessing locally varying circumstances, such as the actual number of lodgers in the 'other-surname' part of the settlement population, the most that can be concluded from this evidence is that it appears that in most cases no serious attempt was made by masters to regulate occupancy or to billett lodgers on the smaller net households. An occupancy policy may have been followed in the cottages at Tansley, but this is a small settlement perhaps statistically unreliable. The improved evenness of household sizes in the larger settlements at Darley Abbey, Cressbrook and Styal may be more reliable evidence, albeit of a half-hearted policy.

CHAPTER 5.

COTTAGERS RENTING LAND.

It was clearly recognised in the early years of the Industrial Revolution that the welfare of the cottager depended far more on the availability of garden ground or a cow pasture than on the condition of his cottage.¹ More attention might usefully be paid to this aspect of the history of working class housing, particularly in situations where land for garden ground was readily available.

Contemporary literature on cottagers renting land was largely the work of a group of enlightened landowners experimenting with the cottage system, or a particular form of it known as the cow system, on their own estates, very often against the opposition of their tenant farmers. The proper provision of allotments for cottagers was also debated by political economists in connection with the Poor Laws and the enclosure movement. Although in time the cottage system tended to lose favour with influential opinion, it was at first regarded as highly relevant to the proper management of the poor. Early industrial proprietors with aspirations to be regarded as enlightened gentry are likely to have given it some attention. Many may also have seen, in cottage food production, an opportunity to lessen the pressure of wage demands.

1. In the publications of the Society for Bettering the Condition of the Poor from 1798 to 1808, approximately twice as many articles deal with the cottage garden and related subjects, as with the improvement or cleansing of cottages.

Any provision of substantial gardens or other little holdings of land for the tenants of rural industrial housing must be seen against a long history of debate on what type of provision would be most suitable. The plan to provide cottagers with small allotments of land, the profits of which might supplement wages, is at least as old as the Elizabethan Poor Law. It first appears in an Act of 1589 requiring four acres of land to be provided with every cottage, with only minor exceptions. This Act remained unrepealed until 1775, though it may by then have been a dead letter.¹ The existence of parochial wastes had also long provided the poor with a reservoir of land where time had sanctioned their grazing rights. There was a very longstanding opinion that enclosures should compensate for the loss of these rights, even though no written grant might exist. In the words of a seventeenth century agricultural improver, "no common land should ever be enclosed without leaving a cow's grass to every cottage."² Many consequently felt that the repeal of the statutory requirement to provide cottagers with land was a gross mistake.³ That a statutory compulsion was necessary merely shows that the free operation of the land market killed the old cottage system; yet many thought that, once re-introduced, the cottage system could be made to flourish unaided because of its inherent economic advantage to the cottager, once his intelligence had been sharpened by the self-discipline of proprietorship.

In 1796 William Pitt introduced a Poor Relief Bill into

1. 31 Eliz. c.7; repealed by 15 Geo. 3 c.32.

2. Gabriel Plattes, Treatise on Husbandry (1638).

3. E.g. Rev. Townsend, in Communications to the Board of Agriculture (1797), I, 106.

Parliament which sought to extend the benefits of relief not only to the destitute but even to industrious labourers already in possession of some little property, with the aim of enabling them to be provided with cows at parish expense.¹ The Bill was opposed by Bentham as impractical, and failed to become law. Its emphasis on little land tenancies as a barrier against poverty was nonetheless widely approved. Many authors of Reports to the Board of Agriculture and the Society for Bettering the Condition of the Poor regarded the cottage system as the only lasting solution to the problem of the poor. In 1797 Sir Frederick Eden expressed his view that he could imagine no more advantageous state of society than if every poor family were to have land "judiciously laid out for a garden, and a little croft, enough to maintain a cow or two, together with pigs, poultry, etc.; and also enough to raise potatoes for the annual consumption of the family, together with a decent and durable cottage."² Amongst others, Arthur Young was moved to draw up very detailed proposals for the application of parish wastes to the welfare of the poor.³ Interest in the cottage system amongst improving landowners evidently led to some experiment. In 1808 Holland was able to report from his observations in Cheshire that "the attachment of a small portion of land to the cottage of the labourer has invariably been the direct means of rendering his situation in life more comfortable

1. Lord Rosebery, Pitt (1891), 170; Poor Law Report (1834), "Magistrates".

2. F. M. Eden, State of the Poor (1797), I, xx.

3. A. Young, The Question of Scarcity Plainly Stated (1800); Inquiry into the Propriety of Applying Wastes to the Better Maintenance and Support of the Poor (1801).

and easy; and of inducing those habits of honest independance, and of industry, which are most efficacious in promoting the happiness of individuals, and consequently the general interests of society."¹

Strong opposition to the cottage system arose from two quarters. Firstly, political economists, particularly Malthus,² denounced a system which they considered would achieve results precisely opposite to those intended, Malthus, writing in 1817, was careful to distinguish between a limited application of the cottage system designed to assist the better sort of labourer, already possessing the will to improve his condition, and the general, indiscriminate system advocated by Arthur Young. He considered that a limited use of the system could "provide a comfortable situation for the better or more industrious labourer ... With this view it is evident that only a certain portion could be included in the plan; that good conduct and not mere distress should have the most valid claim to preference; that too much attention should not be paid to the number of children; and that universally those who have saved money enough for the purchase of a cow should be preferred to those who require to be furnished with one by the parish."³ On the other hand, he believed, any general system of providing "cowgates" or potato lots would fail, as would any misdirected generosity tending to make labourers independant of wages, however attractive in the short term. Malthus described the system

1. H. Holland, General View of the Agriculture of Cheshire (1808), 90.

2. William Strutt praised Malthus's doctrines as being no more controvertible than the elements of Euclid. See R. S. Fitton and A. P. Wadsworth, The Strutts and the Arkwrights (1958), 171n.

3. T. R. Malthus, Essay on Population (8th edn., 1878), 471

of small enclosure allotments advocated by Young as "truly preposterous" and warned that it would produce a population "as independant of the price of corn and the demand for labour as their brethren in Ireland".¹

Opposition to the cottage system arose, secondly, from employers of labour, who saw threats to their own vested interests. Opposition from the latter quarter possibly existed from the start, as rural employers resented competing with their own labourers either for land or for the full use of their labour. Many of the supposed advantages of the cottage system, such as making the cottager partly independant of his employment, or freeing him from the clutches of the truck system, were not calculated to appeal to the employing class, however attractive they might appear to enlightened landowners viewing the question in theory. A contributor of evidence to the Poor Law Commission in 1834 concluded that farmers in particular "are afraid of making labourers independant; and some look with an evil eye to the supposed diminution of their profits by introducing a new class of proprietors."²

The form of the cottage system which consisted in providing workpeople with little closes of pasture on which to turn out a cow or two and a few sheep in winter, usually known as the cow system, flourished particularly in the eighteenth century in the manufacturing counties and the Midlands, in conjunction with domestic industry. At Bury, for instance, in 1796,

1. Malthus pointed to the recognition by Townsend as early as 1787 of the essential principle that population must relate to the demand for labour; see Townsend, *Dissertation on the Poor Laws* (1787), 84. The state of the poor in Ireland and France was deplorable because they were free of the restraints of the labour market. Malthus, *op. cit.*, 451 ff.

2. Poor Law Report (1834), "Occupation of land by labourers."

landowners were said to divide their farms "into small lots, to enable the labouring manufacturer to keep a cow or two."¹ Another writer in the same year commented that the cow system in the Midlands was showing signs of falling into disuse.² One would wish to know to what extent some of the larger early rural millowners like Arkwright or Oldknow, with powerful social ambitions, took up a scheme which was already a feature of the domestic system of manufacture and which clearly appealed to the class of improving landowners. Their workpeople, on the other hand, might be less inclined than agricultural labour, or even an older generation of domestic manufacturing outworkers, to take to spare time horticulture or animal husbandry.

Despite the desire of some leading manufacturers to be regarded as gentry, as employers of labour they had more in common with the tenant farmer class in rural society. Industrial owners of cottage property would not be likely to provide so much land that their labourers might become independent, or even partially so. Even so, sufficient appears to have been done to raise a very severe complaint by Malthus against the rural industrial cottage owner. Malthus found that some industrial proprietors were encouraging the cottage system with the intention of making their workpeople subsist largely on their own produce of the cheapest possible foodstuffs, milk and potatoes.³ He accused employers of hoping that the

1. Eden, op. cit., II, "Bury".

2. Lord Winchilsea, On Cottagers renting Land (1796), 18.

3. Any kind of land provision made generally available to cottagers, Malthus argued, would inevitably be used to produce milk and potatoes, as in Ireland; but it was vitally necessary that the poor should live on a varied staple diet other than the cheapest foodstuffs if there were to be alternatives available in times of distress. Op. cit., 456.

success of this scheme would lessen the price of labour and so increase the competitiveness of manufactures. "I really cannot conceive anything more detestable," he concluded, "than the idea of knowingly condemning the labourers of this country to the rags and wretched cabins of Ireland for the purpose of selling a few more broadcloths and calicoes."

Later in the nineteenth century, the underlying idea that working people would benefit morally from the self-discipline of proprietorship on a small scale continued to hold great appeal, but tended to assert itself in different forms. W. R. Greg, a younger son of Samuel Greg of Styal, argued strongly in favour of more suitable forms of property for the industrial, then predominantly urban, working class. In his experience, the sensible workman would generally be found to have "some independant property - often deposited in his master's hands, oftener still laid out in the purchase of cottages or railway shares."¹ Working class property, he considered, "may be, and usually will be, a political and social influence for good. We trust much, therefore, to the rural population becoming proprietors, and to the urban population becoming capitalists."²

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1. W. R. Greg, "Mary Barton" in Mistaken Aims and Attainable Ideals of the Artisan Class (1876), 135.

2. W. R. Greg, Rocks Ahead, or the Warnings of Cassandra (1874), 43; see also, "Investments for the Working Classes" in Edinburgh Review (1852).

Cottages belonging to country mills were frequently built on old village crofts or folds, or other scraps of unwanted, derelict land. The amount of potential garden land left over after the construction of a row of cottages was largely a matter of chance. It would not in all cases be worth while for a proprietor to take the unused land back into an adjacent field or find some other use for it. Cartographical evidence suggests that in most cases the provision of gardens with rural industrial cottages came about in this manner haphazardly. Only occasional instances are found of what appear to be planned gardens, and the instances are fewer still in which one detects garden planning contemporary with the construction of the cottages. In some of the earlier examples, large plots were not infrequently developed with a sufficiently low density to allow large gardens in addition to the cottages and paved areas. The housing at Long Row in Belper was of this sort, the gardens attached to these cottages being of about five perches in extent. The gardens attached to the "cluster" cottages nearby are even larger, at about ten perches. These must be regarded as planned gardens of a generous type. In some other instances, planned gardens in the form of little grouped allotments existed. The cottages in North Street in Cromford, built by 1777, were provided with allotment gardens in a nearby field. Although not necessarily contemporary with the cottages (and probably laid out subsequent to the purchase of Cromford in 1789), they were systematically planned, as may be seen from the fact that in 1841 the names of the garden tenants were the same and occurred in the same sequence as the

names of tenants of cottages in North Street.¹ Other Midlands examples where substantial allotment gardens were made available to cottagers in mill communities include Rocester (fig.35, p. 315), where the allotments were skillfully planned to ensure that paths took up only the absolute minimum of useable land;² Milford, where the cottagers had the use not only of the gardens attached to their cottages but also of several large fields on the high ground above Hopping Hill;³ and Tutbury, where low land adjacent to the river was made available to the cottage tenants. Amongst Northern examples, potato lots were provided at Caton in a large field;⁴ very extensive gardens at Styal;⁵ and in many other cases the strips of rear garden attached to cottages were large.

Less obvious from map evidence, but of no less importance to a tenant community, was the availability of pasture closes. The traditional cottage system, and the system familiar with domestic manufacture, was the occupation of a multiplicity of little pasture closes. In industrial communities, on the other hand, with a greater tendency for cottages to be grouped in one location, it would probably be more convenient for the proprietor to keep his cottagers' cows together in one herd. Little closes would not then be required, and cartographical evidence would give no clue to the existence of this species of cottage property. At Cromford, the system of a large number of small closes severally tenanted was followed, but at Darley Abbey the contrasting system of managing the

1. Tithe Survey of Cromford (8/66).
2. Tithe Survey of Rocester (32/180).
3. Tithe Survey of Belper (8/23).
4. Tithe Survey of Caton (18/64).
5. See fig. 16, p. 104.

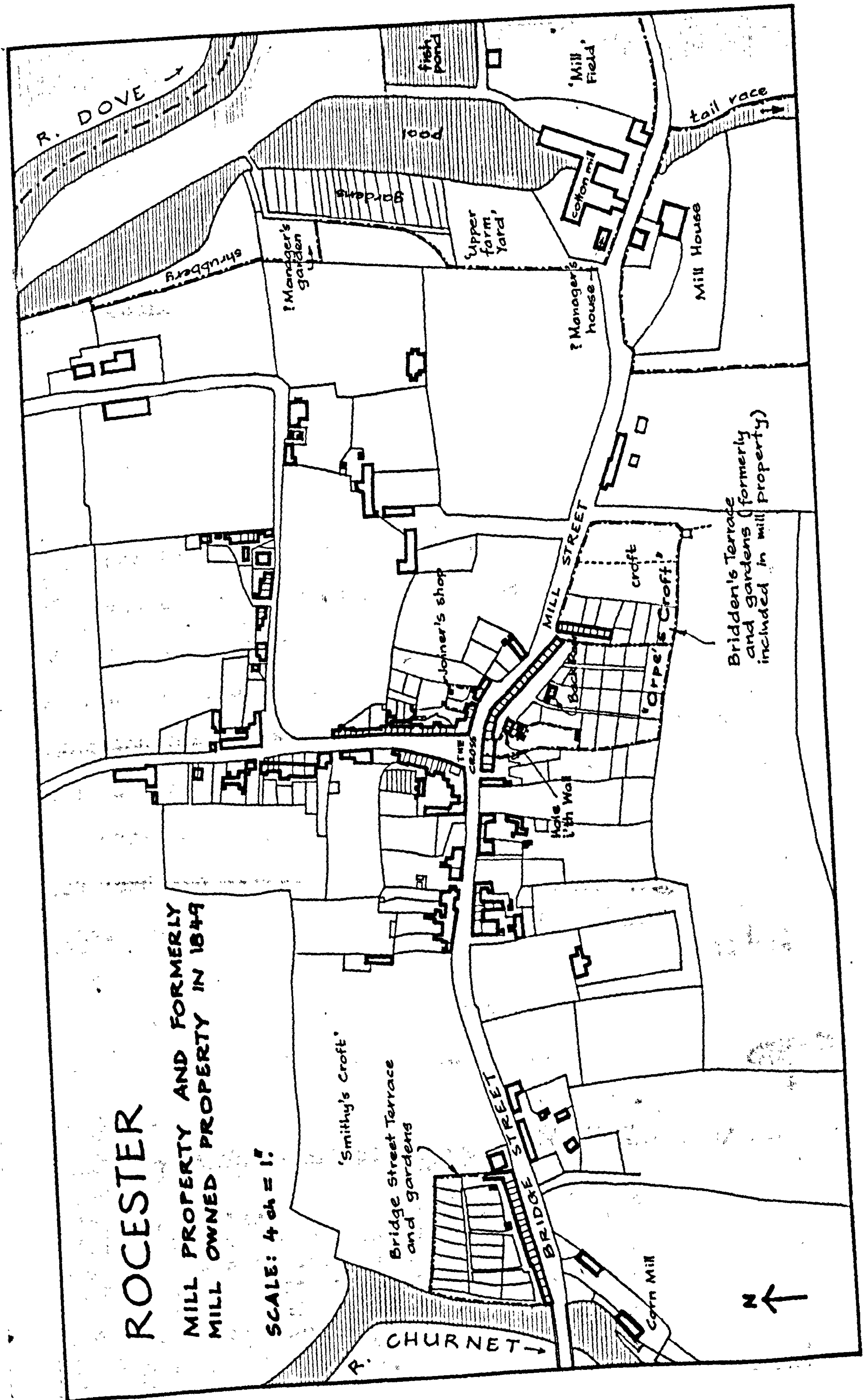


Fig. 35.

cottagers' cattle in a single herd was adopted. Contemporary literature on the 'cow system' normally describes it in the form adopted at Cromford, but it may, on the other hand, particularly under industrial landlords, have actually existed more commonly in the latter form, which would appear to have been more economical in its use of land.¹

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Evidence for the cottage system as practiced at Cromford is quite extensive. In addition to the normal cottage and garden tenancies, the pasture land of the township was shared out in many smallholdings. The Tithe Survey evidence shows a strong contrast between the management of the Arkwright estates in Matlock, which were divided into farm tenancies in the normal manner, and the Cromford estate, where the pasture land was divided into no fewer than 102 smallholdings (see fig. 36, p. 317, and Table 45).² These smallholdings varied greatly in size, but the average extent was a little over seven acres. At one time there may have been a greater number of smallholdings in total, as by 1841 a number of the tenant holdings were in more than one parcel. In 1841 50 tenants of these smallholdings were also tenants of cottages

1. Under agricultural landlords also, it was said in 1796 that industrious labourers frequently benefitted "by laying or feeding their cow or cows from Mayday to Michaelmas, in the demesnes of their lord and master ... a small portion of [tenanted] land is sufficient to produce hay for winter support." W. Pitt, General View of the Agriculture of Staffordshire (1796), 23n.

2. Counting only agricultural holdings of a quarter of an acre or more, indicated in the Tithe Survey.

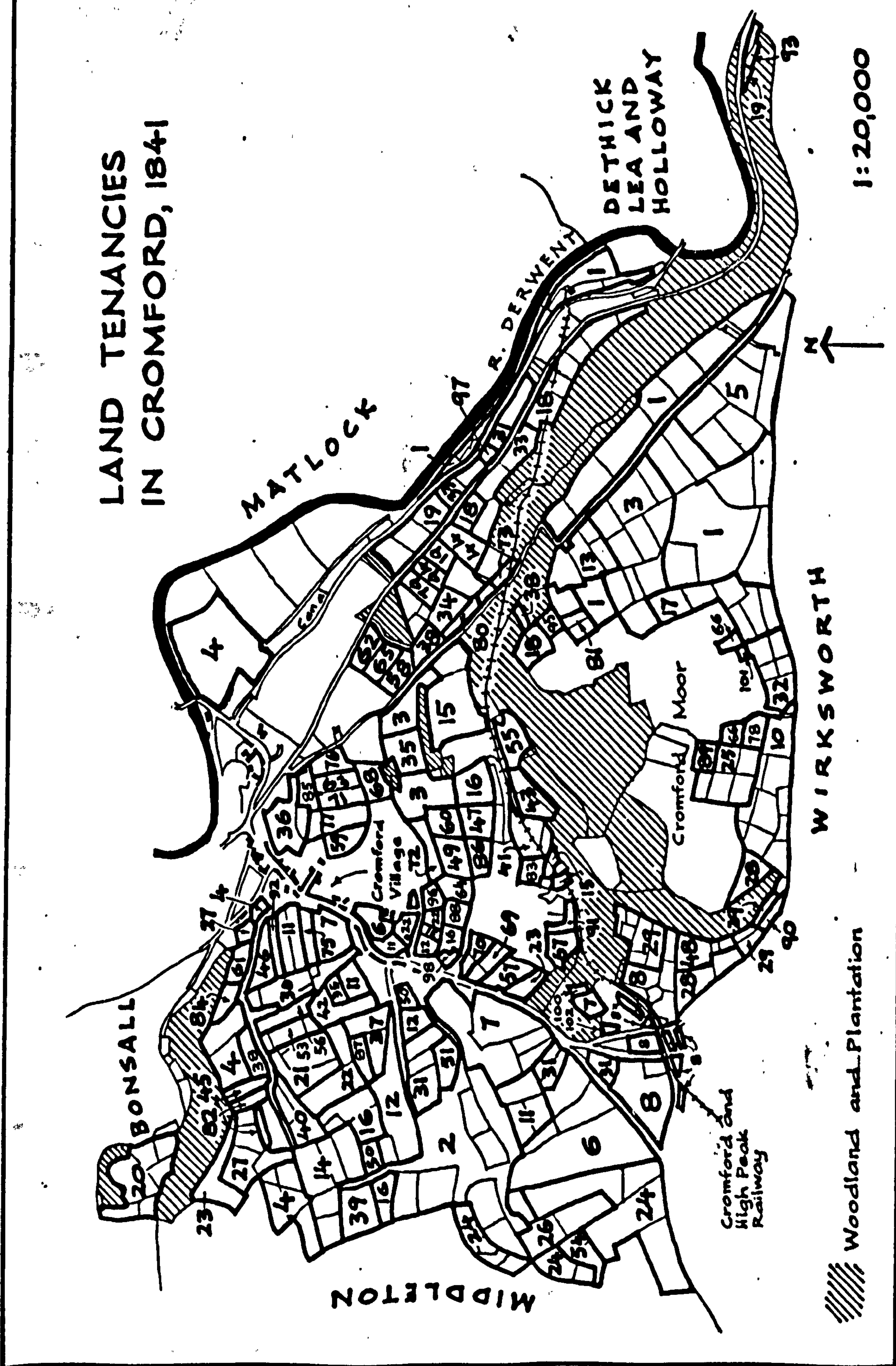


Fig. 36.

in the village of Cromford. A further nine were tenants of gardens or other non-cottage land in the village, and were evidently also inhabitants of Cromford. The remaining 43 names do not appear as tenants in the village, and the location of their cottages is unclear. It is hardly possible to explain away more than a very small number of these small-holdings, if any, as detached parts of farms in adjacent townships. In general, therefore, these agricultural small-holdings are to be regarded as available to the tenants of Cromford.

Table 45.

LAND TENANCIES OF $\frac{1}{4}$ -ACRE OR MORE IN CROMFORD, 1841.

Based on the Tithe Survey and the 1841 census returns.

No. (fig. 36)	Land tenancy:			Tenant's name; occupation; and other tenancies in Cromford (c = cottage, g = garden)	
	T. S. parcel no(s).	a.	r.	p.	
1.	626 &c	89	2	4	Samuel Brown; - ; c.
2.	33 &c	37	3	27	Thomas Hodgkinson (senr.); baker; -.
3.	799 &c	37	3	13	Thomas Boden; - ; g, pigsty
4.	17 &c	36	0	8	George Higgott; publican; Greyhound Inn, stables, croft, g, &c.
5.	921 &c	31	1	3	Joseph Conway; - ; c.
6.	61 &c	29	3	12	Joshua Hodgkinson (jnr.); mechanic; croft, stackyard, barn, calfcroft.
7.	77 &c	26	3	4	John Mart; publican; Cock Inn, g, croft.
8.	66 &c	22	1	12	James Houseley; publican; Railway Inn, pigsties, g.
9.	46 &c	19	0	34	Thomas and William Brooks; - ; -.
10.	725 &c	16	2	21	John Flint (senr.); - ; -.
11.	59 &c	15	1	0	Paul Hodgkinson; farmer; croft, cowhouse, g.
12.	29 &c	14	1	16	George Eaton (jnr.); - ; -.
13.	627 &c	13	1	19	Nathaniel Wheatcroft; - ; -.
14.	21 &c	12	2	12	Joseph Higgott; miller; corn mill.
15.	775	12	1	26	Jane Wildgoose; - ; c, gs, pigsty.
16.	28 &c	12	1	24	Joseph Weston; leadminer; c, g, cowhouse, stackyard, stable.
17.	867 &c	12	0	28	Edward Boden; baker; c, yard, oven, stable, warehouse.

18.	614	11	2	29	George Stayley; - ; c, g, building &c.
19.	615	11	0	13	William Roper; - ; -.
20.	1 &c	10	2	14	John & William Gooddale; paint makers; paint mill.
21.	620 &c	10	1	28	Anthony Boden (jnr.); farmer; c, pigsty, stable, &c.
22.	106 &c	9	2	37	Joseph Brown; - ; c, g, outbuildings &c.
23.	13 &c	9	1	22	Anthony Swift; - ; -.
24.	35 &c	8	3	19	Job Spenser; - ; -.
25.	852	8	3	15	Charles Wright; - ; -.
26.	49 &c	8	3	7	Hugh Walker; - ; -.
27.	14 &c	8	2	14	William Potter; paint maker; works.
28.	748 &c	8	2	2	John Holmes; - ; g, cowhouse, yard.
29.	750 &c	8	0	35	William Street; - ; -.
30.	100 &c	8	0	7	Thomas Stayley; - ; -.
31.	73 &c	7	2	9	George Hodgkinson; - ; -.
32.	858 &c	7	1	36	John Oxpring (senr.); - ; -.
33.	124 &c	7	1	13	Anthony Boden (senr.); - ; g.
34.	667 &c	6	3	37	George Boden; swailer; -.
35.	103 &c	6	2	9	Daniel Gell; publican; Bell Tavern, cowhouse, g, stable.
36.	697 &c	5	3	0	Thomas Barton; farmer; c, cowhouse, g, hovel, kitchen.
37.	105 &c	5	1	1	Thomas Reeds; hatter; c, g.
38.	122 &c	5	0	6	Moses Kidd; lead miner; c, cowhouse.
39.	25 &c	4	3	10	George Buckley; lead miner; c.
40.	113 &c	4	2	38	John Kidd; hatter; two cs, cowhouse, pond, waste, two gs, hatter's shop.
41.	783 &c	4	0	3	Horatio Holmes; hatter; c, pigsty, yard.
42.	104	3	3	0	James Swinscow; - ; c, cowhouse, yard.
43.	822 &c	3	2	39	Hannah Brown; - ; -.
44.	656 &c	3	2	17	John Lee; - ; -.
45.	116 &c	3	2	8	Charles Swift (jnr.); - ; -.
46.	196	3	1	20	George Mather; - ; -.
47.	287 &c	3	1	9	Anthony Britland; lead miner; c, g.
48.	755 &c	3	1	3	Johnes Holmes; - ; -.
49.	795	3	0	18	John Britland; - ; c.
50.	30 &c	3	0	3	John Eaton; - ; -.
51.	87 &c	2	3	38	Thomas Hodgkinson (jnr.); lead miner; c, g.
52.	662 &c	2	3	37	Walter Flint; shoemaker; c, g.
53.	123 &c	2	3	37	Thomas Holmes; labourer; -.
54.	42 &c	2	3	37	Hannah Spenser; - ; -.
55.	828	2	3	15	Hannah Boden; - ; -.
56.	130	2	2	39	John Mather; - ; c, two cowhouses, pigsty, yard.
57.	727	2	2	25	John Barker; hatter; c, g, pigsty.
58.	675	2	2	25	Isaac Kidd; labourer; c, g, cowhouse.
59.	708	2	2	22	James Barton; - ; -.
60.	798	2	2	21	John Britland; miner; -.
61.	150 &c	2	2	18	Jacob Carline, lead miner; -.
62.	677	2	1	38	John Twigg; mechanic; c, yard, cowhouse.
63.	701	2	1	31	Thomas Wilkinson; - ; -.

64.	717 &c	2	1	29	Jonathan Potter; paintmaker; c, two houses, two pigsties, cowhouse, stackyard.
65.	676	2	1	21	Stephen Froggatt; labourer; c, building, g.
66.	854 &c	2	1	21	William Oxpring; - ; -.
67.	767	2	1	14	Thomas Holmes; labourer; c, g, stackyard.
68.	706	2	1	11	Robert Britland; joiner; c, g, joiner's shop, woodyard.
69.	301	2	1	9	Joseph Sheldon; mechanic; c. pigsty, yard.
70.	302	2	1	9	Solomon Sheldon; cooper; c, cooper's shop, pigsty, cowhouse, mine hillock.
71.	700	2	0	39	Thomas Potter; gardener; c, yard.
72.	797	2	0	32	Richard Roose; - ; c.
73.	659 &c	2	0	31	William Fox; - ; c, g, cowhouse, pigsty.
74.	115	2	0	30	Thomas Swift; - ; -.
75.	208	2	0	25	George Eaton (senr.); - ; -.
76.	702	2	0	11	James Rolley; hatter; c, g, cowhouse, hatter's shop.
77.	707	2	0	11	Joshua Roper; publican; Crown Inn.
78.	855	2	0	2	Samuel Flint; shoemaker; -.
79.	666	2	0	0	Job Mather; - ; c, g, cowhouse.
80.	672	1	3	36	William Pearson; - ; c, g.
81.	877 &c	1	3	30	Thomas Poundrell; - ; -.
82.	119	1	3	30	Anthony Holmes; hatter; c, g, cowhouse.
83.	782	1	3	29	Edwin Harrison; - ; c.
84.	138	1	3	26	John Holmes; lead miner; c, pigsty, yard.
85.	699	1	3	18	James Brownson; wood turner; c, cowhouse.
86.	794	1	3	13	John Hallam; schoolmaster; -.
87.	107	1	3	5	William Bunting; blacksmith; c, g, smithy, cowhouse.
88.	312	1	3	4	Jacob Houghton; - ; -.
89.	851	1	3	1	Charles Colledge; - ; -.
90.	751	1	2	31	Samuel Wright; - ; -.
91.	768	1	2	24	Joseph Jebson; lead miner; c, gs, cowhouse, stackyard.
92.	197	1	2	4	Mark Britland; - ; -.
93.	931 &c	1	1	27	John Brocklehurst; - ; -.
94.	667	1	1	17	Timothy Jebson; - ; c, g.
95.	880	1	1	13	Joseph and Joseph Jebson; - ; -.
96.	714	1	1	9	Ann Jebson; - ; c, pigsty, &c.
97.	622		3	26	Francis Stayley; - ; -.
98.	316		2	20	Thomas Hodgkinson; baker; g, waste.
99.	837		1	22	Mark Flint; - ; -.
100.	730		1	18	Samuel Taylor; hatter; c, g.
101.	865		1	22	John Oxpring (jnr.); - ; -.
102.	733		1	20	Widow Barker; - ; -.

The provision of pasture land under the cottage system at Cromford averaged over $2\frac{1}{2}$ acres per cottage, though the majority of cottage tenants had only a garden. Part of the explanation for the unusually large provision of land must lie in its poor agricultural quality and in the history of land occupation before Arkwright's time. Cromford was undoubtedly a substantial village before Arkwright's arrival. The fields to the immediate west of the village are strongly marked and terraced with the regular lines of former boundaries of small fields or holdings, only some of which survived as the field boundaries recorded in 1841. The land to the south and east of the village reveals no former pattern of little fields or holdings, and was evidently enclosed from the waste in a more piecemeal manner. There was no Enclosure Act for Cromford. Fragmentation of agricultural land into a large number of smallholdings is not uncommon elsewhere in Derbyshire, although Cromford, with 102 holdings of above a quarter of an acre, appears to be the extreme example of such fragmentation. The early reports to the Board of Agriculture also show similar fragmentation of land in Lancashire and the West Riding, where it served an essential role in the cottage economy under the domestic system of manufacture. The usual sizes of 'farms' in Lancashire in the eighteenth century were said to include, at the lowest extreme, many holdings of such a size "as will only keep a horse or a cow".¹ The smallholding system found surviving in Cromford in 1841 can in no sense be

1. T. Robertson, Outline of the General Report on the Size of Farms (1796), 7-8.

regarded as an Arkwright innovation, though it is interesting to note that Sir Richard and his son decided to retain the antiquated agricultural pattern, rather than evict their smallholding tenants and turn the land to better farming use.

The land at Cromford was very unproductive, and probably offered little incentive to plans for improvement. Most of the township consisted of pasture, described in 1839 as "inferior and much broken up by mine tips". The same source states: "The extent of the occupation is very small; there is no such thing as a flock of sheep, the greatest number kept by any one person being ... about 30. The extent of the population ... causes a considerable consumption of dairy produce, and this is the staple agricultural production. But few pigs are kept, and though many small parts are occupied by cottagers, it does not seem to me that the most is made of it."¹ This land was generally described as "old turf" in the Tithe Survey.

As early as 1793, Arkwright had started the policy of providing cows for his mill employees. In that year a local newspaper reported that he had given "27 fine milch cows, worth from £8 to &10 each, to 27 of his principal workmen."² In the first year of the following century it was reported that in Cromford there were "many cows being kept here for the accomodation of the people employed in spinning cotton".³ The policy of encouraging cow ownership was thus continued by

1. Tithe File for Cromford (P. R. O., I.R. 18/882).

2. J. Farey, General View of the Agriculture and Minerals of Derbyshire III (1817), 195; Derby Mercury, 24th July 1783.

3. 1801 Crop Returns for Cromford, quoted in F. S. Ottrey, "Aspects of the Development of Wirksworth, 1800-1865" M.A., Nottingham, (1966).

Richard Arkwright junior. That the policy was still active in 1829 is shown by Glover's remark that "every person employed at the mills, capable of purchasing a cow, has a little plot of land allotted to him, sufficient to maintain it."¹ This might be taken to imply that the scheme had been extended, and what was originally provided for favoured employees was now available to all.

An analysis of the Tithe Survey and Census evidence in 1841 enables the outcome of a half century trial of cow ownership in Cromford to be studied.² Evidence is available both on the tenancy of pasture smallholdings and of cowhouses, and the occupations of many of the tenants can be ascertained. Amongst 48 tenants of known occupation, the largest holder of land was a baker; then the publican of the Greyhound Inn; a mechanic; the publican of the Cock; the publican of the Railway Inn; a man described as a farmer; a corn miller; a lead miner; a baker; two men sharing a paint mill; and a farmer. These tenants all held ten acres or more, but the list of lesser smallholders also shows a bias in favour of what might be considered the little businessmen of the village. In 1841 there were also 20 cowhouses in Cromford.³ Amongst their tenants may be identified the occupier of the largest house in North Street, who was probably a baker; the occupier of one of the large semi-detached houses at the upper end of the mill pool; a blacksmith; a publican; two men sharing a smallholding; the occupier of a large house backing against

1. S. Glover, History and Gazetteer of the County of Derby (1829), II, 325.

2. See Table 45, pages 318-20.

3. The ratio of cows to cowhouses is unclear, but surviving examples might suggest 3 to 1.

the south terrace of North Street; a weaver; a woman occupying one of the large houses in the farm group above the road leading to Belper; and a hatter, with one of the large houses adjacent to the Greyhound Inn. Of the remaining ten persons tenanting cowhouses, five were not listed as tenants in the village, and the remaining five were listed as tenants of undistinguished cottages.

Whether or not these persons were the actual cow owners, and they may have sublet their pastures and cowhouses to others, one suspects that tenancy of the property intended to benefit cottagers under the cow system had fallen into the hands of members of the village community who were among the more affluent section. Publicans and artisan traders were more fully represented than persons in the labouring classes. As the history of possession of this property between the date of Arkwright's original gift in 1783 and the survey of 1841 is unknown, one cannot say whether the policy of encouraging cow ownership had succeeded in helping the original recipients to rise in the world, or whether other families of tradesmen, publicans and superior artisans had tended to take over in their stead. Research on family reconstruction from parish registers might ultimately make it possible to determine how the 1841 tenants were connected to the 1783 "principal workmen" or the 1829 employees, and whether this was an example of failed traditional paternalism or a successful policy on Malthusian lines.

The cows at Cromford were clearly the cottagers' own property, so they presumably had the full responsibility for their management and the full profit of both milk and calves.

In other cases, and probably more frequently, cows were only hired to the cottagers. The cottagers would then presumably have only the summer management and the milk. This very different system was followed at Darley Abbey under Thomas Evans.¹ The herd at Darley Abbey appears to have been kept together on Evans's land and the cows hired out to individual tenants over the summer months. The first evidence for this system is in 1795, with more detailed accounts for the period from 1804 to 1810. In the latter period the number of cows hired out rose each year to 31 and fell again in autumn, the usual duration of hire being from a commencement in March, April or May to a termination in October or November. Management of the hiring scheme was in the hands of the Company, who employed a milkmaid at a wage of 2s 4d a week.² The Company made a small profit on the difference between the receipts from cottagers and their single payment to Evans.

The manner of operation of the scheme is clear, but the weekly payments by the cottagers are extraordinarily large, generally about 5s. There is no question of house rent being included, and the payments are certainly for the hire of individual cows. The annual sum paid to the Company usually exceeded £8 per cow. In the year of lowest charges, 1804, the Company received £245 15s for 31 cows, giving a mean hirer's payment of £7 18s 6½d for the year. In later years the mean payment rose as high as £9 2s 3d. If the cows had belonged to the cottagers, the charge for keep only might have been

1. Evans Papers, "D" and "E" ledgers, passim. (Derby Borough Library, 162-2-70 and 162-3-70).

2. J. Forrest, "The Darley Abbey Cotton Spinning and Paper Mills" M.Sc.Econ., London (1957), 93.

closer to the annual charge of £2 10s paid to William Cox of Culland by his cottage tenants for the keep of cows in 1813.¹ At a maximum, the weekly payments by the hirers of cows might be supposed to cover a hiring charge, a rent for pasture, payment for hay, and the expenses of managing the herd and the dairy; but such a comprehensive service would render the part played by the cottager no more than that of a passive spectator. The enormous weekly payments might make sense as a valuation of the animals' total dairy produce, which an agricultural expert in 1795 valued at a mean of £8 6s 8d per cow.² The Darley Abbey cow hirers could then be regarded as persons having contracted to take the full produce of an animal, though this appears a strained interpretation of the simple "By keep of cow" entries in the Company ledgers.

Table 46.

THE 'COW SYSTEM' UNDER EVANS AND COMPANY, DARLEY ABBEY, 1804-10.

Year	Total receipts for "keep of cows"			Probable number of cows (excluding Hopkinson's)	Mean annual charge per cow			Payment for Hopkinson's cow		
	£	s	d		£	s	d	£	s	d
1804	245	15	0	31	7	18	6½	7	10	0
1805	259	2	0	31	8	7	2	9	0	0
1806	265	5	0	31	8	11	1½	7	10	0
1809	282	10	0	31	9	2	3	9	10	0
1810	274	4	0	31	8	16	10¾	9	10	0

The hired cow system was used by Samuel Oldknow at Mellor,

1. Farey, op. cit., III, 187-8.
2. Winchilsea, op. cit.

but no details of its manner of operation are known. Oldknow had considerable farming interests, particularly in livestock; in 1797 he inaugurated winter and spring fairs at Marple for the purpose of showing cattle, horses, sheep and pigs. It is evident that, at one time at least, he kept cows on behalf of his employees as the charge for their keep was a standard deduction from wages.¹

Robert Owen opposed the cottage system, which could not be reconciled with the ideal of co-operation. He "condemned the cottage system as perpetuating the evils of an individualist society and therefore greatly inferior to his proposed villages of co-operation."² He also had evidence of its practical failure, as attempted under A. J. Hamilton at Dalzell. The failure of Hamilton's experiment has been described by Prof. Harrison. Each cottage was provided with a smallholding "sufficient to keep a cow, grow potatoes, and raise other crops", but the tenants, mostly weavers, neglected them.³ Hamilton abandoned the system after meeting Owen in 1816 and becoming converted to the New View of Society. At New Lanark, nonetheless, Owen compromised with his strict principles sufficiently to permit individual gardens and potato lots to be cultivated.

*

1. Oldknow Papers, "S. Oldknow, Letters and Business Documents" (Manchester Ref. Lib., MF 731)

2. J. Harrison, Robert Owen and the Owenites in Britain and America (1969), 28; R. Owen, "Address to the City of London Tavern" in Life, Written by Himself Ia (1858), 112-4.

3. Harrison, loc. cit.

The system of livestock management adopted by Arkwright at Cromford appears to have been similar to that practiced and written about by the Earl of Winchilsea.¹ In this version of the system the cow-owning cottagers were tenants of land which they managed as they saw fit. Other landowners did not permit such tenancies, but preferred the system of agistment,² whereby cottagers were permitted to graze their animals in their landlords' fields under his direction. This also appears to have been a widespread version of the system. The cottagers' cows at Belton were agisted in Lord Brownlow's park from Mayday to Michaelmas at a charge of 18s per head. In order to provide hay for winter fodder, some of Brownlow's cottagers were given meadow closes of from three to four acres.³ By allowing the land to remain in the landlord's possession and full control, the system of agistment permitted it to be used more economically. Minor variants of the system of agistment were known in agricultural communities. Some Lincolnshire landowners associated their tenant farmers in the scheme, obliging them to keep their cottagers' cows at a fee of £3 per annum per cow.⁴ It perhaps illustrates

1. Winchilsea, op. cit.

2. See Blackstone's Commentaries, II, Chapter XXX.

3. Lord Brownlow, "Questions concerning cottages - with Answers" in Communications to the Board of Agriculture (1797), I, 85. See also, T. Bernard, "Account of a Cottage and Garden near Tadcaster" Ibid., I, 411. In some variants of the system the cottager was responsible for providing all the hay required. Critchley refers to the desirability of allowing all the dung produced by the cow and pigs, and the cottagers' own night soil, to be applied to the land used to produce hay ("Answers to the Queries respecting Cottagers renting land" Ibid., I, 93. Estimates of the quantity of hay required varied from 1½ tons per cow according to Critchley and 2½ tons according to Brownlow.

4. Brownlow, op. cit., I, 86.

the difficulty of artificially preserving a system which was becoming uneconomic, that many landowners were giving so much thought to methods of operating it with less and less land. A system of permanent stalling of cows which might almost be described as 'zero grazing' was even proposed, but did not meet with general approval.¹

The difference between the systems adopted on the poor land at Cromford and on the good land at Darley Abbey was clearly due to a greater wish at Darley Abbey to economise in land. Other evidence illustrates the same pressure. Burden at Castle Eden provided only 16 acres for the grazing of 12 cows. On Lord Winchilsea's estates at Hambledon, a field of 114 acres was divided into no fewer than 108 cowgates, and at Eggleton 30 acres were divided into 26 cowgates. These meagre areas of just over one acre per animal appear somewhat restricted.²

After the wasteful use of land, the second major difficulty with the scheme of permitting cottagers to own cows was that they were far too valuable a species of property to be safely entrusted to them. Arkwright's "fine milch cows" provided to favoured employees in 1783 had been valued at from £8 to £10 each. In 1797 Lord Brownlow placed a similar valuation on the cows suitable for cottage families in his part of Lincolnshire.³ In the same year Sir Thomas Bernard set the

1. See e.g. R. Barclay, "On labourers in Husbandry renting Land" *Ibid.*, I, 91; "Copy of a Letter from Sir Henry Vavasour to Lord Carrington, containing an account of a cottager keeping a cow, by the produce of arable land only" in Reports of the Society for Bettering the Condition of the Poor III (1802), Appendix XIV.

2. Bernard, op. cit., 411n; "Extract from a further account of the advantages of cottagers keeping cows" in Reports of the Society for Bettering the Condition of the Poor II (1800), 244 ff.

3. Brownlow, op. cit., I, 88.

limit of value for a cow for insurance purposes at £12.¹ A cow insurance scheme set up in Scarborough in 1807 also adopted a limit of £12.² The disaster of the death of a cow could be a very severe blow to a cottager, and complaints were raised that it was often the pretext for begging. The normal consequence of this misfortune was described by Malthus: "The loss of a cow ... is generally remedied by a petition and subscription; and as the event is considered a most serious misfortune to a labourer, these petitions are for the most part attended to."³ In Lord Brownlow's view, "a new cow may be purchased partly from past profits, and partly from gathering amongst the neighbours; this pretence to ask charity has been known to be often abused, by begging all over the country, and treble the value of the departed cow obtained."⁴ Many landlords therefore regarded it as of prime importance that their cottage tenants should subscribe to societies to insure their animals. Sir Thomas Bernard advised against lending money for the replacement of a cow; it was undesirable to lend a cottager such a large sum; he would be reduced to destitution if the new cow did not live long; and there was too great a temptation to decamp with the money. Bernard suggested a system of hire-purchase of new animals.

A 'cow society' was instituted at Cromford by the owners of cows to insure themselves against "loss attending that kind

1. T. Bernard, "Account of a Cottage and Garden near Tadcaster" in Communications to the Board of Agriculture (1797), I, 411.

2. F. Wrangham, "Account of a Society for the Insurance of the Cows of Cottagers, &c." in Reports of the Society for Bettering the Condition of the Poor V (1808), CXXXIX.

3. Malthus, op. cit., 468.

4. Brownlow, op. cit., 88-9.

of property."¹ The date of this innovation is not known, but it was clearly a novelty unfamiliar to other landowners in Derbyshire and their cottage tenants. Farey reported in 1817, "After I had been at Cromford, I heard of a cow society having existed there, I believe among the cottagers, but the precise nature and objects of the same I am unacquainted with."² Glover provided details in 1829. The cows belonging to the members were valued "twice a year, and each member pays monthly at a rate of 1d per pound in proportion to the value of his stock. Whenever the fund of the society amounts to £40 the payments are discontinued until it is reduced below that sum. When any member's cow dies, he is indemnified to the full extent of its worth."³ The society was said to be highly beneficial to its members.

At Wintingham in Lincolnshire, Lord Carrington established a similar society on his estate before 1799, with the object of providing "a fund for the assistance of any cottager of the society who may lose his cow and be unable to buy another, or for any similar relief." The subscription was 1d a week, apparently without regard to the value of the animals.⁴ A north Lincolnshire society founded before 1807 charged a subscription of 1½d per cow per week which was deemed sufficient "to replace the ordinary losses of cows by death".⁵ The Scarborough cow society, founded in 1807 on the model of the

1. Glover, op. cit., II, 325n.

2. Farey, loc. cit.

3. Glover, loc. cit.

4. T. Thompson, "An Account of a provision for Cottagers keeping cows at Humberston, in the County of Lincoln" in Reports of the Society for Bettering the Condition of the Poor II (1800), 195.

5. Wrangham, op. cit., 204.

last-mentioned one, charged a halfpenny per pound of the animal's "monthly value" half yearly, to insure five sixths of the cost of replacement of cows of less than 14 years old, up to a maximum of £12.¹ The rules of this society appear complicated beyond all reasonableness for the class of persons supposed to be subscribers, but as they were published as model rules by the Society for Bettering the Condition of the Poor, they cannot have been thought unreasonable.

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In the postwar period the emphasis of the cottage system appears to have shifted from cow ownership to the cultivation of potatoes. There was dissatisfaction with the excessive amount of land required to be allotted to cottagers for their cows, and with the many practical problems involved in leaving the management of such animals to the cottager. There appears also to have been a tendency for cow owners to sell their animals and to attempt to subsist entirely on the arable cultivation of their land like little farmers, instead of treating it as a source of merely supplementary income.

There may have been a traditional rule of thumb that land provided for the production of potatoes, intended to be worked in a cottager's spare hours, needed only to be in lots of about a quarter of an acre at the most. This appears to have been the extent of provision with the model cottages at

1. Ibid., 205.

Nuneham Courtenay, built in 1764.¹ The Poor Law Commissioners in 1834 gave careful consideration to the optimum provision of potato lots, and found that in various model provisions a quarter of an acre per cottage had been frequently chosen. One witness suggested that this corresponded to the provision of about a sixteenth of an acre, or about 300 square yards, per family member, in an average family, capable of performing garden labour. Rents charged for potato lots in these model schemes were often about 6d a perch, or £4 per acre, per annum.²

Under the system of cow ownership, land let to cottagers probably usually returned no more rent than when let to farmers. In Cheshire, in 1803, for instance, Holland estimated that the provision of land for a cow generally added about £3 or £4 per annum to the cottager's rent.³ A change from cow ownership to potato cultivation would permit most of the land to be returned to farmers at much the same rent, and the little garden grounds retained for potatoes could return a very much higher rent. The burdens of management would also be reduced, as the cottager could work his potato lot without calling on his landlord's co-operation.

The Poor Law Commissioners in 1834 came to the conclusion, based mainly on South of England evidence, that the system of providing land to labourers in small lots, generally about a quarter of an acre, for garden purposes, was commercially viable. The uneconomic cow system had needed continuous artificial prompting, despite the faith of landlords that it

1. Illustrated in N. Cooper, "The Myth of Cottage Life" in Country Life, 25th May, 1967, top of page 1292.

2. Poor Law Report, loc. cit.

3. Holland, op. cit., 86.

could be self-sustaining; but the Commissioners found that the provision of ample potato lots needed neither exhortation nor legislative interference for its encouragement. "Since it appears that land may be let to labourers on profitable terms, the necessity for any public inquiry on these points seems to be at an end. A practice which is beneficial to both parties, and is known to be so, may be left to the care of their own self interest. The evidence shows that it is rapidly extending; and we have no doubt that as its utility is perceived, it will spread more rapidly; and that experience will show, on what mutual stipulations it can best be effected."¹

The change does not appear to have offered commensurate advantages to the cottager. Evidence with which to compare the contribution of each system to the cottage economy is not plentiful. Lord Winchilsea's paper on Cottagers renting Land (a "very valuable paper drawn up at the request of the President of the Board of Agriculture") makes no direct comparison, but contains evidence from which it appears that the profit of potato cultivation to the cottager was about half that of cow ownership. Winchilsea estimated the gross value of the dairy produce of one cow to be £8 1s 8d per annum. To this could be added the profit of grazing two sheep on the cow pasture during winter, at 2s 6d each. Deductions for rent, hay and other expenses he estimated at £4 per annum.² The clear profit was therefore £4 6s 8d, or 1s 10d per week. This may be contrasted with the profits of a quarter of an acre

1. Poor Law Report, loc. cit.

2. Winchilsea, op. cit. On his own estates, the rent charged was £1 1s or £1 10s per cowgate, and the remaining part of the £4 would go on levies, expenses of haymaking, etc.

of potato garden. Winchilsea estimated the profit of the garden crop to the cottager to be at the rate of £5 to £8 per acre per annum.¹ A quarter of an acre would produce between 25s and 40s profit, or from 5½d to 9¼ per week. These figures show that in one case, at least, the cottager fared better under the cow system, where a landowner charged about the same rent per acre in each case.

The Tithe Survey provides an opportunity to examine the provision of land with cottages in a number of rural millowners' estates.² In 96 estates in c. 1840, 72 were found to include one or more cottages; 2,983 cottages in total. Land in cottagers' occupation, whether building sites, yards, gardens, allotments, pigsties, etc., but not including cow pasture (which only certainly survived at Cromford), amounted to 200a. 2r. 19p. This indicates a mean occupation of 1/15 of an acre per cottage, assuming all the land to have been available to the known cottage tenants.³ The mean provision of land included within the boundaries of cottage sites was 181 square yards per cottage, the total thus occupied being found to be 111a. 2r. 24p. Much of this cottage-site land

1. "It frequently happens that a labourer lives in a house at 20s or 30s a year rent, ... if a garden of a rood was added, for which he would have to pay 5s or 10s a year more, he would be enabled, by the profit he would derive from the garden, to pay the rent of the house, etc."

2. See Appendix A, p. 337 ff.

3. Occasionally, as at Rocester, the tenancies of the allotment gardens and all the cottages are fully known, and it is clear that allotments were reserved exclusively for the cottage tenants. Of 153 tenants of detached gardens at Cromford only 16 were not cottage tenants. Evidence is rarely as complete as this, but as most garden ground was immediately adjacent to cottages, garden-only tenants may be regarded as a rarity. Further confirmation that outsiders were not usually considered as garden tenants appears in the fact that in only two instances out of the 96 estates examined were gardens provided but no cottages. These were the estates including Bentley Mill in Walmersley and Haarlem Mill at Wirksworth. In one instance, Stanton Mill in Mansfield, an acre of gardens were provided but only one cottage.

was necessarily covered by pavings, outbuildings, and the cottages themselves. Adding to this the remaining land in cottagers' occupation but not adjacent to the cottages themselves, a maximum possible figure for the mean gross provision is found, at 325 square yards per cottage, or about a fifteenth of an acre.

Table 47.

MEAN LAND PROVISION WITH 2,983 MILL-OWNED COTTAGES, c.1840

	Mean provision per cottage	Standard Deviation
Gross provision: land in all forms of cottagers' occupation except cow pastures	not more than 325 sq. yds.	216 sq.yds.
Net provision: land included within the boundaries of cottage sites only	181 sq. yds.	103 sq. yds.

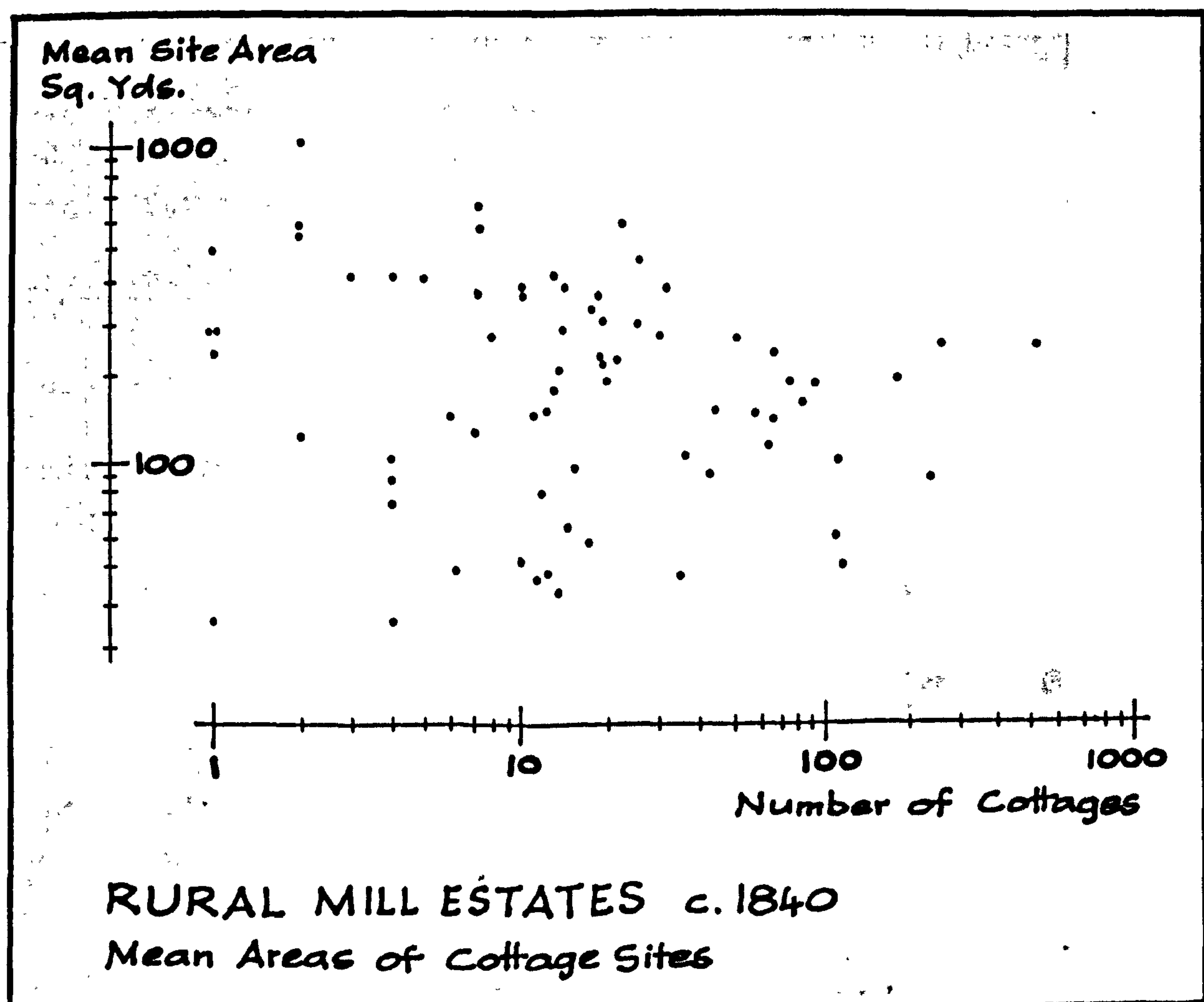


Fig. 37.

APPENDIX A.

Some country mill estates, their proprietors and housing.

1. ALREWAS, Staffordshire. SK 167155

Mill Proprietors: c.1784: Dicken and Company commence cotton spinning in newly built mill using old corn mill reservoir. 300 employees by 1798. 1815: Dicken's bankruptcy; mill closes. 1815: Mill advertised for sale. 1818: Mill still recorded as occupied by T. Dicken, cotton ball manufacturer. 1834: T.W. Haythorn, lace thread manufacturer. 1835: Jonathan Haythorn, manufacturer. 1843: Hitchcock and Company.

Housing: Sale advertisement, 16.2.1815: "(1) A large commodious house for the reception of apprentices. (2) 12 cottages or tenements for workpeople. (3) A pleasant and convenient messuage fit for the residence of a principal or superintendant of the concern, with a garden, orchard and paddock, containing altogether about 3 acres." Second sale advertisement, 1.6.1815: the apprentice house, the manager's house and "a house and shop in the village, with seven cottages or tenements for workpeople, with good gardens."

Tithe Survey evidence of the mill estate: Hitchcock & Co.

	a.	r.	p.
Leasehold under trustees of Countess of Lichfield	0	1	25
Approximate extent of reservoir: tenure unclear	7	0	0
	7	1	25

Industrial (7a 1r 0p; 98%): "The Cotton Mill," woodyard, warehouse and garden, reservoir.

Housing: none

Private occupation (25p; 2%): "Old White House," part of garden. (Possibly the former apprentice house.)

Agricultural land etc.: none

Other: none.

(Shaw, History of Staffordshire (1798), 142, 440; Derby Mercury, 16.2.1815, 1.6.1815; Parson and Bradshaw, Directory

(1818); White, Directory (1834); Pigot, Directory (1835); 1851 Census, population tables; Tithe Survey of Alrewas, 32/5; Chapman in Econ. H. R., ii, XXIII (1970), 265.)

2. ALTON, Staffordshire. SK 072427

Mill Proprietors: c. 1787: Cotton spinning commenced by "a company of adventurers." 1805: Mill advertised for sale. Prospective purchasers were invited to "apply to the works to W. W." Perhaps this is the same as William Watts, cotton spinner, of Biddulph. Cotton spinning perhaps ceased at this time, 1809: Part of the reservoir filled in in the construction of the Caldon Branch Canal. 1818: Mill occupied as a corn mill. 1844: Smith and Son, paper manufacturers.

Tithe Survey evidence of the mill estate: Smith and Son.

	a.	r.	p.
Leasehold under Earl of Shrewsbury:	19	2	29
Industrial (2a Or 17p; 11%) Paper Mills, reservoir.			
Housing: none. (Gardens: 1a 1r 21p; 7%)			
Private occupation: none.			
Agricultural land etc. (16a Or 31p; 82%)			
Other: none.			

(Derby Mercury, 16.5.1808; Pitt, History of Staffordshire (1818), 227; Tithe Survey of Alton, 32/6: Tithe Survey of Farley, 32/ ; C. Hadfield, Canals of the West Midlands (1966), 201.)

3. ASHBOURNE, Derbyshire. SK 158455.

Mill Proprietors: 1781: Arkwright establishes mills at Hanging Bridge near Ashbourne. c. 1792: Anthone Bradley and Thomas Marshall of Burton on Trent, who insure their "New Mills" in 1795. 1818: Cooper and Company. 1846: J. D. Cooper.

Housing: One terrace of cottages belonging to this mill in 1846 stood to the north of the Mayfield to Ashbourne road, opposite the access road to the mill. This firm was employing parish apprentices in 1796: although not included in the mill estate in 1846, the field names "Londoners' Closes"

found adjacent to the cottages may be relevant.

Tithe Survey Evidence of the mill estate: J. D. Cooper.

	a.	r.	p.
Freehold (96%)	5	2	2
Leasehold under Sir E. Antrobus (4%)			39
	5	3	1

Industrial (2a Or Op; 35%): "Cotton Manufactory" etc.

Housing (1r 32p; 8%): Seven cottages. Average site area = 311 sq. yds.

Private occupation (1r 21p; 11%): Holme Cottage and pleasure grounds.

Agricultural land etc. (2a 2r 29p; 47%).

Other: none.

(R.E. 29/143634 (1795); Sun C.S. 7/638230 (1795); Derby Mercury 13.10.1796; Parson and Bradshaw, Directory (1818); Tithe Survey of Clifton and Compton, 8/60; Tithe Survey of Offcote and Underwood, 8/159.)

4. BAKEWELL, Derbyshire. SK 213691.

Mill Proprietors: 1778: Arkwright constructs Lumford cotton mill on leasehold land. Before his death this property was conveyed to Richard Arkwright jnr., who resided there. 1878: Richard Arkwright purchases the freehold. Before 1814: Robert Arkwright becomes manager. 1821: Property conveyed to Robert Arkwright. 1830: Commencement of intended sale by installments to Horace Mason. 1839: Mason fails, having defaulted on all his installments. Robert and his brother Peter Arkwright persist in attempting to sell Lumford mill, unsuccessfully. 1844: lease to Simpson, Hibbert and Company for a term of years. This Simpson was presumably the Samuel Simpson described in 1822 as "late of Lumford, now of Matlock," who had long been a business associate of Richard Arkwright jnr.

Housing: There is no evidence of parish apprentices at Lumford. Pilkington refers in 1789 to 300 hands; the surviving Wages

Books confirm this and indicate a further 200 outworkers. The firm's 23 cottages in New Street in Bakewell were the only ones built by the Arkwrights. The site was purchased by Richard Arkwright in 1778. In 1782 it was included in the conveyance to Richard Arkwright jnr., described as "dwelling houses some time since erected by Richard Arkwright forming a street called the New Street." The buildings in Gell Court were included in the original lease from Gell to Arkwright in 1778. While still held under lease they were described in 1797 as "now or late in ten dwellings." Richard Arkwright jnr. purchased the freehold in 1798. By 1821 the number of dwellings had increased to eleven. The thirteen dwellings now misleadingly known as Arkwright Square were formerly known as Birkett's Buildings, having been purchased from Birkett by Robert Arkwright in 1811. Three other cottages stood in the mill grounds, formed of the old master's house in c.1840. Two unlocated cottages were included in the intended conveyance to Horace Mason.

Tithe Survey &c. evidence of the mill estate: Simpson, Hibbert and Company.

	<u>a.</u>	<u>r.</u>	<u>p.</u>
Leasehold under Robert Arkwright, by whom			
leased from the Duke of Devonshire:	23	3	0
Leasehold under Robert Arkwright:	17	3	18
	<u>41</u>	<u>2</u>	<u>18</u>

Industrial (26a Or 30p; 63%): Lumford Cotton Mill, reservoirs and mill goit.

Housing (2a 1r 11p; 6%): 51 cottages. Average site area = 219 sq. yds.

Private occupation: none.

Agricultural land etc. (12a 1r 34p; 30%). A further 87 acres of Arkwright land in Great Longstone township adjacent to the mills was not included in the lease to Simpson, Hibbert and Company.

Other (2r 24p; 2%): part of river etc.

(R.E. 4/75060 (1799); Pilkington, Derbyshire (1789), II 416; Lumford Mill Wages Books, 1787-1811, Chesterfield P. Lib.; Rocester Mill Deeds, Staffordshire R. O., D/624; S. Glover, Derbyshire (1829), II 65; Arkwright MSS, Chatsworth; Derby Mercury 25.12.1839; Tithe Survey of Great Longstone, 8/135; M. H. Mackenzie, "The Bakewell Cotton Mill and the Arkwrights" Derbys. Arch. Jnl. LXXIX (1959).

5. BAMFORD, Derbyshire. SK 205833

Mill Proprietors: 1783: Christopher Kirk commences cotton spinning in Bamford, but his establishment, burned down in 1791, may only have been a jenny workshop. Pilkington refers to the method of spinning as "very different from that at Cromford." 1791: H. C. Moore builds the present mill. 1843: W. C. Moore.

Housing. Ten cottages belonging to the mill stood on a croft in the village of Bamford in 1843. Four others stood in a lane called "The Hollow" between the village and the mill.

Tithe Survey evidence of the mill estate: William Cameron Moore.

	a.	r.	p.
Freehold:	106	3	20

Industrial (2r 6p): Bamford Mill, gasworks and stables.

Housing (1a 1r 22p; 1%): Four cottages and gardens in lane, ten cottages and fold in village. Additional gardens in the village and at the mill. Average site area of cottages = 113 sq. yds.

Private occupation (3r 7p): Homestead, gardens and shrubbery. Agricultural land etc. (104a 3r 16p; 99%). This includes 11 acres in hand and 93 acres farmed by R. Turner.

Other (1r 17p): School and yard in village, lane.

(Pilkington, Derbyshire (1789), II 387; S. D. Chapman, "Transition to the Factory System in the Midlands Cotton Spinning Industry" Econ. H. R., ii ser., XVIII (1965), 530; F. Nixon, Industrial Archaeology of Derbyshire (1969), 225; Tithe Survey of Bamford, 8/17.

6. BELPER, Derbyshire. SK 345480 etc; SK 350450 etc.

Mill Proprietors, 1778: Jedediah Strutt, in partnership with Need and Arkwright, commences cotton spinning at Belper. The first mill was followed by several larger and later mills, some sited near the bridge at Belper, some two miles downstream at Milford. The interest of the partners was eliminated at a very early date. 1798: Strutt's death; mills pass to a partnership between his sons William, George and Joseph. 1830: William died. The firm continued under the name W. G. and J. Strutt.

Housing: Many cottages at Belper and Milford are laid out in settlements which might be thought systematically planned. One forms the north suburb of the town of Belper and the other an isolated village at Milford. There are in addition many concentrations of smaller numbers of cottages in the surrounding districts. With few exceptions, both cottages and gardens were excluded from the immediate proximity of the mills. Pilkington in 1789 reported a total of 433 houses in Belper, "and this number is daily increasing. Every year, almost every month, new houses are rising up." He explained the rapid increase of population as due to "the erection of two large cotton mills in the vicinity by Mr Strutt," employing 600 hands. By 1833 the workforce had risen to 2000, or a quarter of the then population of Belper. The fact that the majority of the population in 1833 were not Strutt employees must indicate powerful incentives to population growth other than the presence of the mills.

The early stone cottages of Jedediah Strutt are in the Long Row, the Clusters, Crown Court, and in the North and South Terraces at Milford. Considerable building activity took place in the 1790s. The succeeding partnership added a number of cottages on the back-to-back plan before c.1830, including Birkin's Court in Bridge Street, new cottages to the rear of the South Terrace at Milford, and elsewhere. Early in the 1830s several terraces of brick cottages of mean appearance, known as the Short Rows, were added to the east of the Long Row.

Tithe Survey evidence of the mill estate: W. G. and J. Strutt.

	a.	r.	p.
Freehold:	1233	2	16

Industrial (18a 1r 22p; 2%): Mills, bleachworks, foundry, gasworks, model rooms, warehouse, timber yard.

Housing (43a 0r 7p; 4%): Cottages include the following groups: 12 at Belper Mills, 3 at Milford Mills, 2 at Milford Foundry, 3 at Bridge Hill, 2 near Shireoaks Farm, 2 at Bridge Hill House, 3 called Lawn Cottages, 107 at Hopping Hill, 2 in Dalley Lane, 4 near Bank Buildings, 14 called Bank Buildings, 7 in Belper Lane End, 36 at Scotches, 36 at Mount Pleasant, 6 at Broadholm, 29 in Berkin's Court, 10 in Crown Court, 20 in the Clusters, 12 in George Street, 14 in St. George's Place, 41 in Long Row, 4 in Matlock Road, 10 elsewhere in Matlock Road, 29 south of Long Row, 46 in Short Rows, 9 in Field Row, 2 in Chesterfield Road, 6 in Swinney Lane, 12 elsewhere in Chesterfield Road, 15 at Swainsley Court, 35 at Sunny Hill, Milford, 15 in Milford village, 14 at Forge Hill, 29 in Mackeney, 3 at Duffield Bank, 3 opposite to Moscow Farm, and 19 single cottages elsewhere. Average site area per cottage = 233 sq. yds. Other cottage holdings included allotment gardens (20a 0r 2p), frameshops, nailers' shops, workshops, stables, cart sheds and Public Houses.

Private occupation (59a 2r 11p; 5%): Bridge Hill House and grounds, Mackeney Hall.

Agricultural land, etc. (1067a 3r 23p; 87%): including 80 acres of timber and 12 of farmland in hand, and 975 acres leased to tenant farmers.

Other (3a 3r 0p): Schools at Belper and Milford, Unitarian Chapel, Surgery and Stable, old Workhouse, rope walk, waste.

(R.E. 4/76867 (1779); Sun O.S. 536381 (1787); Pilkington, Derbyshire (1789), II 237-8; Farey, General View of the Agriculture and Minerals of Derbyshire, II (1813) 209; "An Account of the Cotton and Woollen Mills and Factories in the U. K., (H. of L. Sess. Pprs., 1819); Glover, Derbyshire (1829) I 103-4, 252;

Strutt Correspondence, c.1750-1830, Derby B. Lib.; Sanderson, Survey of the Country 20 miles round Mansfield (1830-4); "Answers of Manufacturers to Queries" (P. P. 1834, XX); 1851 Census, Population Tables; Tithe Survey of Belper, 8/23; Tithe Survey of Duffield, 8/78; Digby, History of the Digby and Strutt Families (1928); A. W. Skempton and H. R. Johnson, "William Strutt's Cotton Mills, 1793-1812" Trans. Newcomen Soc., XXX (1955-7); R. S. Fitton and A. P. Wadsworth, The Strutts and the Arkwrights (1958); M. W. Barley, "Industrial Housing at Belper and Milford" Archaeological Jnl. CXVIII (1961); J. R. G. Jennings, Belper - a study of its history based on visual evidence (Belper Hist. Soc., n. d.)

7. BROUGH, Derbyshire. SK 181824, SK 177820.

Mill Proprietors: 1795: Benjamin Pearson and Company insure their "Cotton Mill House" for £250. 1829: the inhabitants of Brough said to be "chiefly employed in agriculture and at the cotton mills of Messrs Pearson and Company." The second mill was possibly built after 1825. 1844: Benjamin Pearson a tenant of the old mill under John Champion, and freeholder of the new mill.

Housing: 1844: one cottage at the mill, one in Brough village.

Tithe Survey evidence of the mill estate: Benjamin Pearson & Co.

	a.	r.	p.
Freehold (36%)	3	1	26
Leasehold under John Champion (61%)	5	2	36
Leasehold under Earl of Newborough (3%)		1	3
	9	1	25

Industrial (3a 1r 3p; 35%): Cotton Factory, reservoir, new mill. The plan of the Tithe Survey is evidently out of date, being perhaps unaltered since Bainbrigg's survey of 1825; the new mill is referred to in the Apportionment, but omitted on the Plan.

Housing (37p; 3%) 2 cottages. Average site area = 411 sq. yds.

Private Premises: none.

Agricultural land etc. (5a 3r 25p; 63%).

Other: none.

(Sun C.S. 9/640651 (1795); S. Glover, Derbyshire (1829), II 166; Baines, History of the Cotton Manufacture (1835), 389; Tithe Survey of Brough and Shatton, 8/39.)

8. BUGLAWTON, Cheshire. SJ 866635

Mill Proprietors: 1810: John Vaudrey, in business as a cotton spinner in Congleton since at least 1788, moves to Bath Mill, Buglawton. 1827: Will of John Vaudrey, cotton spinner and silk throwster, divides the property: Thomas Vaudrey and Isaac Faulkner receive the cotton mill (managed by Charles and William Vaudrey) and the waste silk mill (managed by John Wild). The same heirs and Charles Vaudrey receive Vaudrey's own house and cottage property. William and Thomas Vaudrey and Isaac Faulkner receive six newly built cottages and the agricultural land. 1834: William and Charles Vaudrey, cotton spinners and manufacturers 1848: Charles Vaudrey apparently sole proprietor.

Housing: The date of construction of the first eleven cottages, three of which are adjacent to the cotton mill and eight nearby, was probably early in the period of John Vaudrey at Bath Mill. His cottage property elsewhere included thirteen in High Street in Congleton with a timber yard and several small plots, and cottage property in Staffordshire. The six cottages on the Congleton side of the Dane-in-shaw Brook are evidently c. 1825. Eight more cottages near the Waste Silk Mill are are not indicated in the Tithe Survey to have been Vaudrey property.

Tithe Survey evidence of the mill estate: Charles Vaudrey.

	a.	r.	p.
Freehold	25	3	26
Leasehold under Thomas Vaudrey	29	0	25
	55	0	11

Industrial (2a 3r 3lp; 5%): Factory, gasworks, reservoir.

Housing (2r 26p; 1%): 17 cottages; average site area = 57 sq yds. Additional gardens.

Private occupation (2r 0p; 1%): House and Pleasure grounds.

Agricultural land etc. (49a 0r 37p; 93%)

Other (1a 2r 37p; 2%): river, waste.

(Petition to the Board of Trade from Congleton (1788), P.R.O. BT 6/140; Land Tax Returns, Congleton and Buglawton: Cheshire R. O. QDV 2/74 and 125; Will of John Vaudrey of Buglawton, proved 10.3.1828, Ches. R. O.; Pigot, Directory (1834); Tithe Survey of Buglawton, 5/82; Tithe Survey of Congleton, 5/129; Slater, Directory (1848); Stephens, History of Congleton (1970).

9. BULWELL, Nottinghamshire. SK 543456

Mill Proprietors: S. Walsh's mill described as "nearly finished" in 1794. 1836: mill marked on the Ordnance Survey as a twist mill. 1841: William Cartledge.

Housing: Ten cottages at the mill in 1841.

Tithe Survey evidence of the mill estate: William Cartledge.

	a.	r.	p.
Leasehold under Rev. A. Padley	20	3	16

Industrial (3a 2r 14p; 19%): cotton mill, reservoir, etc.

Housing (1a or 18p; 3%): ten houses close to the mill: average site area = 327 sq. yds. Additional gardens.

Private occupation (1a Or 35p; 6%): house and grounds.

Agricultural land, etc. (13a 3r 29p; 71%).

Other: none.

(Lowe, General View of the Agriculture of Nottinghamshire (1794) 1" O.S., 1st edn., LXXI NE.; Tithe Survey of Bulwell, 26/24.

10. BURY, Lancashire. SD 812117

Mill Proprietors: 1793: Thomas Haslam, cotton manufacturer in Bury. 1804: inspection of the mill of Thomas Haslam senior and Thomas Haslam junior. Further inspections of Haslams' mill up to 1817, when the proprietor's name given simply as "Thomas Haslam." 1833: Samuel Greg at Hudcarr Mill, in the centre of Late Haslam's estate. 1840: Samuel Greg.

Tithe Survey evidence of the mill estate: Samuel Greg

	a.	r.	p.
Freehold (38%)	2	0	23
Leasehold under trustees of T. Haslam (62%)	5	2	28
	7	3	11
Industrial (2a Or 23p; 38%): cotton mill, reservoirs.			
Housing: none. (unknown whether 18 cottages in Free Town, Bury, known as Greg Row, were yet built.)			
Private occupation: none.			
Agricultural land, etc. (3a 2r 28p; 62%).			
Other: none.			

(Universal British Directory (1793); "An account of the Cotton and Woollen Mills and Factories in the U. K." (H. of L. Sess. Pprs., 1819); "Answers of Manufacturers to Queries" (P. P. 1834, XX); Tithe Survey of Bury, 18/58.)

11. BURY, Lancashire. SD 814104

Mill proprietors: 1824: Charles Openshaw of Butcher Lane listed as a cotton manufacturer; four other branches of this family were woollen manufacturers, including John Openshaw, Son and Company of Pimhole. 1840: Messrs. Openshaw, cotton spinners, at Pimhole.

Housing. 45 cottages in the mill yard in 1840. The cottages were all built on glebe land.

Tithe Survey evidence of the mill estate. Messrs. Openshaw.

	a.	r.	p.
Freehold (mill and reservoir) (9%)		3	23
Leasehold of Glebe (29%)	2	3	10
Leasehold under Earl of Derby (61%)	5	3	21
	9	2	14

Industrial (2a Or 29p; 23%): cotton mill, two reservoirs, warehouses.

Housing 3a Or 25p; 33%): 45 cottages; average site area = 251 sq. yds. Additional gardens.

Private occupation: none.

Agricultural land, etc. (3a 2r 37p; 39%)

Other (2r 23p; 5%); Sunday School, waste.

(Baines, Lancashire (1824), I 584, 588; Tithe Survey of Bury 18/58.)

12 CASTLETON, Derbyshire. SK 178824

Mill Proprietors: 1841: George Hall. This is probably the mill mentioned by Baines in 1835, and possibly that mentioned by Farey in 1811; Glover refers to twine spinning and cotton weaving at Castleton.

Housing: 2 cottages at mill.

Tithe Survey evidence of the mill estate: George Hall.

	a.	r.	p.
Leasehold under Rev. Henry Case (98%)	1	2	31
Leasehold under Joseph Wright (2%)			6
	1	2	37

Industrial (1a 2r 31p; 98%) Cotton mill etc.

Housing (6p; 2%): two cottages; average site area = 91 sq. yds.

Private occupation: none.

Agricultural land etc.: none.

Other: none.

(Farey, General View of the Agriculture and Minerals of Derbyshire (1811-17); S. Glover, Derbyshire (1829), II 194; 1" O.S. 1st edn., LXXXI; Tithe Survey of Castleton, 8/49)

13. CATON, Lancashire. SD 531635

Mill Proprietors: 1803: Hodgson, Capstick and Company at "Caton Cotton Forge". The same proprietors owned Caton and Willow cotton mills. 1824: Capstick and Company, Flax and Tow spinners at Forge in the village of Caton. 1847: Joseph Wright at Forge Cotton Mill.

Housing: Three cottages at the mill in 1847; The firm also owned Barracks House (Borwicks House, on the O.S.). If this was an apprentice house it may have served the nearby Rummel Row Silk mill, to which it is connected by a footbridge over the Artle Beck. It appears from the insurance evidence of

1803 that the firm also owned the Nook Cottages.

Tithe Survey evidence of the mill estate: Joseph Wright.

	a.	r.	p.
Freehold (3%)		2	21
Leasehold under John Edmondson (97%)	18	0	18
	18	2	39

Industrial (2r 21p; 3%): Cotton mill etc.

Housing (1r 25p; 2%): Three cottages. Average site area = 403 sq. yds.

Private occupation: none.

Agricultural land etc. (17a 2r 33p; 95%).

Other: none.

Phoenix Insurance policies 155008 (1798), 228545 (1803);

"An Account of the Cotton and Woollen Mills and Factories in the U. K." (H. of L. Sess. Pprs., 1819); Baines, Lancashire (1824), II 662; Dickson, General View of the Agriculture of Lancashire (1815); Tithe Survey of Caton, 18/64; 6" O.S., 1st edn.)

14. CATON, Lancashire. SD 527648.

Mill Proprietors: 1784: Caton Low Mill built. This may be the same as the Caton Cotton Mill of Hodgson, Capstick and Company's insurance policy of 1803. Before 1824: purchased by Samuel Greg and Company, managed by John Greg. 1847: John Greg.

Housing: In 1808 Hodgson, Capstick and Company were employing apprentices described as "a family of 75 persons, 30 of whom are under 14 years of age. The apprentice house was near the mill. There were about the same number of free workers; the firm produced calico yarn. Cottages owned in 1847 included three called Bury Houses, three at the mill, nine adjacent to the nearby Rummel Row Silk Mill, and six in the potato gardens to the south. John Greg reported in 1833 that the majority of his employees lived in the firm's cottages, "which have been materially improved of late years." This implies that most were purchased with the mill before 1824.

Tithe Survey evidence of the mill estate: John Greg

	a.	r.	p.
Freehold:	95	3	25
Industrial (7a 0r 38p; 8%): Cotton mills and reservoir; silk mills (tenant, John Armstrong) and reservoir.			
Housing (6a 3r 9p; 7%): 21 cottages. Average site area = 206 sq. yds. Also seven acres of potato gardens.			
Private occupation: none. (House included with mill.)			
Agricultural land etc. (81a 3r 8p; 85%).			
Other: none.			

(Phoenix Insurance policy 228545 (1803); R. W. Dickson, General View of the Agriculture of the County of Lancaster (1815), 626-8; "An Account of the cotton and woollen mills and Factories of the U. K. (H. of L. Sess. Pprs., 1819); Baines, Lancashire (1824), II 662; "Answers of Manufacturers to Queries" (P. P. 1834, XX); Lazenby, "Social and Economic History of Styal". M.A., Manchester, (1949), 174: Tithe Survey of Caton, 18/64.

15. CHADDERTON, Lancashire. SD 902029

Mill proprietors: Before 1780: Joel Halliwell, cotton spinner. 1824: Crowther and Halliwell, woollen spinners. 1841: P. Taylor and Company.

Housing: two cottages, one near mill.

Tithe Survey evidence of the mill estate: P. Taylor and Co.

	a.	r.	p.
Freehold (7%)	1	0	16
Leasehold under Ann Robinson (93%)	15	2	29
	16	3	5

Industrial (2a 1r. 16p; 14%): mill and reservoir.

Housing (3r 23p; 5%): Two cottages. Average site area = 1316 sq. yds. Additional gardens.

Private occupation: none.

Agricultural land etc. (13a 1r 18p; 78%).

Other (1r 28p; 3%): road.

(Baines, Lancashire (1824), II 685; Tithe Survey of Chadderton, 18/66; Butterworth, Historical Sketches of Oldham (1856), 116-7.)

16. CHADDERTON, Lancashire. SD 908049

Mill Proprietors: 1803: Fletcher and Smethurst of Stockbrook Cotton Mill. 1824: John Smethurst. 1841: William Smethurst.

Housing: In 1841, eight cottages near the mill, three near Bank Mill, and three at Cow Hill.

Tithe Survey evidence of the mill estate: William Smethurst.

	a.	r.	p.
Freehold:	8	3	10

Industrial (2a 1r 0p; 26%): Factory, reservoir, brickyard.

Housing (1a 2r 9p; 18%): 14 cottages; average site area = 421 sq. yds. Additional garden at mill.

Private occupation: none.

Agricultural land etc. (5a or 1p; 57%).

Other: none.

("An Account of the Cotton and Woollen Mills and Factories of the U. K. (H. of L. Sess. Pprs., 1819); Baines, Lancashire (1924), II 685; Tithe Survey of Chadderton, 18/66.)

17. CHEADLE BULKELEY, Cheshire. SJ 883899

Mill Proprietors: 1803: Jeremiah Bury, Alexander Booth, John Middleton and Joseph Mayer were proprietors of a cotton factory at Brinksway. 1812: Middleton and Company, tenants under John Shaw. 1833: John Middleton. 1844: Thomas Hunt, tenant under John Shaw.

Housing: Middleton reported in 1833 that he owned cottages, which he required his workpeople occupying them to keep in repair. This may be a reference to cottages owned by his Partner, Jeremiah Bury, which appear in the Land Tax returns from 1820. Hunt owned no cottages in 1844.

Tithe Survey evidence of the mill estate. Thomas Hunt.

	a.	r.	p.
Leasehold under John Shaw:	0	2	27
Industrial (2r 27p) Cotton Mill. Short leat from the Mersey.			
Housing: none.			
Private occupation: none.			
Agricultural land etc.: none.			
Other: none.			

(Land Tax returns, Cheadle Bulkeley, Cheshire R. O., QDV 2/92, esp. 1812 and 1820ff.; "An Account of the cotton and woollen mills and factories in the U. K." (H. of L. Sess. Pprs., 1819); "Answers of Manufacturers to Queries" (P. P. 1834, XX); Tithe Survey of Cheadle Bulkeley, 5/96.)

18. CHESTERFIELD, Derbyshire. SK 340692.

Mill Proprietors: Before 1797: Radley and Chapman commence cotton spinning at Holymoorside. 1828: Mills and Eliot. 1849: Simeon Manlove.

Tithe Survey evidence of the mill estate: Simeon Manlove.

	a.	r.	p.
Freehold:	15	1	29
Industrial (1a Or 24p; 7%): Cotton Mill and Reservoir.			
Housing: none.			
Private occupation (1r 9p; 2%): house etc.			
Agricultural land etc. (13a 3r 36p; 91%).			
Other: none.			

(Tithe Survey of Walton (Chesterfield), 8/54; R. H. Oakley, "The Mills of Holymoorside" Dbys. Misc. II (7) (July 1961).)

19 CHESTERFIELD, Derbyshire. SK 368708.

Mill Proprietors: Before 1800, Hewitt and Bunting commence cotton spinning at New Brampton. 1849: Hewitt, Longston and Company.

Tithe Survey evidence of the mill estate: Hewitt, Longston & Co.

	a.	r.	p.
Freehold:	82	2	39

Industrial (3a 1r 20p; 4%): Factory etc., mill etc., reservoir, bleachworks.

Housing (3r 24p; 1%): seven cottages in mill grounds. Average site area = 622 sq. yds.

Private occupation: none.

Agricultural land etc. (78a 0r 35p; 95%).

Other (1r 0p): Road.

(Derby Mercury, 31.7.1800; Tithe Survey of Walton (Chesterfield) 8/54.)

20. CHIPPING, Lancashire.

Mill Proprietors: 1795: Peter Atherton and John Rose, cotton twist spinners. 1842: Cornelius Walmsley and John Evans.

Housing: The Tithe Survey indicates four cottages adjacent to the Saunder Rake factory, about a quarter of a mile upstream of Chipping Factory. There were also gardens adjacent to the reservoir of Chipping Factory.

Tithe Survey evidence of the mill estate: Walmsley and Evans.

	a.	r.	p.
Freehold:	15	1	38

Industrial (1a 1r 39p; 10%): Spinning mill, reservoir etc.

Housing (1a 1r 31p; 10%): Four cottages at Saunder Rake.

These cottages appear to have been planned back-to-back with an industrial building, or there might at one time have been eight such cottages. If four is the correct number, the average site area = 401 sq. yds.

Private occupation (12p): house and garden.

Agricultural land etc. (12a 1r 36p; 81%).

Other: none.

(Sun C.S. 11/649218 (1795); Tithe Survey of Chipping, 18/71.)

21. CHIPPING, Lancashire.

SD 614438

Mill Proprietors: 1824: S. Bond, cotton spinner, at Saunder Rake. 1842: Simon Bond.

Housing: one cottage attached to the mill buildings in 1842.

Tithe Survey evidence of the mill estate: Simon Bond

	a.	r.	p.
Freehold:	31	0	31

Industrial (3r 19p; 3%): Factory and reservoirs.

Housing (34p; 1%): cottage at mill. Site area = 1029 sq. yds.

Private occupation (1r 19p; 1%): House, outbuildings and garden.

Agricultural land etc. (29a 2r 39p; 95%).

Other: none.

(Baines, Lancashire (1824), II 633; Tithe Survey of Chipping, 18/71.)

22. CHORLEY, Lancashire.

SD 585183

Mill Proprietors: 1803: James Anderson and Company, Griffin Mill, probably since at least 1793. 1825: James Anderton, cotton spinner, at 'Waterloo Mill'. 1840: Late Benjamin Dobson's executors.

Housing: 23 cottages, all but one back-to-back, in 1840.

Tithe Survey evidence of the mill estate: Late Benjamin Dobson.

	a.	r.	p.
Freehold:	13	1	4

Industrial (3r 37p; 7%): Factory, lodge and buildings.

Housing (24p; 1%): 23 cottages. Average site area = 32 sq. yds.

Private occupation. (1r 2p; 2%): house, garden and outbuildings.

Agricultural land etc. (11a 3r 21p; 90%).

Other: none.

(Universal British Directory (1793); "An account of the Cotton and Woollen Mills and Factories in the U. K." (H. of L. Sess. Pprs., 1819); Baines, Lancashire (1824), I 605; Tithe Survey of Chorley, 18/72.)

23. CHORLEY, Lancashire. SD 586186

Mill Proprietors: 1824: Richard Smethurst and Sons.

1840: Richard Smethurst. The mill site is amongst those likely to have been occupied since at least 1793.

Housing: 34 cottages at the mill in 1840, all planned back-to-back. One cottage in Chorley. Average site area = 44 sq. yds. An additional small garden at the mill.

Tithe Survey evidence of the mill estate: Richard Smethurst.

	a.	r.	p.
Freehold:	4	2	25

Industrial (1a 2r 26p; 36%): Mill, Factory, outbuildings and lodges.

Housing (1r 23p; 8%): 35 cottages.

Private occupation (23p.3%): house etc.

Agricultural land etc. (2a 1r 23p; 53%).

Other: none.

(Universal British Directory (1793); Baines, Lancashire I (1824), 605; Tithe Survey of Chorley, 18/72.)

24. CHURCH MAYFIELD, Staffordshire. SK 157447

Mill Proprietors: 1792: cotton spinning commences at the former corn and leather mill. 1803 and 1806: Bainbrigge, Dale and Company. 1808: Cooper and Company. 1818: Daniel Smith, cotton spinner. 1829: Smith and Cooper. The mill was idle in 1832 and 1834. 1839: Mill at work with 42 employees. 1849: John Chambers. Subsequently passed to John Haigh, and in 1868 to Simpson Brothers.

Housing: All but one of the cottages in 1849 lined the access road from Church Mayfield village to the mills. They were probably of early date, as the buildings replacing them are of mid-nineteenth century appearance. A second enclave of housing stands on land between the river and the mill leat. At the time of the Tithe Survey this land was undeveloped and not yet mill property. The cottages there were perhaps built by the Simpson Brothers from 1868.

Tithe Survey evidence of the mill estate. John Chambers.

	a.	r.	p.
Freehold:	8	0	11

Industrial (2r 5p; 7%): Cotton mill, gasometer etc.

Housing (1a 0r 7p; 13%): 19 cottages near the mill. Average site area = 266 sq. yds.

Private occupation (2a 0r 36p; 28%): House etc.

Agricultural land etc. (4a 1r 3p; 53%).

Other: none.

(Leicester Journal, Sept. 1792; Pitt, General View of the Agriculture of the County of Stafford (1808); "An Account of the Cotton and Woollen Mills and Factories in the U. K. (H. of L. Sess. Pprs., 1819); Parson and Bradshaw, Directory (1818); Pigot, Directory of Derbyshire (1829); White, Directory (1834); "Return of Mills and Factories" (P. P. 1839), mill 359; Tithe Survey of Mayfield, 32/151.)

25. CLAUGHTON, Lancashire

Mill Proprietors: 1794: Lorimer and Company commence cotton spinning at Bannister Hey. 1839: Richard Kenyon at Brock Bottom Factory.

Housing. Cottages appear in three groups in 1839: one adjacent to the mill, of which only foundations remain; a second group between the upper reservoir and the river, and a third group a quarter of a mile upstream near the mill access road. Nothing remains of the latter two groups.

Tithe Survey evidence of the mill estate. Richard Kenyon.

	a.	r.	p.
Leasehold under Lawrence Cottam (48%)	14	0	19
Leasehold under Richard Shepherd (52%)	15	0	21
	29	1	0

Industrial (3a 2r 8p; 12%): Factory, reservoirs and leat.
 Housing (1a 0r 0p; 3%): 14 cottages near the mill, three
 upstream of the mill. Average site area = 285 sq. yds.
 Private Occupation (3r 16p; 3%): House, gardens and fold.
 Agricultural land etc. (23a 2r 23p; 81%).
 Other: none.

(Universal British Directory (1794); Baines, Lancashire II
 (1825), 626; Tithe Survey of Claughton, 18/76.)

26. CLITHEROE, Lancashire. SD 749415

Mill Proprietors: 1848: Ambrose and Thomas Bulcock at Brewery
 Mill. The mill probably existed since at least 1824.

Tithe Survey evidence of the mill estate: A. and T. Bulcock

	a.	r.	p.
Freehold:	4	3	2

Industrial (2a 3r 0p; 58%): Factory and reservoir.

Housing: none, but garden of 1r 4p at mill. (6%)

Private occupation: none.

Agricultural land etc. (1a 2r 38p; 36%).

Other: none.

(Baines, Lancashire I (1824), 612; Tithe Survey of Clitheroe,
 18/80.)

27. CLITHEROE, Lancashire. SD 729418

Mill Proprietors: 1782: John Parker leases an estate of 55
 acres and a 17th century house at Low Moor. Parker and a relative
 of the same name found cotton mills, known as Edisford Factory.
 1791: mills burned. Partners subsequently bankrupt. 1799:
 ownership transferred to Garnett and Horsfall. The same
 partners owned the mill and estate in 1848 at the time of the
 Tithe Survey.

Housing: 28 cottages were built at the time of construction
 of the first mill. These were clearly the 28 in parallel rows

facing each other at the bottom of St. Paul's or High Street, close to the mill entrance. Later cottages were sited in parallel terraces to the north or in terraces at right angles to the earliest cottages to the south, and in the upper part of the mill access road. The Census returns, which distinguish Low Moor as a separate hamlet from 1831, suggest that the village was substantially completed in the period around 1841. Gardens and allotments were also provided.

Tithe Survey evidence of the mill estate: Garnett and Horsfall:

	a.	r.	p.
Freehold:	75	1	27

Industrial (7a or 39p; 10%): Low Moor Works and mill goit.

Housing (9a 3r 15p; 13%): 233 cottages at the mill and 2 in Clitheroe. Average site area = 91 sq. yds. There was in addition over five acres of gardens, pasture and arable allotments.

Private occupation: none.

Agricultural land etc. (58a 1r 15p; 77%).

Other: none.

(Sun Insurance, C.S. 11/651450 (1796); O. Ashmore, "Low Moor, Clitheroe, a nineteenth Century Factory Community" Trans.

L. & C. Antic. Soc., LXXIII-LXXIV (1963-4); Tithe Survey of Clitheroe, 18/80; 1841 Census of Low Moor, P.R.O. H.O. 107/507.

28. COLNE, Lancashire. SD 885397

Mill Proprietors: 1824: John Halsted jnr. cotton spinner and manufacturer at Walk Mill. 1846: Bramley and Alcocks.

Housing: Twelve cottages at the mill in 1846.

Tithe Survey evidence of the mill estate: Bramley and Alcocks.

	a.	r.	p.
Freehold (54%):	3	15	
Leasehold under the Earl of Derby (46%)	2	34	
	1	2	9

Industrial (1a Or 9p; 68%): Mills and reservoirs.

Housing (1r 13p; 17%): 12 cottages at the mill. Average site area = 45 sq. yds. Small additional gardens.

Private occupation: none.

Agricultural land etc.: none.

Other (37p; 15%): road.

(Baines, Lancashire I (1824), 622; Tithe Survey of Colne, 18/21.)

29. COLNE, Lancashire. SD 884402.

Mill proprietors: 1824: Thornber and England, cotton spinners and manufacturers, at Vivary Bridge. 1846: Thomas Thornber.

Tithe Survey evidence of the mill estate: Thomas Thornber.

	a.	r.	p.
Freehold:	6	2	6

Industrial (1a Or 17p; 17%): Vivary Mill and reservoir.

Housing: none.

Private occupation (5p): house and garden.

Agricultural land etc. (5a 1r 24p; 83%).

Other: none.

(Baines, Lancashire I (1824), 621-2; Tithe Survey of Colne, 18/21.)

30. COLNE, Lancashire. SD 908402.

Mill Proprietors: 1824: William Garth of Ball Grove cotton mill. 1832: mill sold. 1846: Hartley Sagar. (Unclear whether Sagar worked this mill; in 1846 it was disused. The Sagars were minor local gentry connected with Southfield Hall. In 1824 R. Sagar had spun cotton at Carry Bridge mill, a mile distant from Ball Grove.)

Housing: Cottages and gardens were sited on small parcels of roadside land at various points on the mill estate.

Tithe Survey evidence of the mill estate: Hartley Sagar.

	a.	r.	p.
Freehold:	34	3	38

Industrial (2a Or 4p; 6%): Disused mill, reservoir and goit.

Housing (34p; 1%): seven cottages. Average site area = 125 sq. yds. A small additional garden.

Private occupation (1a 3r 36p; 5%): Ball Grove House, garden and plantation.

Agricultural land etc. (29a Or 21p; 83%).

Other (1a Or 23p; 3%): roads and yard.

(Baines, Lancashire I (1824), 620-2; Tithe Survey of Colne, 18/21; O. Ashmore, Industrial Archaeology of Lancashire (1969), 45.)

31. COMPSTALL BRIDGE, Cheshire. SJ 965907

Mill Proprietors: 1802: Andrew and Parkinson build cotton spinning mills on land tenanted under Grimshaw's Commissioners in Romiley. 1805: Andrew and Company also recorded as owners of land in Werneth. 1823-4: Mills enlarged. 1833: Andrew and Brookshaw. 1840: George Andrew.

Housing: The growth of the village of Compstall Bridge was almost entirely due to the presence of Andrew's mills. Pigot's Directory reported in 1834: "The principal employment of the inhabitants is cotton spinning, calico printing and weaving ... Thirty years ago Compstall consisted of only a few straggling cottages, but since the establishment of the cotton manufacture, it has gradually risen to its present thriving condition." The majority of the cottages formed a compact group sited on rising ground to the north of the reservoirs. Others lined the (turnpike) road between the mills or stood in a short terrace at right angles to it. There were also cottages at the canal wharf and in Mount Pleasant Fold.

Tithe Survey evidence of the mill estate. George Andrew.

	a.	r.	p.
Freehold:	196	1	37

Industrial (23a 1r 7p; 12%): Cotton works and mill, Printworks, limekiln and warehouse, reservoirs.

Housing (7a 0r 23p; 4%): 169 cottages in Compstall Bridge; a porter's lodge to the entrance to Greenhill; six cottages at the canal wharf and eight in Mount Pleasant Fold. Average site area = 175 sq. yds. Some small gardens in addition.

Private occupation (4a 3r 32p; 3%): Greenhill Mansion, stables and garden; two other houses.

Agricultural land etc. (153a 0r 2p; 77%).

Other (8a 0r 13p; 4%): school, building land, wharves, river, waste.

(Land Tax Returns, Romiley and Werneth, Cheshire R. O., QDV 2/368 and 449; Pigot, Directory (1834); Tithe Survey of Romiley, 5/337; Tithe Survey of Werneth, 5/418.)

32. CRESSBROOK, Derbyshire. SK 172726

Mill Proprietors: 1779: Arkwright commences cotton spinning at Cressbrook. The mill was subsequently burned. 1787: Baker, Bossley and Company recommence spinning in new mills. 1807: Bossley and Company said to be a small concern, employing about 30 apprentices. 1829: William Newton, originally Bossley and Company's manager, 1848: H. and J McConnell.

Housing: The 30 male and female apprentices in 1817 had "Separate appartments in a lodging house a short distance from the mills." Other early, three-storey cottages stand in a group with the apprentice house to the north of the mill. The later cottages stand in terraces on the steep ground above Cressbrook Hall. The cottages nearest to the Hall have the largest gardens, and the gardens of those further away become progressively smaller.

Tithe Survey evidence of the mill estate: H. and J. McConnell.

	a.	r.	p.
Freehold (79%):	190	1	7
Leasehold under the Duke of Devonshire (21%)	51	1	1
	241	2	8

Industrial (5a 3r 16p; 2%): Cressbrook mill, old reservoir (fish pond) etc.

Housing (3a 0r 19p; 1%): 14 cottages at the mill, including three made out of the old apprentice house. 34 in Cressbrook village and 12 at Ravensdale; two at Upper Dale. Average site area = 115 sq. yds. Some gardens and drying ground in addition.

Private occupation (17a 2r 12p; 7%): Cressbrook Hall, stable, grounds.

Agricultural land etc. (206a 1r 4p; 85%).

Other (8a 2r 37p; 4%): Quarry, roads, river, waste.

(Sun Insurance O.S. 378/588793 (1791); C.S. 8/640372 (1795); "An Account of the Cotton and Woollen Mills and Factories in the U.K." (H. of L. Sess. Pprs., 1819): S. Glover. Derbyshire, unpublished MS of vol. III (Derby B. Lib.); Tithe Survey of Litton, 8/133; Tithe Survey of Little Longstone, 8/136.)

33. CROMFORD, Derbyshire. SK 298569 etc.

Mill Proprietors. 1771: Arkwright commences construction of his first cotton mill at Cromford in partnership with Strutt and Need. 1772: Mill commences production. 1778: Arkwright in sole control. 1789: Arkwright purchases the Manor of Cromford. 1792: Property inherited by Richard Arkwright jnr. 1843: Cromford property inherited by Peter Arkwright.

Housing: The major part of the village of Cromford clearly predates Arkwright's arrival. His earliest acquisitions of land in Cromford were evidently dictated by the needs of establishing his industrial premises. Apart from the mill site, a particularly early acquisition was the old corn mill and its

reservoir on the Bonsall Brook, which controlled his water supply. This explains the reason for the later siting of the Greyhound Inn, which is built on the spare land between the dam and the road. The inn was under construction in 1779. Another early acquisition was the site of North Street in the middle part of the village. One of the two terraces lining this street was a continuation of the line of the outbuildings of the Cock public house. This street was completed by 1777. In 1789 Pilkington reported that Cromford consisted of 120 houses, its population having recently increased because of the activity of the mills. In the same year Col. Byng complained that the "bold rock" at the entrance to the village "was now disfigured by a row of new houses built under it." In 1790 the row of shops to the north of the open space in front of the inn were probably added, as in that year Arkwright obtained the grant of a market in Cromford. The main increase in the size of Cromford village probably occurred under the proprietorship of Richard Arkwright jnr. By 1801 the number of houses had risen to about 200. It appears probable that the activities of the latter were concentrated in the upper part of the village. In 1816 Peter Arkwright indicated a point in the upper part of the village as the centre. The first three decades of the new century were probably unmarked by much new building work, as the population of Cromford increased only from 1,115 to 1,291. In 1841, by contrast, the Tithe Survey and the Census indicate a resumption of activity. Large cottages immediately north of North Street were under construction, and also a group of three-storey pairs of cottages above the corn mill reservoir which do not appear on the Ordnance Survey map the fieldwork of which dates from the late 1830s.

Tithe Survey evidence of the mill estate. Richard Arkwright;
subsequently Peter Arkwright:

	a.	r.	p.
Freehold (99%):	2011	1	2
Leasehold under Devisees of Thomas Pearson (1%):	11	0	18
	2022	1	20

Industrial (10a 2r 25p; 1%): Cromford and Masson mills, channel, wheelhouse, reservoirs.

Housing (28a 2r 13p; 1%): Cottages include 192 in Cromford and 12 in Scarthin, constituting the greater part of the village of Cromford; 4 at the Canal Wharf; 9 at Moorside; 16 at Bedehouses; 9 near Rock House; 2 in Barnwell Lane; 5 at Botany Bay; 2 at Foxclouds; six at Cromford Bridge; and six single cottages elsewhere. Average site area = 223 sq. yds. There were a further 16 acres of gardens and allotments, not including 141 agricultural smallholdings or farms in the four townships included in the Cromford estate.

Private occupation (89a 2r 20p; 4%): Rock House and grounds, Willersley Castle and Grounds.

Agricultural land etc. (1730a Or 22p; 86%): This includes 300 acres of timber in hand. The remainder was farmland on lease.

Other (163a 1r 20p; 8%): Paper and paint mill, stone mill, corn mill, turning shop, blacksmith's shop, comb shop, rope walk, Chapel, schools, inn and public houses, 156 acres of waste land.

(Strutt Correspondence, Derby B. Lib.; "Plan of Cromford Moor Long Sough" (1777) in Bagshawe MSS, 180, Sheffield Central Lib.; R. E. Insurance 4/75060; Bray, Tour into Derbyshire and Yorkshire (2nd edn., 1783), 119; Pilkington, Derbyshire (1789), II 301; Derby Mercury, 27.5.1790; Select Committee on the State of the Children employed in the Manufactory of the U. K., (P. P., 1816, III), 278-83; Glover, Derbyshire (1829), II 325ff.; 1" O. S., 1st edn., LXXXII SW; Tithe Survey of Bonsall, 8/29; Tithe Survey of Cromford, 8/66; Tithe Survey of Matlock, 8/142; Tithe Survey of Wirksworth, 8/239; 1851 Census, Population Tables; G. Unwin, Samuel Oldknow and the Arkwrights (1924); R. S. Fitton and A. P. Wadsworth. The Strutts and the Arkwrights (1959); Swindin, "The Arkwright Cotton Mills at Cromford" Jnl. Ind. Archaeol, II (1965); Charlton et al., "Arkwright and the Mills at Cromford" Dbys. Archaeol. Soc. (1971).)

34. DISLEY, Cheshire. SJ 981854.

Mill Proprietors: 1790: Samuel Oldknow establishes Waterside Mill for finishing processes in conjunction with Mellor. 1801: Norton and Company. 1802: Patterson and Company. 1803 to 1805: Messenger and Company. 1806: James Heald. 1824: Moseley and Howard enter a tenancy under Heald. The mill converted from printing to spinning. 1840: Archibald Vickers,

Housing: Moseley and Howard housed "a part of" their workforce in 1833. In 1840 the cottage property included three cottages adjacent to the road from Disley village. The remaining cottages stood in the mill grounds.

Tithe Survey evidence of the mill estate: Archibald Vickers.

	a.	r.	p.
Leasehold under George Heald:	80	3	18

Industrial (1a 2r 3p; 2%): Cotton Factory.

Housing (2a 3r 15p; 4%): 20 cottages at the mill and three near the school. Average site area = 598 sq. yds.

Private Occupation (1a 0r 25p; 1%): Waterside House.

Agricultural land etc. (71a 2r 17p; 89%).

Other (3a 2r 38p; 5%): school, unspecified building, roads, river.

(Disley Land Tax Returns. Cheshire R. O., QDV 2/142; "Answers of Manufacturers to Queries" (P. P. 1834, XX); Pigot, Directory of Derbyshire (1834); G Unwin, Samuel Oldknow and the Arkwrights (1924), 128; Tithe Survey of Disley, 5/144.)

35. DOLPHINHOLME, Lancashire. SD 518534

Mill Proprietors: c.1787: Edmundson, Addison and Satterthwaite commence worsted spinning at Dolphinholme. 1795: Thomas Hinde, Son and Company purchase the lease of the mills. Thomas Derham later taken on as manager. 1822: Hinde and Derham. 1840: Mill sold to Swainsons. 1850: Cooke and Margerison convert the mill to cotton manufacture.

Housing: Hinde, Son and Company built cottages near the mill in the mid-1790s immediately after commencing, and the Corless cottages very shortly afterwards. The cottages owned or controlled by the company in 1840 included four adjacent to the mill together with the house built for Derham as manager, 68 cottages to the north of the river, and the 34 Corless Cottages.

Tithe Survey evidence of the mill estate: Hinde and Derham

	<u>a.</u>	<u>r.</u>	<u>p.</u>
Freehold (including cottages listed as property of Jane Hinde) (93%):	91	0	11
Leasehold under the Duke of Hamilton and Brandon (7%):	6	3	24
	97	3	35

Industrial (1a 3r 7p; 2%): Dolphinholme mills, charcoal shade, mill race.

Housing (1a 1r 7p; 1%): Four cottages at mill, 68 north of the river, and 34 known as Corless Cottages. Average site area = 59 sq yds.

Private occupation (2r 32p; 1%): Hinde's house, Derham's house, stables, coach house.

Agricultural land etc. (93a 1r 18p; 95%).

Other (3r 11p; 1%): road, river.

(Universal British Directory (1794); "An Account of the Cotton and Woollen Mills and Factories in the U. K." (H. of L. Sess. Pprs., 1819); Tithe Survey of Dolphinholme, 18/103; Tithe Survey of Ellel, 18/115; P. P. Hall, "Dolphinholme" Trans. Fylde Hist. Soc., III (1969).)

36. EDALE, Derbyshire.

SK 137855.

Mill Proprietors: 1791: Nicholas Cresswell and Company commence cotton spinning. 1795: Robert Blackwall, Nicholas Cresswell, Joshua Fletcher and James Harrison. 1803: Robert Blackwall. Between 1821 and 1831: Mill ceases production, leading to a fall in the population of Edale from 435 to 333 persons. Before 1841; a thread lace manufactory commences. 1841: Lorenzo Christie.

Housing: Eight cottages owned in 1841.

Tithe Survey evidence of the mill estate: Lorenzo Christie:

	a.	r.	p.
Freehold:	84	0	23

Industrial (4a 0r 0p; 4%): Mill and reservoirs.

Housing (1r 20p): Six cottages near the mill, two at the roadside nearby. Average site area = 227 sq. yds.

Private Occupation (2r 23p; 1%): House.

Agricultural land etc. (78a 3r 2p; 94%).

Other (38p) Building, road etc.

(R. E. Insurance, 29/143301 (1795); Sun C.S. 8/638577 (1795); "An Account of the Cotton and Woollen Mills and Factories in the U. K." (H. of L. Sess. Pprs., 1819): Tithe Survey of Edale, 8/81; 1851 Census, Population Tables; S. D. Chapman, The Early Factory Masters (1965), 59.)

37. EYAM, Derbyshire. SK 221765.

Mill Proprietors: 1807: Samuel Greg and Company. Little business then being done, "from the low state of the cotton trade." 1842: J. and J. Cooper.

Housing: One cottage near the factory in 1842. The larger factory building has since the date of the Tithe Survey been converted into a terrace of seven cottages, abutting three others since formed of the old homestead.

Tithe Survey evidence of the mill estate. J. and J. Cooper.

	a.	r.	p.
Freehold:	8	1	4

Industrial (12p; 1%): Old Factory, occupied by William Bramwell; Factory, occupied by Isabella Barton.

Housing (15p; 1%): Cottage near factory. Site area = 242 sq. yds. Small additional garden.

Private occupation (8p; 1%): house and garden at the factory.

Agricultural land etc. (7a 2r 29p; 93%).

Other (1r 20p; 5%): Mine Hillocks.

("An Account of the Cotton and Woollen Mills and Factories in the U. K." (H. of L. Sess. Pprs., 1819); G Lazenby, "Social and Economic History of Styal" M.A., Manchester, (1949); F. Nixon, Industrial Archaeology of Derbyshire (1969), 234; Tithe Survey of Eyam, 8/88.)

38. FISKERTON, Nottinghamshire. SK 741516.

Mill Proprietors: Before 1792: Benjamin Chambers establishes a cotton mill on the river Greete. Chambers was still proprietor in 1813. The mill subsequently reverted to corn milling. 1847: John Marriott.

Housing: seven cottages in 1847.

Tithe Survey evidence of the mill estate: John Marriott:

	a.	r.	p.
Leasehold under John Chambers or Chambers' Devises	42	0	27

Industrial (7a Or 1p; 17%): Mill and reservoirs.

Housing (3r 13p; 2%): two cottages at the mill, two at the entrance to the mill grounds and three in a field. Average site area = 576 sq. yds.

Private Occupation (25p): House etc.

Agricultural land etc. (32a Or 32p; 76%).

Other (1a 3r 36p; 5%): river and osier beds.

(R.E. Insurance 24/127330 (1792); "An Account of the Cotton and Woollen Mills and Factories in the U. K." (H. of L. Sess. Pprs. 1819); Lowe, General View of the Agriculture of Nottinghamshire (2nd edn., 1813); Tithe Survey of Fiskerton 26/47; Tithe Survey of Rolleston, 26/102.)

39. HABERGHAM EAVES, Lancashire. SD 804329.

Mill Proprietors: 1793: Peel, Yates and Company establish a branch warehouse and cotton mill at Lower House. 1812: Lower House sold. 1824: John Dugdale and Brothers, cotton spinners, manufacturers and calico printers. 1846: John Dugdale and Brothers.

Housing: In 1846 Dugdales owned 107 cottages in Habergham Eaves and Padiham.

Tithe Survey evidence of the mill estate: John Dugdale and Brothers:

	a.	r.	p.
Freehold (76%):	241	3	4
Leasehold under J. P. K. Shuttleworth (2%):	7	1	12
Leasehold under Janet Shuttleworth (21%):	66	1	8
	314	3	24

Industrial (9a 3r 11p; 3%): Lower house factory and reservoirs.

Housing (1a 0r 19p): The numbers of cottages in 1846 estimated to be: 27 at the mill, 20 in small roadside groups near the mill, 10 in Double Row, Padiham, 23 in Alma Street, Padiham, 20 in St. Giles Street, Padiham, and seven others. Average site area = 51 sq. yds.

Private occupation: none.

Agricultural land etc. (302a 0r 35p; 26%).

Other (1a 2r 39p; 1%): Lime kiln, warehouse, smithy, road and waste.

(Sun Insurance C.S. 7/640034 (1796); Baines, Lancashire I (1824), 572; Tithe Survey of Habergham Eaves, 18/140; Tithe Survey of Padiham, 18/238; S. D. Chapman, "The Peels in the Early English Cotton Industry" Business History, XI (1967).)

40. HALTON, Lancashire. SD 504646.

Mill Proprietors: 1803: Thomas Robinson and Company at Halton Cotton Mill. 1824: Thomas Robinson, cotton spinner. By 1841 the mill property was merged in the manor of Halton

under John Swainson. Cotton spinning appears to have been extended to Forse Bank Mill, a former iron forge and bobbin mill. 1841: John Swainson.

Housing: 12 cottages in 1841.

Tithe Survey evidence of the mill estate: John Swainson:

	a.	r.	p.
Freehold:	97	3	37

Industrial (3a 0r 32p; 3%); Halton cotton mill, with a small reservoir taken from the tailrace of Forse Bank mill; Forse Bank cotton mill; furnace etc., leased to Rossall and Charnley. Housing (1a 1r 30p; 1%): five cottages at the mill and seven in Halton. Average site area = 146 sq. yds. One acre of gardens in addition.

Private occupation (2a 1r 38p; 3%): Mansion etc.

Agricultural land etc. (89a 3r 31p; 92%).

Other (3r 26p; 1%): Sheds, pond and road.

("An Account of the Cotton and Woollen Mills and Factories of the U. K." (H. of L. Sess. Pprs., 1819): Baines, Lancashire II (1825), 661; Tithe Survey of Halton 18/147; O. Ashmore, Industrial Archaeology of Lancashire (1969) 270.)

41. HAYFIELD, Derbyshire. SK 020869.

Mill Proprietors: 1851: Thomas Brown, bleachworks. This establishment probably dates from the great increase in spinning and manufacturing which occurred in Hayfield in the 1820s.

Housing: one cottage at the works in 1851.

Tithe Survey evidence of the mill estate: Thomas Brown.

	a.	r.	p.
Leasehold under Peter Booth:	10	1	27

Industrial (1r 21p; 4%): Bleachworks, etc.

Housing (8p): Cottage at the mill. Site area = 242 sq. yds.

Private occupation: None.

Agricultural land etc. (9a 3r 38p; 96%).

Other: None.

(Pigot, Directory (1828): Tithe Survey of Hayfield, 8/101.)

42. HAYFIELD, Derbyshire. SK 038863.

Mill Proprietors: 1825: Aaron Rangeley, cotton spinner.

1829: Aaron Rangely of Phoaside Mill.

Housing: Four cottages in Hayfield in 1851.

Tithe Survey evidence of the mill estate: Aaron Rangeley:

	a.	r.	p.
Freehold	5	1	20

Industrial (2r 23p; 12%): Phoaside Cotton Mills and reservoir.

Housing (24p; 3%): Four cottages in Hayfield; average site area = 76 sq. yds. One small garden in addition.

Private occupation: None.

Agricultural land etc. (4a 2r 13p; 85%).

Other: None.

(Baines, Lancashire II (1825), 734; Glover, Derbyshire (1829) unpublished MS of vol. III in Derby B. Lib.; Tithe Survey of Hayfield, 8/101.)

43. HAYFIELD, Derbyshire, SK 032882.

Mill Proprietors: 1825: Samuel Ridgway and Company, cotton spinners and manufacturers, also Aaron Shepley, cotton spinner, at Clough Mills.. 1828: Samuel Ridgway and Company at Clough Mills (Aaron Shipley at Little Clough; but Aaron Rangeley also

listed at Clough Mill.) 1829 and 1834: Samuel Ridgway and Company at Clough Mills. 1851: Hibbert and Alcock, tenants under J. and T. Slack of Bank Vale Paper Mill.

Housing: Twenty cottages in 1851.

Tithe Survey evidence of the mill estate: Hibbert and Alcock:

	a.	r.	p.
Leasehold under J. and T. Slack:	11	3	9

Industrial (1a Or 17p; 9%): Clough Mill and reservoir.

Housing (3r 1p; 6%): sixteen cottages at the mill, likely to have been included in the mill tenancy. Four cottages in Little Hayfield. Average site area = 175 sq. yds. A small garden in addition.

Private Occupation : None.

Agricultural land etc. (9a 2r 16p; 81%).

Other (1r 15p; 3%): Pond and bank.

(Baines, Lancashire II(1825), 734; Pigot, Directory (1828), Glover, Derbyshire, (1829), unpublished MS of Vol III, Derby B. Lib.; Pigot, Directory of Cheshire (1834); Tithe Survey of Hayfield, 8/101.)

44. HINDLEY, Lancashire. SD 620044.

Mill Proprietors: 1825: Richard Pennington, cotton manufacturer. 1840: Richard Pennington.

Housing: 43 cottages in 1840.

Tithe Survey evidence of the mill estate: Richard Pennington:

	a.	r.	p.
Leasehold under John Pennington:	7	1	21

Industrial (3a 3r 13p; 52%): Mill, reservoir, warehouse, stables, brickfield etc.

Housing (3r 37p; 13%): 28 cottages in the mill grounds, fifteen cottages in Lowe Mill Lane. Average site area = 96 sq. yds.

Private occupation (1a Or 14p; 15%): Hindley Lodge.

Agricultural land etc. (1a 1r 37p; 20%).

Other: None.

Housing: Five cottages stood in the mill grounds. The remaining thirteen stood on Tallentine's farm, about one mile west of the mill.

Tithe Survey evidence of the mill estate: Thomas Livesey:

	a.	r.	p..
Freehold:	12	2	5

Industrial (2a 2r 2p; 20%): Factory and reservoir.

Housing (1a 3r 1p. 14%): 18 cottages. Average site area = 331 sq. yds. Small garden in addition.

Private occupation (1r 20p; 3%): House etc.

Agricultural land etc. (7a 3r 22p; 63%).

Other: None.

(Baines, Lancashire II (1825), 649; Baines, Cotton Manufactures (1835), 386; Tithe Survey of Hoghton, 18/166; O. Ashmore, Industrial Archaeology of Lancashire (1969), 45-6, 274.)

47. HOGHTON, Lancashire. SD 627272

Mill Proprietors. 1825: Richard Baxter, cotton spinner.
1846: Cornelius Walmsley, printworks

Housing: ten cottages at the mill in 1846.

Tithe Survey evidence of the mill estate: Cornelius Walmsley:

	a.	r.	p.
Leasehold under Sir Henry Bold Hoghton	12	3	35

Industrial (4a 3r 0p; 37%): Lower Mill Printworks, reservoirs.

Housing (3r 6p; 6%): the cottages at the mill. Average site area = 381 sq. yds.

Private occupation (1a 3r 18p; 14%): House and grounds.

Agricultural land etc. (5a 2r 11p; 43%).

Other: None.

(Baines, Lancashire II (1825), 648; Tithe Survey of Hoghton, 18/166.)

(Baines, Lancashire II (1825), 715; Tithe Survey of Hindley 18/165.)

45. HOGHTON, Lancashire. SD 628265.

Mill Proprietors: 1819: Hoghton Higher Mill in use as a carding and spinning mill. 1846: Mill disused. Production subsequently recommenced.

Housing: The mill property included 15 cottages in 1846. Three cottages were built into the east end of the mill, a second group stood to the rear of the mill and a third group formed a terrace with cellar dwellings adjacent to the mill approach road.

Tithe Survey evidence of the mill estate. (Void Property).

	a.	r.	p.
Untenanted estate forming part of the freehold of Sir Henry Bold Hoghton:	1	1	8

Industrial (1a Or 16; 85%): Hoghton Higher Mill.

Housing (32p; 15%): Fifteen cottages, excluding cellars.

Average site area = 65 sq. yds.

Private Occupation: None

Agricultural land etc.: None.

Other: None.

(Tithe Survey of Hoghton, 18/166; O. Ashmore, Industrial Archaeology of Lancashire (1969), 45-6, 274.)

46. HOGHTON, Lancashire. SD 627629.

Mill Proprietors: 1825: James Livesay, cotton spinner and manufacturer. 1846: Thomas Livesay.

48. HOLLINGWORTH, Cheshire. SK 006962

Mill Proprietors: 1794: Thomas Cardwell of Hollingworth Mill commences spinning at Arrowcroft. 1803: Mr. Ousey, tenant. 1805: Mill idle. 1825: James Sidebottom Before 1833: The mill, converted to steam, passes from Sidebottom's executors to John Hollingworth. 1840: Thomas Rhodes, tenant under John Hollingworth. c.1850: mill disused.

Housing: Hollingworth stated in 1833 that his workpeople lived "principally in houses belonging to their employer," but the Tithe Survey records no cottages in Hollingworth's ownership in 1840.

Tithe Survey evidence of the mill estate: Thomas Rhodes.

	a.	r.	p.
Leasehold under John Hollingworth.	1	1	10
Industrial (1a 1r 10): Cotton factory, reservoirs, gashouse, buildings, etc.			
Housing: None.			
Private Occupation: None.			
Agricultural land etc.: None.			
Other: None.			

(Hollingworth Land Tax, Cheshire R. O., QDV 2/217.; Baines, Lancashire II (1825), 735; "Answers of manufacturers to queries" (P. P. 1834, XX); Tithe Survey of Hollingworth, 5/204; 6" O. S., 1st edn.)

49. HOLLINGWORTH Cheshire. SK 011967.

Mill Proprietors: 1789: Thomas Cardwell establishes cotton mills. 1794 to 1802: Mr. Reynolds, tenant under Cardwell. 1803: W. Dalton. 1810: James Sidebottom, tenant under Cardwell. 1815: James Sidebottom acquires the freehold. c.1830: James Sidebottom's death; mill property passes to Ralph Sidebottom.

Housing: New cottages appear to have been built about 1803 at the time the mills came into Dalton's hands. New houses

belonging to Mrs Dalton were then assessed for Land Tax. These are perhaps the cottages on the Hollingworth to Tintwistle road. In 1847 the mill property included 12 cottages standing in two terraces at the roadside south of the mills and a group including "coffee row" north of the mill near Woolley Mill.

Tithe Survey evidence of the mill estate: Ralph Sidebottom.

	a.	r.	p.
Freehold	10	0	33

Industrial (4a 1r 1p; 42%): Factory, reservoir, yard, new reservoir.

Housing. (1r 35p; 35%): 12 cottages near the factory, four in the fold. Average site area = 100 sq. yds. Small gardens in addition.

Private Occupation (1a 0r 0p; 10%): House etc.

Agricultural land etc (4a 1r 37p; 44%):

Other: none.

(Hollingworth Land Tax, Cheshire R. O., QDV 2/217; "Answers of Manufacturers to Queries" (P. P. 1834, XX); Pigot, Directory (1834): Tithe Survey of Hollingworth, 5/204; Tithe Survey of Tintwistle, 5/397; 6" O. S., 1st edn.)

50. HYDE, Cheshire. SJ 940938.

Mill Proprietors: Before 1803: John Sidebotham builds Gibraltar Mill. 1825: John Sidebotham, gentleman, cotton spinner and manufacturer. 1840: William Sidebotham, under John Sidebotham's executors.

Tithe Survey evidence of the mill estate: William Sidebotham

	a.	r.	p.
Leasehold under John Sidebotham's executors:	2	1	24

Industrial (1a 0r 21p; 47%): Mill, goit etc.

Housing: None.

Private occupation: None

Agricultural land etc. None.

Other (1a 1r 3p; 53%): River, road.

("An Account of the Cotton and Woollen Mills and Factories in the U. K." (H. of L. Sess. Pprs., 1819); Baines, Lancashire II (1825), 734; Tithe Survey of Werneth, 5/418.)

51. LITTON, Derbyshire. SK 159730

Mill Proprietors: c. 1782: Ellis Needham and Company commence cotton spinning. 1792: Partners were Ellis Needham, Thomas Frith, Francis Heywood. 1829: John Baker, John Boden, George Dicken and Ralph Bramwell, cotton spinners. 1848: Henry Newton.

Housing: This firm employed apprentices at least until 1811. The apprentice house is said to have been in the adjacent parish of Brushfield, but no evidence of this appears in the Tithe Survey, and the mill estate includes no land in that parish. The Tithe Survey records no cottages in the mill estate, but four cottages belonging to Newton's landlord, situated at the mill gate, must be regarded as included.

Tithe Survey evidence of the mill estate: Henry Newton.

	a.	r.	p.
Leasehold under Lord Scarsdale	126	3	7

Industrial (5a 1r 6p; 4%): Litton Mill, reservoirs, outbuildings.
Housing (18p): Four cottages at the mill gate. Average site area = 91 sq. yds.

Private occupation (37p): House etc.

Agricultural land etc. (120a 2r 0p; 95%).

Other (2r 26p): School, quarry, watering place, roads.

(R. E. 22/128180 (1792); "An Account of the Cotton and Woollen Mills and Factories in the U.K." (H. of L. Sess. Pprs., 1819); Brown, A Memoir of Robert Blincoe (1828); Glover, Derbyshire (1829), unpublished MS of vol. III, Derby B. Lib.; Tithe Survey of Litton 8/133; S. D. Chapman, The Early Factory Masters (1965), 200.)

52. MACCLESFIELD, Cheshire. SJ 919743.

Mill Proprietors: c. 1790: Joseph Roe commences cotton production at Lower Beech Mill. c. 1800: Brian Hodgson (or Hudson). 1806: Charles Wood. 1818-1834: Richard Wood. 1840: Samuel Bayley.

Housing: A terrace of cottages is marked on the Tithe Survey beside the mill. The precise number is unknown as these were demolished for railway development before the date of the 25" Ordnance Survey plan. There appear to have been about 14 cottages.

Tithe Survey evidence of the mill estate: Samuel Bayley.

	a.	r.	p.
Freehold (25%):	2	0	8
Leasehold under Sir Edward Stacey (75%):	8	0	23
	10	0	31

Industrial (1a 1r 26p; 14%): Factory etc.

Housing (2r 22p; 6%): Terrace estimated to have consisted of fourteen cottages at the mill. Average site area = 43 sq. yds. There was half an acre of garden in addition.

Private occupation (1a 2r 38p; 17%): House and grounds.

Agricultural land etc. (6a 1r 25p; 63%).

Other: none.

(Titherington Land Tax returns, Ches. R. O.; Aikin, Description of the Country around Manchester (1795), 438-9; Pigot, Directory, (1834); Tithe Survey of Titherington (5/398); Bagshawe, Directory (1850); Davies, History of Macclesfield (1961).)

53. MANSFIELD, Nottinghamshire. SK 541610.

Mill Proprietors: 1845: John Bradley and Sons.

Housing: No cottages appear in Bradley's ownership in the Tithe Survey, but there was a terrace called Bradley's Buildings at SK 542611 on the first edition of the 6" Ordnance Survey.

Tithe Survey evidence of the mill estate: John Bradley & Sons.

	a.	r.	p.
Leasehold under the Duke of Portland		3	22

Industrial (3r 8p; 90%): Old mill, picking room, smithy, reservoir etc.

Housing: none.

Private occupation: none.

Agricultural land etc.: none.

Other (14p; 10%): part of river, waste.

(Tithe Survey of Mansfield (26/78).)

54. MANSFIELD, Nottinghamshire. SK 537603.

Mill Proprietors: 1790: Field Mill established. 1833: Levers and Greenhalgh, lace yarn manufacturers. 1845: John Levers and Richard Greenhalgh.

Tithe Survey evidence of the mill estate: Levers and Greenhalgh

	a.	r.	p.
Leasehold under the Duke of Portland	11	1	7

Industrial (4a 1r 0p; 38%): Cotton Mill, reservoir, leat.

Housing: none.

Private occupation (1a 3r 31p; 17%): House and grounds.

Agricultural land etc. (4a 0r 8p; 36%).

Other (1a 0r 8p; 9%): bank, river.

("Answers of Manufacturers to Queries" (P. P. 1834, XX);
Tithe Survey of Mansfield (26/78).)

55. MANSFIELD, Nottinghamshire. SK 545615.

Mill Proprietors: c.1792: Stanton mill established by Charles and George Stanton. By 1816 they employed 200 hands. 1845: Richard Greenhalgh, under the trustees of the late Charles Stanton.

Housing: The Tithe Survey mentions one cottage in 1845.

Tithe Survey evidence of the mill estate: Richard Greenhalgh.

	a.	r.	p.
Leasehold under Late Stanton's Trustees:	23	0	13

Industrial (1a 3r 5p; 8%): Mill, reservoir, counting house, bagroom etc.

Housing (3r 37p; 4%): cottage at the mill with yard and garden. Site area = 212 sq. yds. One acre of gardens in addition.

Private occupation (12a 3r 33p; 56%): Car Bank House and grounds. Agricultural land etc. (7a 0r 28p; 31%).

Other (30p; 1%): river.

("An Account of the Cotton and Woollen Mills and Factories in the U. K." (H. of L. Sess. Pprs., 1819); Select Committee on the State of the Children employed in the Manufactory of the U. K." (P. P. 1816, III) 213, 220; Tithe Survey of Mansfield (26/78).)

56. MELLOR, Derbyshire. SJ 967885.

Mill Proprietors: 1790: Samuel Oldknow commences the construction of his cotton mills at Mellor, the building of which completed in 1793. 1800: Richard Arkwright Junior, Oldknow's major creditor, acquires the property but retains Oldknow as manager. 1828: Oldknow's death. Oldknow's half-brother, John Clayton, becomes manager. 1843: Arkwright's death. Mill property passes to Peter Arkwright.

Housing: Stone Row and Brick Row were completed by 1794. The Canal Buildings (behind the Navigation Inn) were added in 1801. There were other cottages on isolated sites throughout the estate.

Tithe Survey evidence of the mill estate: Peter Arkwright.

	a.	r.	p.
Freehold:	924	3	30

Industrial (21a 3r 0p; 2%): Mellor Cotton Mill and reservoirs; limeworks; canal basin, etc.

Housing: (7a Or 26; 1%): 55 cottages at New Marple; 15 at Canal Buildings; 2 near the canal; 2 near the corn mill; 3 near the lime kilns; 3 near Marple Bridge; 3 single cottages elsewhere. There may also have been cottages in Mellor township. Average site area = 151 sq. yds. About 4 acres of gardens in addition.

Private occupation (1a 1r 8p): Mellor Lodge.

Agricultural land etc. (882a 3r 14p; 95%). Of this, 634a Or 34p was leased to 34 farm tenants.

Other (8a 3r 7p; 1%): Quarry, osier beds, warehouse, corn mill, roads.

(Oldknow Papers, John Rylands Lib., Manchester; Oldknow Papers, Manchester Ref. Lib.; Glover, Derbyshire (1829), unpublished MS of vol. III, Derby B. Lib.; Tithe Survey of Mellor (8/144); Tithe Survey of Marple (5/254); G. Unwin, Samuel Oldknow and the Arkwrights (1924).)

57. MOLD, Flint. SJ 231651

Mill Proprietors: 1789: A water-powered site on the River Allyn advertised. 1795: Atherton, Hodgson and Company, cotton spinners. 1800: Hodgson and Leigh advertise their mill for sale. Early in the nineteenth century this firm passed into the hands of Thomas and William Bateman and Thomas and Samuel Knight, under the name of the Mold Cotton Twist Company. The Knights emerged as sole proprietors, but were financially ruined in the panic of 1829-30. The mills were then taken by Unman and Son. 1837: mills passed to Thomas Trueman. The mills later became part of the Greg empire, and were destroyed by fire in 1866.

Housing. The mill advertisement of 1800 included 16 cottages. These were evidently the cottages at Rhyd y Goleu. They were probably originally lead miners' cottages. Later cottages were built in Maes y Dre in c. 1830.

Tithe Survey evidence of the mill estate: Thomas Trueman.

	a.	r.	p.
Freehold:	32	3	38
Industrial (3a 3r 30p; 12%): Mill, yard, buildings, reservoir.			
Housing (2a 1r 13p; 7%): 16 cottages at Rhyd y Goleu; 8 at Maes y Dre. Average site area = 470 sq yds.			
Private occupation (4a 2r 33p; 15%): Manager's house, garden and field.			
Agricultural land etc. (22a 0r 2p; 68%).			
Other: none.			

(Sun Insurance CS 9/644220 (1795); Baines, Lancashire, II (1825), 226; Tithe Survey of Mold (50/28); Foulkes, "The Cotton Spinning Factories of Flintshire 1777-1866" Flintshire Hist. Soc. Publns., XXI, (1964).)

58. MOSSLEY, Lancashire. SD 982020.

Mill Proprietors: 1825: Charles and Mark Andrew and Charles Kershaw, cotton spinners. 1847: Hugh and William Kershaw, occupants of a mill on the Micklehurst Brook belonging to Giles and Mark Andrew.

Tithe Survey evidence of the mill estate: Hugh and William Kershaw:

	a.	r.	p.
Leasehold under Giles and Mark Andrew:	1	21	
Industrial (1r 1p; 67%): Mill, reservoir, etc.			
Housing: none.			
Private occupation (20p; 33%): House and Garden.			
Agricultural land etc.: none.			
Other: none.			

(Baines, Lancashire, II (1825), 668; Tithe Survey of Tintwistle (5/397).)

59. MOTTRAM, Cheshire. SJ 994935.

Mill Proprietors: Before 1795, Wagstaffe's cotton mill established at Broadbottom; known as "Dry Mill". 1802: Freehold conveyed to John Bayley. William and George Sidebottom were tenants under Bayley. 1825: William and George Sidebottom and Company. 1827: Joseph Sidebottom, manager. 1833: George and Joseph Sidebottom. 1846: Joseph Sidebottom.

Housing: in 1827 Joseph Sidebottom was reported to have built "several ranges of stone cottages for the accomodation of the workpeople employed in his very extensive cotton works, that lie adjacent, in addition to his own mansion." In 1833 G. and J. Sidebottom reported that nearly half of their employees lived in company-owned houses. The cottages were laid out in two groups; one group of four terraces (Well Row, Bottoms Street, Old Street and New Row) stood on the steep ground immediately adjacent to the mill, and were reached from the main road by the same private access. The other three terraces stood on the higher ground on either side of the main Mottram to Charlesworth Road, with a third terrace, King Street, to the north.

Tithe Survey evidence of the mill estate. Joe Sidebottom.

	a.	r.	p.
Freehold:	55	3	39
Industrial (4a Or 3p: 7%): Cotton mills, stables, reservoirs, etc.			
Housing (4a 2r 11p; 8%): 102 cottages. Average site area = 102 sq. yds. Two acres of gardens in addition.			
Private occupation (4a 2r 29p; 8%): Harewood Lodge, outbuildings, kennels, etc.; new manager's house, etc.			
Agricultural land, etc. (42a Or 21p; 75%).			
Other (2r 15p; 1%): Lane, river.			

(Mottram Land Tax, Ches. R. O., QDV 2; Butterworth, History and Description of Stockport (1827); "Answers of Manufacturers to Queries" (P. P. 1834, XX); Pigot, Directory (1834); Tithe Survey of Mottram (5/277).)

60. NETHER LANGWITH, Nottinghamshire. SK 547703.

Mill Proprietors: 1785: A. G. and R. Burden commence cotton spinning at Nether Langwith. 1795: George and Richard Burden. 1814: property conveyed to Hollins and Company and combined with the former worsted spinning mills of W. Toplis and Company, founded in 1785 at Cuckney. 1816: the new firm employed 261 hands at their combined establishments. 1839: Henry and Charles Hollins.

Housing: Three-storey cottages at Nether Langwith, evidently of the back-to-back type, and probably early, survived until recently. The Cuckney enterprise used apprentices in its early years, many being brought from London. Thoroton wrote in 1790 that "they live in cottages, built for the purpose, under the care of superintendants: the boys under one roof and the girls under another." The combined firm owned an estimated 31 cottages in 1839.

Tithe Survey evidence of the mill estate: Henry and Charles Hollins:

	a.	r.	p.
Leasehold under Earl Bathurst	30	2	12
Industrial (6a 3r 30p; 23%): Cuckney and Nether Langwith mills, reservoirs, etc.			
Housing (2a 3r 7p; 9%): 6 cottages at Cuckney mill, estimated 16 cottages at Nether Langwith mill, 9 cottages in Cuckney village. Average site area = 354 sq. yds. Half an acre of gardens in addition.			
Private occupation (1a 0r 2p; 3%): House.			
Agricultural land, etc. (19a 3r 13p; 65%).			
Other: none.			

(Thoroton, History of Nottinghamshire (1790); Sun Insurance CS 5/631405 (1794); CS 9/641202 (1795); "An Account of the Cotton and Woollen Mills and Factories in the U.K." (H. of L. Sess. Pprs., 1819; Select Committee on the State of the Children employed in the Manufactory of the U.K., (P. P. 1816, III); "Answers of Manufacturers to Queries" (P. P. 1834, XX);

Tithe Survey of Cuckney and Nether Langwith (26/37);
 S. Piggott, Hollins - A Study in Industry (1949); D. M.
 Smith, Industrial Archaeology of the East Midlands (1965).)

61. PADIHAM, Lancashire. SD 793338.

Mill Proprietors: 1825: H. and E. Helm, cotton spinners and
 manufacturers. They were still in possession in 1840.

Housing: This firm possessed 19 cottages at their mills or
 elsewhere in Padiham in 1840.

Tithe Survey evidence of the mill estate: H. and E. Helm.

	a.	r.	p.
Freehold (18%):	2	2	34
Leasehold under Janet Shuttleworth (65%):	9	2	4
Leasehold under LeGendre Pierce Starkie (16%):	2	1	22
Leasehold under John Dewhurst and others:			9
	14	2	29

Industrial (2a Or 1p; 14%): Factories and Weaving Shop.

Housing (3r 7p; 5%): 11 cottages at the mills; 8 elsewhere in
 Padiham. Average site area = 202 sq yds.

Private occupation : none.

Agricultural land, etc. (11a 3r 21p; 81%).

Other: none.

(Baines, Lancashire, II (1825), 642; Tithe Survey of Padiham
 (18/238).)

62. PLEASLEY, Derbyshire. SK 516649, 520650.

Mill Proprietors: 1784: Oldknow, Cowpe and Company commence
 cotton spinning. 1802: Hollins, Oldknow, Pearce and Company,
 employing 300 hands. 1829: the partnership dissolved; Hollins,
 Siddon and Company established.

Housing: The workforce in 1802 included 60 female apprentices. In 1816 there were only 40 apprentices. Hollin's Cottages, a long row of two and three storey cottages, were built in 1792 at a total cost of £500.

Tithe Survey evidence of the mill estate: Henry and Sanuel Hollins and Company:

	a.	r.	p.
Freehold (96%):	14	3	8
Leasehold under W. E. Nightingale (4%):		2	16
	15	1	24

Industrial (9a 0r 5p; 59%): Mills and reserviors.

Housing (2r 32p; 5%): ten cottages at the mill. Average site area = 48 sq. yds. Half an acre of gardens in addition.

Private occupation: none.

Agricultural land, etc. (5a 2r 27p; 37%).

Other: none.

("An Account of the Cotton and Woollen Mills and Factories in the U. K." (H. of L. Sess. Pprs., 1819); Select Committee on the State of the Children employed in the Manufactory of the U. K. (P. P. 1816, III) 186-7, 211, 220; Pigot, Directory (1829); Glover, Derbyshire (1829), unpublished MS of vol. III, Derby B. Lib.; Tithe Survey of Pleasley (8/170); G. Unwin, Samuel Oldknow and the Arkwrights (1924); S. Piggott, Hollins - A Study in Industry (1949); F. A. Wells, Hollins and Viyella (1968).)

63. RAINOW, Cheshire. SJ 943764

Mill Proprietors: 1835: Stephen Sheldon, jnr., cotton spinner . 1850: Stephen Sheldon.

Tithe Survey evidence of the mill estate: Stephen Sheldon.

	a.	r.	p.
Leasehold under J Mellor	2	3	18

Industrial (2a 2r 35p; 95%): Factory, reservoir.

Housing: None.

Private occupation: (23p; 5%): House and Yard.

Agricultural Land, etc.: none.

Other: none.

(Pigot, Directory, (1834); Tithe Survey of Rainow (5/335).)

64. ROCESTER, Staffordshire. SK 113392.

Mill Proprietors: 1781: Richard Arkwright commences cotton spinning at the site of former corn and fulling mills. 1783: Mills and land conveyed to Richard Arkwright jnr. 1786: Richard Bridden taken into junior partnership. Bridden was formerly a manager at Bakewell. 1803: Bridden becomes sole proprietor under an agreement to buy out Arkwright's two-thirds share in the property. 1814: Bridden dies, having failed to pay Arkwright. In accordance with his will, the property passes to Trustees, Richard Arkwright and Samuel Simpson refuse to accept the Trust, leaving Bridden's two eldest sons as sole Trustees. For many years the mills were run by Richard Bridden jnr. as sole surviving Trustee and two other sons acting as managers. By 1826 the property was subject to mortgages exceeding £18,000. 1831: an unsuccessful attempt to sell the mills. 1833 and 1837: the mill property sold in three installments to Thomas Houldsworth of Manchester, in whose ownership they remained until his death in 1852. 1848: mills managed by Henry Houldsworth and James Nicholson.

Housing: All but four of the firm's cottages were in the village of Rocester. (i): The terrace of cottages on Lambpits Close at the west extremity of the town, adjacent to the River Churnet, consists of three sections, the centre one of which appears to have been built in the 1790s. Not much later a terrace of five was added to the east of the earliest ones. In 1827 there were said to be 13 dwellings on this site. The Tithe Survey in 1850 shows 20 cottages fronting the road plus one, since demolished, standing to the rear. These 20 were complete by 1841. (ii): The second main group stood on

Orpe's Croft, originally a small homestead at the Cross in Rocester. This contained eight dwellings in 1790, formed out of the farmstead outbuildings. These were demolished and replaced by new cottages. By 1826 there were 23 cottages. By 1841 four additional cottages had been built, known as "Back Row" and "Hole i'th Wall".

Tithe Survey evidence of the mill estate. Thomas Houldsworth.

	a.	r.	p.
Freehold:	137	0	13
Industrial (5a 1r 16p; 4%): Cotton mills, reservoirs, etc.			
Housing (5a 2r 4p; 4%): 46 cottages. Average site area = 140 square yards. There were in addition 4 acres of gardens. Also two workshops in the possession of cottagers.			
Private occupation (3a 2r 39p; 3%): Former partner's house; manager's house.			
Agricultural land, etc. (120a 2r 10p; 88%).			
Other (1a 1r 24p; 1%): Fishponds, paths, river.			

(Rocester Deeds, Staffordshire C. R. O., D 624; Tithe Survey of Rocester, 32/180.)

65. ROYTON, Lancashire. SD 917074.

Mill Proprietors: 1825: William Parr and Company, and Garlick and Buckley. 1847: Seville, Ashworth and Company.

Tithe Survey evidence of the mill estate: Seville, Ashworth & Co.

	a.	r.	p.
Freehold:	1	1	37
Industrial (1a 1r 37p): Union mills. etc.			
Housing: none.			
Private occupation: none.			
Agricultural: none.			
Other: none.			

(Baines, Lancashire, II (1825); Tithe Survey of Royton (18/237).)

66. ROYTON, Lancashire. SD 909070

Mill Proprietors: 1825: Booth Taylor, cotton spinner, at Birchln Lane. 1847: Robert Hambleton.

Tithe Survey evidence of the mill estate: Robert Hambleton:

	a.	r.	p.
Leasehold under Benjamin Whitworth:	8	1	14

Industrial (1r 28p; 5%): Birchln Lee mill and reservoir
Housing: none.

Private occupation (16p; 1%): House and Garden
Agricultural land, etc. (5a 2r 1p; 66%).

Other (2a 1r 9p; 28%): brook, waste, road etc.

(Baines, Lancashire II (1825), 687; Tithe Survey of Royton (18/273).)

67. ROYTON, Lancashire. SD 928079.

Mill Proprietors: 1825: George Travis, cotton spinner and manufacturer. 1847: John Travis and Brothers.

Housing: In 1847 the Travis Brothers owned three terraces of cottages standing in the mill yard, and three other terraces, not included in the Tithe Survey, standing to the south of the road. Three other cottages occupied a small field-corner site at the side of the road leading to Royton.

Tithe Survey evidence of the mill estate: Travis Brothers:

	a.	r.	p.
Freehold (88%):	12	1	31
Leasehold under the Churchwardens of Manchester (12%)	1	2	39
	14	0	30

Industrial (3r 16p; 6%): Luzley Mills

Housing (1a 3r 5p; 13%): 25 cottages in the mill yard, 38 in an adjacent field, 3 at the roadside closer to Royton.

Average site area = 131 sq yds.

Private occupation: none.

Agricultural land, etc. (11a 2r 9p; 81%).

Other: none.

(Baines, Lancashire II (1825), 687; Tithe Survey of Royton, (18/273).)

68. SCORTON, Lancashire. SD 502489.

Mill Proprietors: 1795: Cardwell and Company, cotton spinners, at Scorton and Clevely. 1825: Fishwick, Webster and Sons, cotton spinners and manufacturers. George Fishwick at this time lived in the village of Scorton. 1844: George Fishwick.

Housing: The company-owned cottages occupy old crofts within the village of Scorton. Rear gardens were in some cases laid out in the manner of allotments, rather than in strips corresponding to the cottage frontages.

Tithe Survey evidence of the mill estate: George Fishwick.

	a.	r.	p.
Leasehold under the Duke of Hamilton and Brandon:	134	2	33

Industrial (6a Or 26; 5%): Scorton Factory, warehouse, reservoirs, etc.

Housing: (2a 2r 37p; 2%): 37 cottages and gardens in Scorton. Average site area = 106 sq. yds.

Private occupation (3r 10p; 1%): Springfield House and gardens. Agricultural land, etc. (121a 1r 31p; 90%):

Other (3a 2r 9p; 3%): Methodist Chapel, School, lane, river.

(Sun Insurance, CS 10/641162 (1795); "An Account of the Cotton and Worsted Mills and Factories in the U. K." (H. of L. Sess. Pprs, 1919); Baines, Lancashire II(1825), 626; Tithe Survey of Cabus and Nether Wyresdale (18/60); Fishwick Memorial, Scorton Methodist Chapel.)

69. SHUTTLEWORTH, Lancashire. SD798175

Mill Proprietors: 1840: Edmund Seddon at Shuttleworth Mill.

Housing: 4 cottages in 1840.

Tithe Survey evidence of the mill estate: Edmund Seddon.

	a.	r.	p.
Leasehold under the Earl of Derby:	2	2	34
Industrial (2a 1r 24; 88%): Cotton mill, reservoir etc.			
Housing (1r 10p; 12%): Four cottages in the mill yard. Average site area = 378 sq. yds.			
Private occupation: none.			
Agricultural land, etc.: none.			
Other: none.			

(Tithe Survey of Walmersley cum Shuttleworth, (18/320, Part II).)

70. SHUTTLEWORTH, Lancashire, SD 824179.

Mill Proprietors: 1840: James, George, Richard and John Ramsbottom.

Tithe Survey evidence of the mill estate: Richard Ramsbottom and others:

	a.	r.	p.
Leasehold under the Earl of Derby (2%):			33
Leasehold under E., W. and A. Seddon (Lessees under the Earl of Derby) (98%):	10	2	0
	10	2	33

Industrial (2r 5p; 5%): Cotton mill and reservoirs.
Housing: none.
Private occupation (6p): Homestead.
Agricultural land, etc. (10a 0r 22p; 94%).
Other: none.

(Tithe Survey of Walmersley and Shuttleworth (18/320, Part II).)

71. SHUTTLEWORTH, Lancashire. SD 811183

Mill Proprietors: 1825: Askew and Dewhurst, cotton spinners and manufacturers. 1840: Richard Haworth.

Housing: Haworth's extensive leasehold property included only three cottages.

Tithe Survey evidence of the mill estate: Richard Haworth:

	a.	r.	p.
Leasehold under the Earl of Derby (89%):	204	0	0
Leasehold under John Rostron (lessee under the Earl of Derby) (11%):	34	2	19
	308	2	19

Industrial (1a 0r 10p) Cotton mill, reservoirs.

Housing (10p): Two cottages in the lane to Four Acres; one at Ridgeway, Walmersley. Average site area = 101 sq. yds.

Private occupation: none.

Agricultural land, etc. (304a 3r 31p; 99%).

Other (2a 2r 8p; 1%): Quarry, road.

(Baines, Lancashire II (1825), 673; Tithe Survey of Walmersley and Shuttleworth (18/320).)

72. SHUTTLEWORTH, Lancashire. SD 823165

Mill proprietors: 1840: Henry Ramsbottom and George Pickup.

Housing: Probably four cottages stood in the mill yard in 1840. One may have served as a toll house on the adjacent Cheesden Toll Bar.

Tithe Survey evidence of the mill estate: Ramsbottom and Pickup:

	a.	r.	p.
Probably all leasehold under Richard and Alice Haworth (lessees under the Earl of Derby):	3	0	10
Industrial (2a 3r 12p; 93%): Cotton and Woollen mill, reservoir etc.			
Housing (8p; 1%): Four cottages in the mill yard; average site area = 60 sq. yds.			
Private occupation: none.			
Agricultural land, etc.: none.			
Other (30p; 6%): waste.			

(Tithe Survey of Walmersley cum Shuttleworth (18/320).)

73. SHUTTLEWORTH, Lancashire. SD 803176.

Mill proprietors: 1840: John Holt. Soon after this date this mill changed from cotton to paper manufacture.

Tithe Survey evidence of the mill estate. John Holt:

	a.	r.	p.
Leasehold under the Earl of Derby:	18	0	8

Industrial (1a Or 21p; 6%): Cotton mill, reservoir, etc.

Housing: none.

Private occupation: none.

Agricultural land, etc. (16a 3r 29p; 94%).

Other: none.

(Tithe Survey of Walmersley cum Shuttleworth (18/320, Part II).)

74. SHUTTLEWORTH, Lancashire. SD 827174

Mill proprietors: 1840: John Haworth at Four Acre Cotton Mill.

Tithe Survey evidence of the mill estate: John Haworth:

	a.	r.	p.
Leasehold under George Ashworth (Lessee under the Earl of Derby):	1	1	16

Industrial (1a 1r 16p): Cotton mill, reservoir, etc.

Housing: none.

Private occupation: none.

Agricultural land, etc.: none.

Other: none

(Tithe Survey of Walmersley cum Shuttleworth (18/320, Part II).)

75. SHUTTLEWORTH, Lancashire. SD 805177

Mill Proprietors: 1840: John Wild. Wild's premises also served as a cotton twine mill and as a bleachworks.

Tithe Survey evidence of the mill estate: John Wild:

	a.	r.	p.
Share in the freehold of the Riding Head Mill Pond (58%):	4	3	2
Leasehold under the Earl of Derby (42%):	3	1	34
	8	0	36

Industrial (4a 3r 2p; 66%): Cotton mill and reservoirs.

Housing: none.

Private occupation (26p; 2%): Homestead and garden

Agricultural land, etc. (1a 3r 14p; 22%).

Other (3r 3p; 9%) Road, waste.

(Tithe Survey of Walmersley cum Shuttleworth (18/320 Part II); Ashmore, Industrial Archaeology of Lancashire (1969), 67-9, 302.)

76. SHUTTLEWORTH, Lancashire. SD 797175

Mill proprietors: 1825: Thomas Wild. 1840: Thomas Wild.

Housing: There were two cottages in the mill yard in 1840.

Tithe Survey evidence of the mill estate: Thomas Wild.

	a.	r.	p.
Share in the freehold of the Riding Head Mill Pond (53%):	4	3	2
Leasehold under the Earl of Derby (47%):	4	0	39
	9	0	1

Industrial (6a 3r 2p; 76%): Shuttleworth Lower Mill, reservoir.

Hosing (8p; 1%): Two cottages in the mill yard. Average site area = 121 sq. yds.

Private occupation: none.

Agricultural land, etc. (2a 0r 13p; 23%).

Other: none.

(Baines, Lancashire II (1825), 673; Tithe Survey of Walmersley cum Shuttleworth (18/320, Part II).)

77. SOUTHWELL, Nottinghamshire. SK 696556.

Mill Proprietors: 1786: Markland, Evison and Little commence cotton spinning at Maythorn Mill. 1795: Thomas Caunt, Samuel Wise, Benjamin Hornbuckle and Eliah Fellows, cotton spinners. By 1803 this mill may have converted to silk throwing. 1840: Bean and Johnson.

Housing: Three cottages were included in Caunt and Company's insurance policy in 1795. These were evidently the three standing closest to the river. By c. 1840 there were 8 cottages in a terrace fronting the approach road to the mill, and the master's house and 6 other cottages in a terrace at right angles to these. Two other cottages were attached to the end of the mill.

Tithe Survey evidence of the mill estate: Bean and Johnson.

	a.	r.	p.
Freehold	9	2	12

Industrial (4a 0r 3p; 42%): Silk mill, gasworks, reservoir.

Housing (1a 1r 5p; 13%): 16 cottages at the mill. Average site area = 388 sq. yds.

Private occupation (8p; 1%): Manager's house.

Agricultural land, etc. (4a or 14; 43%).

Other (22p; 1%): road.

(Sun Insurance, CS 10/646166; "An Account of the Cotton and Woollen mills and Factories in the U. K." (H. of L. Sess. Pprs. 1819): Tithe Survey of Southwell (26/112); S. D. Chapman, "Fixed Capital Formation in the British Cotton Industry" Econ. H. R., ii ser., XXIII (1970); D. M. Smith, Industrial Archaeology of the East Midlands (1965), 60-1.)

78. STYAL, Cheshire. SJ 834829.

Mill proprietors: 1782: Samuel Greg commences construction of Styal cotton mill on land leased from the Earl of Stamford. 1784: production commences. 1796: Peter Ewart taken in to junior partnership. 1815: Partnership with Ewart dissolved.

Samuel Greg continues as sole proprietor. 1819: Robert Hyde Greg taken into junior partnership. 1823: John Greg taken into junior partnership. 1826: Samuel Greg jnr. taken into junior partnership. 1836: Death of Samuel Greg. Reorganisation of the Company. The younger sons moved to the management of mills elsewhere in Lancashire and Cheshire. Robert Hyde Greg assumes sole control at Styal. 1875: Death of R. H. Greg.

Housing. See Chapter 2, Part 5.

Tithe Survey evidence of the mill estate. R. H. Greg,

	a.	r.	p.
Freehold (28%):	70	3	29
Leasehold under the Earl of Stamford (70%):	175	3	11
Leasehold under T. J. Trafford (lessee under the Earl of Stamford) (2%):	4	2	1
Leasehold under J. Barratt (lessee under the Earl of Stamford)			28
	251	1	29

Industrial (7a 2r 27p; 3%): Quarry Bank mill, reservoir, etc.
 Housing (13a 2r 28p; 5%): Gate lodge and three other cottages in the grounds of Norcliffe Hall; 7 cottages on Shaw's Farm; 40 cottages on the Oak Farm; 16 other cottages, including the Farm Fold. Average site area = 213 sq. yds. 9½ acres of gardens in addition. Apprentice house and playground.

Private occupation (40a 1r 1p; 16%): Norcliffe Hall, private grounds and park; Quarry Bank House and gardens; manager's house and garden.

Agricultural land, etc. (181a 1r 0p; 72%): including 152 acres leased to seven farm tenants, and 15 acres of timber.

Other (8a 1r 13p; 3%): Unitarian minister's house; chapel and yard; laundry; playgrounds; osier beds; roads and waste.

(Greg Papers, Manchester Ref. Lib.; Stamford Leases, John Rylands Lib.; Tithe Survey of Pownall Fee (5/327).)

79. TANSLEY, Derbyshire. SK 319599

Mill proprietors: Before 1789, Samuel Unwin built a cotton mill at Tansley. 1803: Unwin and Company, proprietors of two mills at Tansley. 1846: John Hackett and Sons, tenants under Heathcote Unwin.

Housing. A section at the north end of Tansley lower mill may have served as an apprentice house. In 1846, Heathcote Unwin's property in Tansley included seventeen cottages which were probably, but not certainly, used in connection with the mill.

Tithe Survey evidence of the mill estate: John Hackett and Sons.

	a.	r.	p.
Leasehold under Heathcote Unwin	6	1	11

Industrial (3a 3r 14p; 61%): Tansley upper and lower mills and reservoirs.

Housing (1r 0p; 4%): possible apprentice house at lower mill.

Cottages in Tansley not recorded as used by Hacketts.

Private occupation: none.

Agricultural land, etc. (1a 0r 5p; 16%).

Other (1a 0r 32p; 19%): road, waste.

(Pilkington, Derbyshire (1789) II, 322; "An Account of the Cotton and Woollen Mills and Factories in the U. K." (H. of L. Sess. Pprs., 1819); Tithe Survey of Tansley (8/206).)

80. TINTWISTLE, Cheshire. SK 072991.

Mill proprietors: Before 1813, cotton spinning commenced at Crowden Brook cotton mill. The mill was also at work in 1827. 1834: Hadfield and Wilkinson, cotton spinners. Joseph Wilkinson was the managing partner. 1847: William Brown.

Tithe Survey evidence of the mill estate: William Brown

	a.	r.	p.
Freehold:	3	17	

Industrial (3r 17p): Crowden Brook Mill.

Housing: none.

Private Occupation: none.

Agricultural land, etc.: none.

Other: none.

(Butterworth, History and Directory of Stockport (1827);

Pigot, Directory (1834); "Answers of Manufacturers to Queries" (P. P. 1834, XX); Tithe Survey of Tintwistle (5/397).)

81. TINTWISTLE, Cheshire. SK 029972; SK 024971.

Mill proprietors: 1799: Bottoms Lodge mill constructed.

1824: John Turner, cotton spinner. 1834: John Winterbottom. By 1847, Winterbottom also leased a small mill, Rhodes Mill, under James Rhodes.

Housing: In 1847, Winterbottom owned 12 cottages in Tintwistle. Cottages at Rhodes mill are recorded as owned by Rhodes.

Tithe Survey evidence of the mill estate: John Winterbottom.

	a.	r.	p.
Freehold: (75%):	17	3	14
Leasehold under James Rhodes (25%):	5	3	21
	23	2	35

Industrial (3a 3r 22p; 16%): Bottoms Lodge mill and leat, Rhodes Mill and leat.

Housing (2r 36p; 3%): Twelve cottages in Tintwistle. Average site area = 83 sq. yds. Half an acre of gardens in addition. Private occupation: none.

Agricultural land, etc. (18a 3r 3p; 80%).

Other (34p. 1%): Old stone quarry.

(Baines, Lancashire II (1825), 735; Pigot, Directory (1834); "Answers of Manufacturers to Queries" (P. P. 1834, XX); Tithe Survey of Tintwistle (5/397).)

82. TINTWISTLE, Cheshire. SK 037978.

Mill proprietors: 1834: Josiah Cheetham. 1847: Alexander Steele.

Housing: in 1847 a group of 30 cottages stood in the mill yard.

Tithe Survey evidence of the mill estate: Alexander Steele.

	a.	r.	p.
Freehold (24%):	4	2	38
Leasehold under George Hyde (30%):	5	3	39
Leasehold under the Trustees of the Independant Chapel (47%):	9	1	21
	20	0	18

Industrial (3a 1r 38p; 17%): Vale House Mill, leat etc.

Housing (2a 0r 20p; 11%): 30 cottages at the mill. Average site area = 242 sq. yds. Half an acre of gardens in addition.

Private occupation (1r 0p; 1%): House and garden.

Agricultural land, etc. (14a 1r 0p; 71%).

Other: none.

(Pigot, Directory (1834); Tithe Survey of Tintwistle (5/397).)

83. TISSINGTON, Derbyshire. SK 184504.

Mill proprietors: 1784: John Cooper and Company establish Woodeaves mill. 1847: J. D. Cooper.

Housing: Four short terraces of cottages stood at the rear of the mill.

Tithe Survey evidence of the mill estate: John Douglas Cooper.

	a.	r.	p.
Leasehold under Jedediah Strutt (68%):	6	2	3
Tenure of leat unclear (32%):	3	0	0
	9	2	3

Industrial (4a 1r 22p; 46%): Cotton mill, yard, leat.

Housing (2a 1r 34p; 26%): 13 cottages in the mill yard. Average site area = 163 sq. yds. Two acres of gardens in addition.

Private occupation: none.

Agricultural land, etc. (2a 2r 27p; 28%).

Other: none.

(Sun Insurance, OS 377/581502 (1791); Tithe Survey of Tintwistle (8/213).)

84. TOTTINGTON, Lancashire. SD 786172.

Mill Proprietors: 1843: Richard Radcliffe.

Housing: One cottage in the mill yard in 1843.

Tithe Survey evidence of the mill estate: Richard Radcliffe:

	a.	r.	p.
Leasehold under Rachel Rostron:		2	31

Industrial (2r 30p; 99%): Cotton waste mill, reservoir.

Housing (1p; 1%): cottage. 30 sq. yds.

Private occupation: none.

Other: none.

(Tithe Survey of Tottington Lower End (18/308).)

85. TOTTINGTON, Lancashire. SD 769139.

Mill proprietors: 1843: Edward Fletcher

Housing: Six cottages in the mill grounds in 1843.

Tithe Survey evidence of the mill estate: Edward Fletcher.

	a.	r.	p.
Leasehold under Thomas Potter	2	0	35.

Industrial (2a 0r 5p; 92%): Fearn's Wood cotton mill, reservoir.

Housing (10p; 3%): six cottages at the mill. Average site area = 50 sq. yds.

Private Occupation: none.

Agricultural land, etc.: none.

Other (20p; 6%): waste.

(Tithe Survey of Tottington Lower End (18/308).)

86. TUTBURY, Staffordshire. SK 213293.

Mill proprietors: 1780: Bott and Company, silk throwsters and owners of Tutbury corn mill obtain a lease of the land between their leat and the river for the purpose of erecting a cotton and worsted mill. 1781: mill constructed by John Bott, Charles Bott, William Lucas, Francis Greasley and Thomas Webb. Lucas dies shortly after. J. Bott becomes leading partner. 1815: Bott dies. Leadership of the Company passes to Thomas Webb. 1822: With nine years of the original lease term unexpired, the partners purchase the freehold from the Duchy of Lancaster. 1823: Original partnership dissolved. Mill property auctioned and purchased by John Webb. 1841: Thomas Webb.

Housing: seven cottages in the mill grounds, six of these being a terrace of blind-back cottages. These were probably built c. 1825 by Webb. Two cottages in the corn mill grounds and 26 in Tutbury in 1841.

Tithe Survey evidence of the mill estate: Thomas Webb:

	a.	r.	p.
Freehold:	89	3	29
Industrial (8a 3r 30p; 10%): Cotton mills, reservoir, leat, corn mill, etc.			
Housing (5a 1r 3p; 6%): seven cottages at the mill; 26 in Tutbury; two at the corn mill; average site area = 137 sq. yds. Four acres of gardens in addition.			
Private occupation: none.			
Agricultural land, etc. (74a 1r 19p; 83%): including 35 acres leased to ten farm tenants.			
Other (1a 1r 17p; 2%): Gravel bed, waste.			

(Bayley, Western and Midland Directory (1784); Sun Insurance, CS 11/648079 (1795); Shaw, History of Staffordshire (1798) I, 58; Pitt, General View of the Agriculture of Staffordshire (1808), 236; Select Committee on the State of the Children employed in the Manufactory of the U. K., (P. P. 1816, XX), 84; Pigot, Directory (1828); Moseley, History of the Castle, Priory and Town of Tutbury (1832); Tithe Survey of Tutbury (32/217).)

87. WALMERSLEY, Lancashire. SD 794152.

Mill proprietors: 1803: James, Richard, John, William and Thomas Kay. 1817: James Kay and Company. 1829: John Robinson Kay rebuilds the mills at Brooksbottom. 1840: J. R. Kay.

Housing: In 1840, two terraces of cottages stood to the north of the river in the mill grounds; seven other terraces were on the opposite side of the river on land between the access road and the bridge. To the west of the mill, within the boundaries of Tottington Lower End Township, 100 more cottages belonging to the company were completed after 1848.

Tithe Survey evidence of the mill estate: J. R. Kay:

	a.	r.	p.
Freehold (68%):	16	1	28
Leasehold under James Kay (31%):	7	3	12
Leasehold under Richard Hamer (1%):		1	1
	24	1	0

Industrial (5a 3r 3lp; 24%): Cotton mill, reservoirs etc.

Housing (3a Or 38p. 13%): 67 cottages at the mill; six in Tottington Lower End Township. Average site area = 176 sq. yds. Half an acre of gardens in addition.

Private occupation: none.

Agricultural land, etc. (14a Or 10p; 58%).

Other. (1a Or 1p; 4%): Chapel, yard, roads, river.

("An Account of the Cotton and Woollen Mills and Factories in the U. K." (H. of L. Sess. Pprs., 1819); Baines, Lancashire I (1824), 585; Tithe Survey of Walmersley cum Shuttleworth (18/320, Part I); Tithe Survey of Tottington Lower End (18/308).)

88. WALMERSLEY, Lancashire. SD 823157.

Mill proprietors: 1840: John Haworth at Croston Close Mill.

Housing: one terrace and one pair of cottages in 1840.

Tithe Survey evidence of the mill estate: John Haworth:

	a.	r.	p.
Leasehold under the Earl of Derby	60	3	35

Industrial (2a 2r 34p; 4%): Cotton mill, reservoirs, etc.

Housing (1r 10p; 1%): eleven cottages at the mill. Average site area = 138 sq. yds.

Private Occupation: none.

Agricultural land, etc. (57a 1r 9p; 94%).

Other (2r 22p; 1%): Waste.

(Tithe Survey of Walmersley cum Shuttleworth (18/320, Part I).)

89. WALMERSLEY, Lancashire. SD 822156.

Mill proprietors: 1840: George Haworth at Croston Close Lower Mill.

Tithe Survey evidence of the mill estate: George Haworth,

	a.	r.	p.
Leasehold under the Earl of Derby: (94%):	131	2	16
Leasehold under Martha Haworth (lessee under the Earl of Derby) (6%):	7	3	38
	139	2	14

Industrial (4a 0r 1p; 3%): Cotton mill, reservoir.

Housing: none.

Private occupation (2r 24p) Homestead

Agricultural land, etc. (130a 3r 32p; 94%).

Other (3a 3r 37p; 3%): waste.

(Tithe Survey of Walmersley cum Shuttleworth (18/320).)

90. WALMERSLEY, Lancashire. SD 790143.

Mill proprietors: 1795: Peel, Yates, Halliwell and Warran were the owners of three small cotton mills at Summerseat. 1803: Sir Robert Peel and Company; five mills at Summerseat. 1817: Mills conveyed to Edmund Haworth and Company. 1824: Mills reconveyed to Richard Hamer and Son, cotton spinners and manufacturers. 1840: Richard Hamer.

Housing: In 1840 one terrace of cottages stood near Twist Bridge. 15 cottages were near Summerseat Chapel. The majority stood in a long row on the narrow piece of land between the river and the Twist Mill reservoir, and in terraces adjacent to the Summerseat mills.

Tithe Survey evidence of the mill estate: Richard Hamer:

	a.	r.	p.
Freehold:	157	2	24

Industrial (12a 2r 10p; 8%): Mills and reservoirs; cotton mill on Holcombe Brook and reservoir.

Housing (5a 1r 39p; 3%): 73 cottages at Summerseat mills; 15 near Summerseat Chapel; 5 at Higher Summerseat. Average site area = 169 sq. yds. Two acres of gardens in addition.

Private occupation (2a 0r 10p; 1%): House and garden

Agricultural land, etc. (131a 3r 0p; 84%).

Other (5a 3r 5p; 4%): stone quarry, three large houses, roads, waste.

(Sun Insurance, CS 7/640035 (1795); CS 56/749337-9 (1803); "An Account of the Cotton and Woollen Mills and Factories in the U. K." (H. of L. Sess. Pprs., 1819); Baines, Lancashire I (1824), 585; Tithe Survey of Walmersley cum Shuttleworth (18/320, Part I); Tithe Survey of Elton (18/118); S. D. Chapman, "The Peels in the Early English Cotton Industry" Business History II (1969), 77.)

91. WALMERSLEY, Lancashire. SD 810137.

Mill proprietors: 1840: Edmund Milnes, at Bentley cotton mill.

Tithe Survey evidence of the mill estate: Edmund Milnes:

	a.	r.	p.
Leasehold under Miles Formby	36	0	19

Industrial (4a 2r 2p; 12%): Cotton mill, reservoir.

Housing (1r 0p; 1%): Gardens only.

Private occupation (1r 2p; 1%): Homestead

Agricultural land, etc. (30a 1r 13p; 84%).

Other (3r 2p; 2%): waste.

(Tithe Survey of Walmersley cum Shuttleworth (18/320, Part I).)

92. WALMERSLEY, Lancashire. SD 828143, SD 824144.

Mill proprietors: 1840: Joshua Doodey and James Price at Cobhurst Nab Mill and Lower Wheel Mill.

Housing: Access to the Cobhurst Nab mills was by a road passing first through the grounds of Deeply Vale mill, upstream. The cottages of Doodey and Price were in the grounds of the latter mill.

Tithe Survey evidence of the mill estate: J. Doodey and J. Price:

	a.	r.	p.
Leasehold under Robert Kershaw (lessee under the Earl of Derby)	43	3	21

Industrial (7a 2r 35p; 18%): Cobhurst Nab (or Deeply Vale Lower) Mill and reservoir; Lower Wheel mill.

Housing (1a 1r 24p; 3%): 19 cottages at Deeply Vale Upper Mill; 7 at Deeply Vale Lower Mill. Average site area = 261 sq. yds.

Private occupation (1a 1r 25p; 3%): Homestead etc.

Agricultural land, etc. (31a 1r 32p; 72%).

Other (1a 3r 25p; 4%): roads, waste.

(Tithe Survey of Walmersley cum Shuttleworth (18/320, Part I).)

93. WALMERSLEY, Lancashire. SD 798123.

Mill proprietors: 1795: Peel, Yates, Halliwell and Warran, owners of "two spinning factories communicating" at Burrs. 1808 or 1809: Burrs mill conveyed to Richard Calrow. The firm of Calrow and Topping already owned mills on the opposite side of the Irwell at Higher Wood in Elton township. 1840: Thomas Calrow, at Burrs and Higher Wood.

Housing: Sir Robert Peel and Company owned 20 cottages at Burrs in 1795. These early cottages stood between the mill and the tailrace. Calrow and Company in 1840 owned 22 cottages at Burrs and 37 at Higher Wood.

Tithe Survey evidence of the mill estate. Thomas Calrow.

	a.	r.	p.
Leasehold under the Earl of Derby	117	2	25

Industrial (9a 2r 9p; 8%): Burrs and Higher Wood cotton mills and reservoirs.

Housing (2a 3r 32p; 3%): 22 cottages at Burrs and 37 at Higher Wood. Average site area = 145 sq. yds. One acre of gardens in addition.

Private occupation (2a 0r 9p; 2%): House and grounds.

Agricultural land, etc. (94a 1r 16p; 80%).

Other (8a 2r 39p; 7%): houses.

(Sun Insurance CS 7/640035; "An Account of the Cotton and Woollen Mills and Factories in the U. K." (H. of L. Sess. Pprs., 1819); Baines, Lancashire I (1824), 584; Tithe Survey of Walmersley cum Shuttleworth (18/320, Part I); Tithe Survey of Elton (18/118); Frances Collier, The Family Economy of the Working Classes (1964).)

94. WALMERSLEY, Lancashire. SD 823148.

Mill proprietors: 1840: John Ramsbottom at Deeply Vale cotton mill.

Housing: In 1840, eleven cottages stood adjacent to the mill. Other cottages nearby belonged to neighbouring millowners.

Tithe Survey evidence of the mill estate: John Ramsbottom

	a.	r.	p.
Leasehold under Robert Kershaw (lessee under the Earl of Derby)	10	2	34
Industrial (6a 2r 19p; 62%): Deeply Vale cotton mill and reservoir.			
Housing (15p; 1%): 11 cottages near the mill. Average site area = 41 sq. yds.			
Private occupation: none.			
Agricultural land, etc.: none.			
Other (4a 0r 0p; 37%): waste.			

(Tithe Survey of Walmersley cum Shuttleworth (18/320, Part 1).)

95. WILNE, Derbyshire. SK 447315

Mill proprietors: c.1781: Stretton, Thacker and Company commence cotton spinning at Wilne on the river Derwent. 1789: Thacker and Company owned corn, fulling and slitting mills in addition. 1795: John Lovall Thacker, Joseph Thacker, Sarah Tillard, Thomas Arnatt and William Eaton. 1804: Thacker, Wood and Company. 1829: Tillard and Company. 1847: James and William Soresby.

Housing: In 1847 J. and W. Soresby owned 19 cottages, including 12 at the mills.

Tithe Survey evidence of the mill estate: J. and W. Soresby:

	a.	r.	p.
Leasehold under the Earl of Harrington:	58	0	15
Industrial (5a 3r 3p; 10%): Cotton mills and watercourses.			
Housing (1a 3r 12p; 3%): 12 cottages at Wilne Mills, one toll house, six cottages at New Delight. Average site area = 205 sq. yds. Drying ground and one acre of gardens in addition.			
Private occupation: none.			
Agricultural land, etc. (49a 3r 19p; 6%).			
Other (2r 22p; 1%): osier beds.			

(Cromford Canal Papers (H. of L. MS Evidce. on Private Bills, 1789); Sun Insurance, CS 10/646116 (1795); Pigot, Directory (1828); Tithe Survey of Draycott and Church Wilne (8/228).)

96. WIRKSWORTH, Derbyshire. SK 284526.

Mill proprietors: 1780: Arkwright commences cotton spinning at Haarlem Mill. 1793: Thomas Eley. 1797: Robert Sykes and - Eley. 1798: Death of Thomas Eley. 1804: Robert Sykes. 1808: Sykes. By 1827 the mill had been converted to the manufacture of tape. 1849: James Tatlow.

Tithe Survey evidence of the mill estate: James Tatlow

	a.	r.	p.
Leasehold under Charles Hurt	6	1	5

Industrial (2a 3r 5p; 44%): Tape mills and reservoir.

Housing (1a 0r 5p; 18%): gardens only.

Private occupation: none.

Agricultural land, etc. (2a 1r 35p; 39%):

Other: none.

(Pilkington, Derbyshire (1789) II, 300; Wirksworth Land Tax Returns, Derbyshire R. O.; Sun Insurance, CS 17/664245 (1797); "An Account of the Cotton and Woollen Mills and Factories in the U. K." (H. of L. Sess. Pprs., 1819); Ince, Fragments for a History of the Parish and Mineral Customs of Wirksworth (1827); Tithe Survey of Wirksworth (8/235); George Eliot, Adam Bede; (1858); F. S. Ottrey, "Geographical Aspects of the Development of Wirksworth," M.A., Nottingham, 1966.)

(C) Distribution of households by head-surname group size

Settlement	Head-surname group size												
	1	2	3	4	5	6	7	8	9	10	11	12	12+
Belper	8	39	46	52	32	28	34	18	8	4	2	0	0
Cromford	23	40	29	57	34	27	27	7	14	3	0	0	0
Low Moor	6	23	24	27	28	33	19	22	4	9	4	3	0
Darley Abbey	8	17	19	23	20	22	18	11	11	9	1	2	0
Broadbottom	4	10	12	18	14	10	20	11	4	3	1	1	0
Dolphinholme	1	9	13	16	10	16	10	9	6	4	3	1	0
Marple	2	19	15	17	16	12	9	4	1	1	1	0	0
Styal	4	12	18	7	11	10	10	3	6	2	0	1	0
Milford	2	8	4	14	7	19	11	9	7	2	2	3	2
Rocester	5	4	7	9	8	10	5	5	2	0	1	0	0
Cressbrook	3	5	5	8	7	3	3	2	1	4	0	1	0
Scorton	5	8	2	8	6	2	3	5	2	0	2	2	0
Fazeley	2	6	7	6	5	5	5	3	1	2	0	0	0
Tutbury	1	7	8	7	6	2	1	3	1	0	0	0	0
Tansley	2	1	4	1	2	3	1	0	0	1	0	0	0

BELPER, Derbyshire.

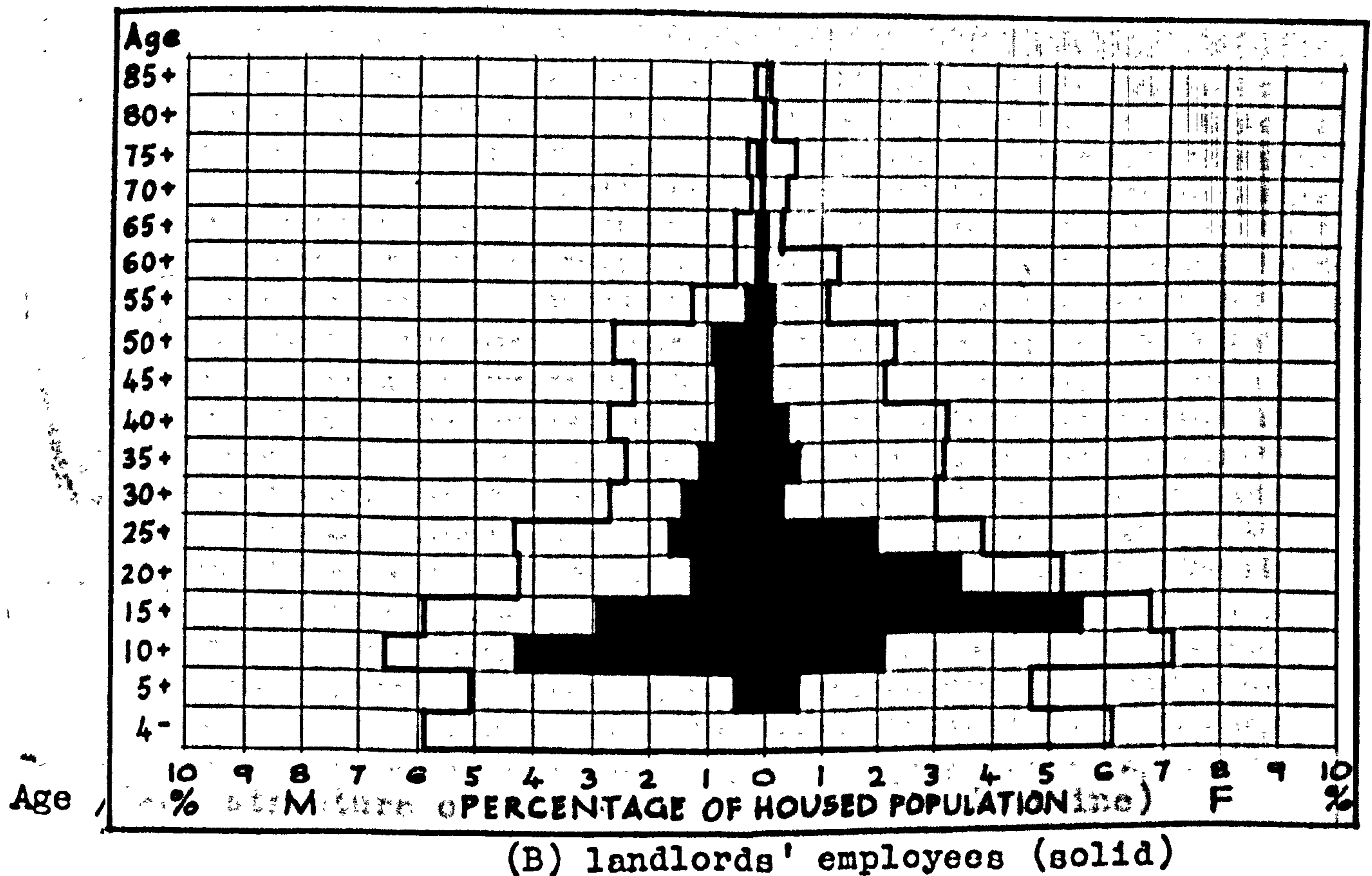
Cottage property of W., G. and J. Strutt in 1841.

Occupied dwellings: 271.

Void dwellings: 2.

Occupants on 7th June 1841:

(A) Tenant population:			Ages	MALES			FEMALES		
Males:	773	(49%)		(A)	(B)	(C)	(A)	(B)	(C)
Females:	812	(51%)	85+	4	0	2	1	0	0
			80-84	1	0	1	2	0	0
	1585	(100%)	75-79	6	3	4	8	0	3
			74-79	5	1	4	6	0	4
(B) Landlords' employees:			65-69	9	2	9	5	1	1
Males:	270	(17%)	60-64	9	2	7	21	1	17
Females:	297	(19%)	55-59	22	6	20	18	3	14
			50-54	43	15	37	37	2	37
			45-49	37	14	32	35	2	34
	567	(36%)	40-44	44	14	38	42	6	37
			35-39	39	18	30	51	9	46
(C) Sharing surname of			30-34	44	23	33	49	5	37
head of household:			25-29	69	27	49	62	32	42
Males:	620	(39%)	20-24	68	20	51	85	55	62
Females:	649	(41%)	15-19	95	47	73	110	90	85
			10-14	104	68	89	116	35	96
			5- 9	81	10	68	76	10	63
	1278	(81%)	0- 4	95	0	73	88	0	71



CROMFORD, Derbyshire.

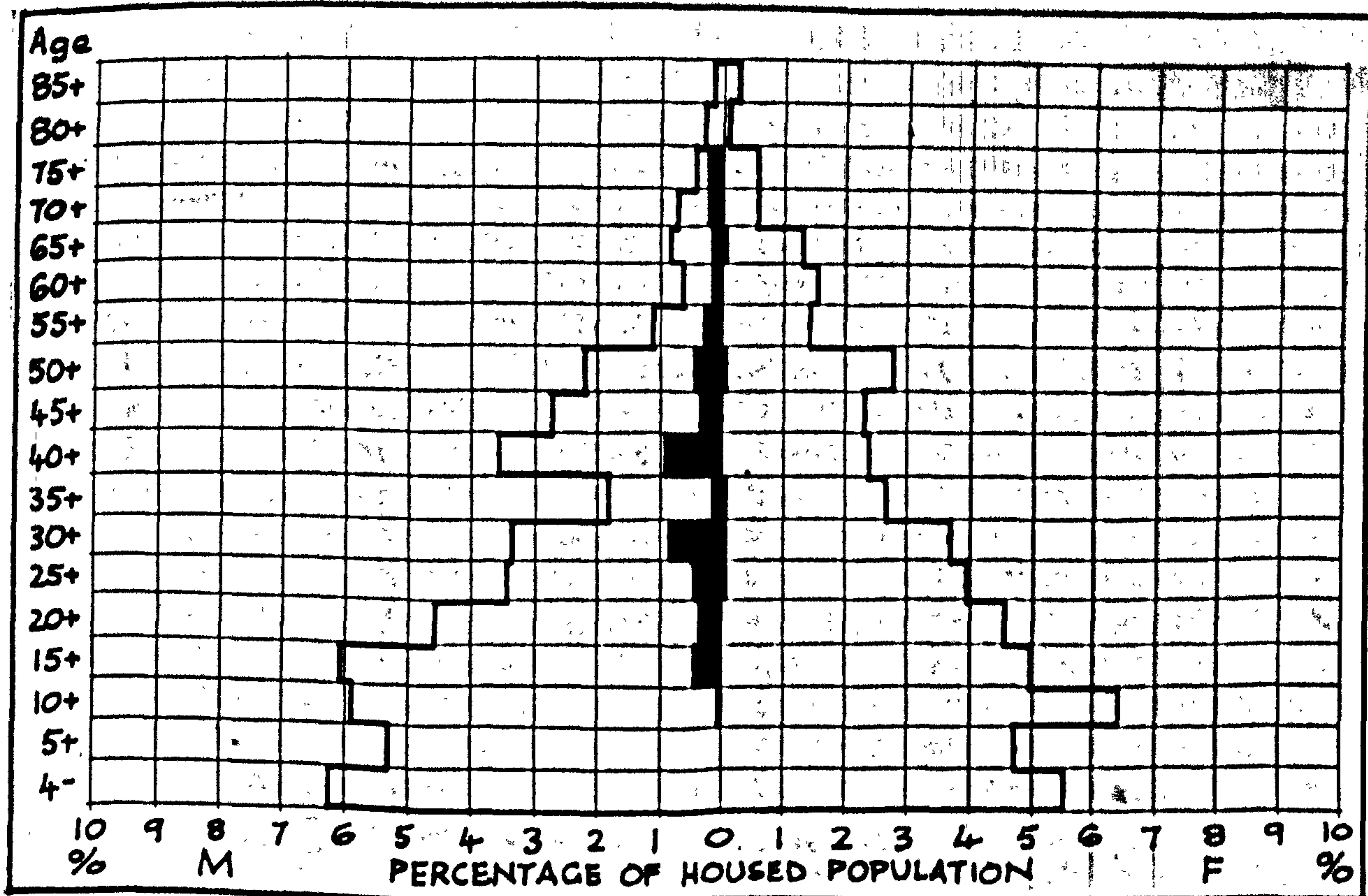
Cottage property of Richard Arkwright in 1841.

Occupied dwellings: 261.

Void dwellings: 4.

Occupants on 7th June 1841:

(A) Tenant population:			Ages	MALES			FEMALES		
				(A)	(B)	(C)	(A)	(B)	(C)
Males:	687	(50%)							
Females:	693	(50%)	85+	1	0	0	3	0	2
			80-84	3	0	3	1	0	1
	1380	(100%)	75-79	6	3	5	8	0	7
			70-74	11	3	10	8	0	7
(B) Persons in textile employment:			65-69	12	2	12	18	1	18
			60-64	10	2	9	23	0	19
Males:	72	(5%)	55-59	15	4	15	20	0	20
			50-54	30	7	27	39	1	33
Females:	6		45-49	39	6	35	32	2	27
			40-44	50	12	45	33	0	28
	78		35-39	25	3	24	37	0	34
			30-34	47	12	30	52	0	45
(C) Sharing surname of head of household:			25-29	48	6	33	55	1	40
			20-24	64	5	42	63	1	41
Males:	569	(41%)	15-19	84	6	64	69	0	57
			10-14	82	1	78	89	0	83
Females:	582	(42%)	5-9	74	0	61	66	0	61
			0-4	86	0	73	77	0	59
	1151	(83%)							



Age / sex structure of (A) tenant population (outline)

(B) persons in textile employment (solid).

LOW MOOR, Clitheroe, Lancashire.

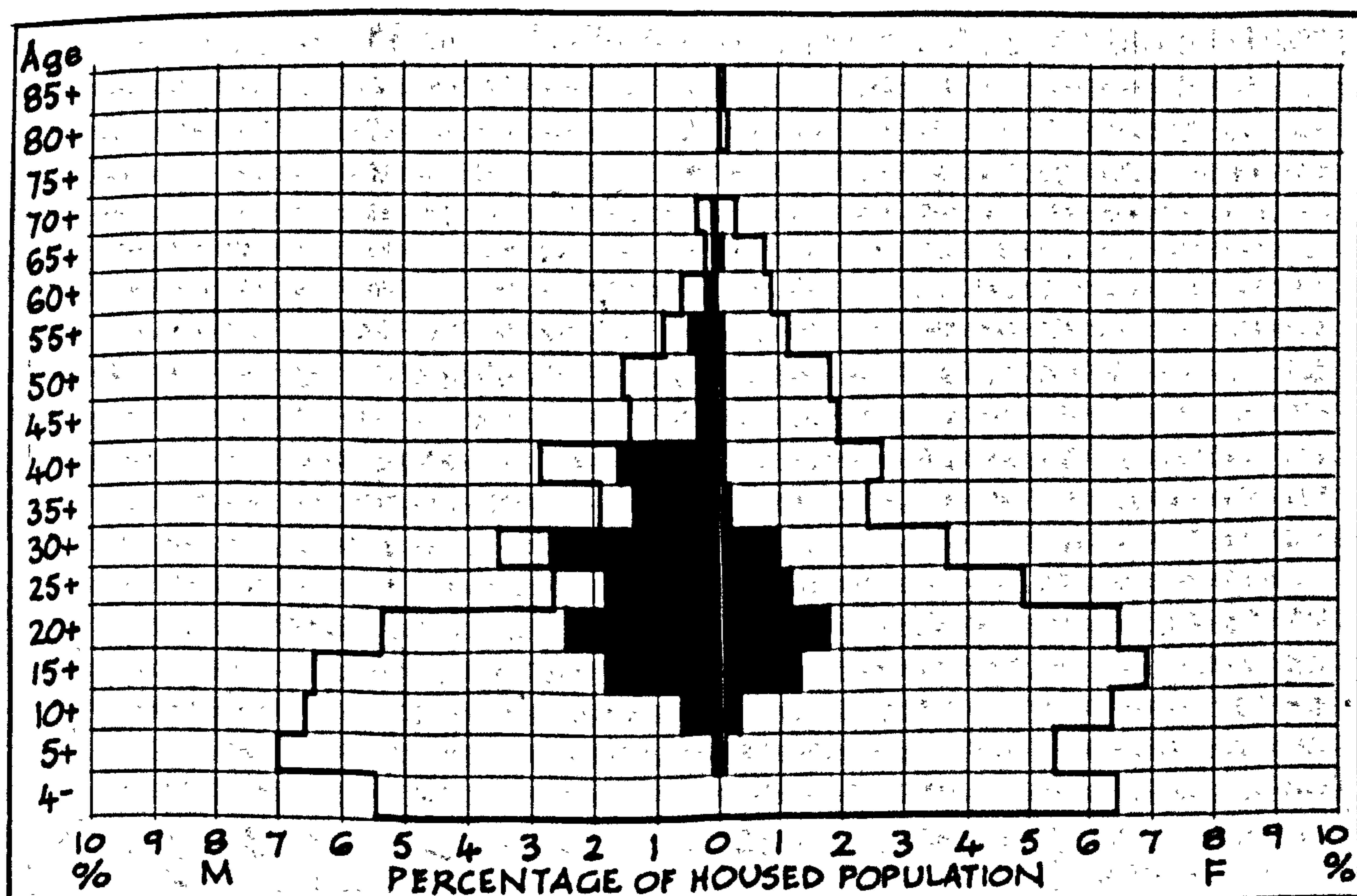
Cottage property of Garnett and Horsfall in 1841.

Occupied dwellings: 205.

Void dwellings: 38.

Occupants on 7th June 1841:

(A) Tenant population:			Ages	MALES			FEMALES		
				(A)	(B)	(C)	(A)	(B)	(C)
Males:	614	(47%)	85+	0	0	0	1	0	0
Females:	684	(53%)	80-84	0	0	0	2	0	2
			75-79	0	0	0	0	0	0
	<u>1298</u>	(100%)	70-74	5	1	4	3	0	1
			65-69	3	1	3	11	1	10
(B) Landlords' employees:			60-64	9	3	7	12	0	11
Males:	187	(14%)	55-59	12	7	11	15	1	11
Females:	81	(6%)	50-54	20	5	19	23	1	21
			45-49	19	5	19	26	1	22
	<u>268</u>	(21%)	40-44	38	22	32	36	1	34
			35-39	25	18	20	32	2	25
			30-34	46	36	39	49	13	43
(C) Sharing surname of			25-29	35	23	31	64	15	56
head of household:			20-24	70	32	49	84	24	48
Males:	527	(40%)	15-19	84	23	74	90	16	73
Females:	575	(44%)	10-14	86	9	76	81	4	74
			5-9	91	2	83	71	2	61
	<u>1100</u>	(85%)	0-4	71	0	58	84	0	69



Age / sex structure of (A) tenant population (outline)

(B) landlords' employees (solid).

DARLEY ABBEY, Derbyshire.

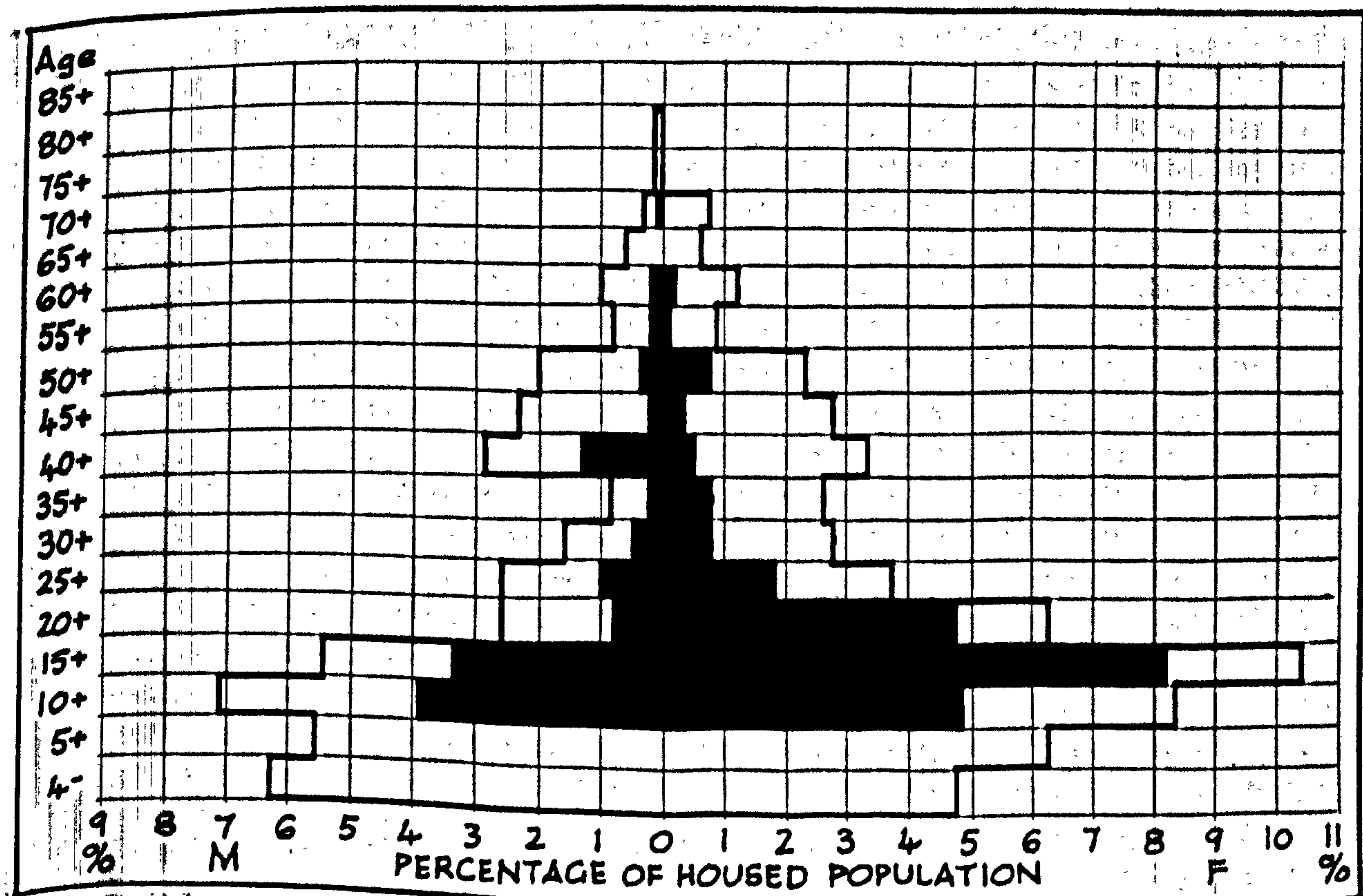
Cottage property of Evans and Company in 1841.

Occupied dwellings: 161

Void dwellings: 3

Occupants on 7th June 1841:

(A) Tenant population:		Ages	MALES			FEMALES		
			(A)	(B)	(C)	(A)	(B)	(C)
Males:	423	(43%)						
Females:	565	(57%)						
	988	(100%)						
(B) Landlords' employees:		85+	0	0	0	0	0	0
		80-84	1	0	1	0	0	0
		75-79	1	0	1	0	0	0
		70-74	3	1	3	7	1	6
		65-69	6	0	6	6	0	5
		60-64	10	5	9	12	3	9
	Males:	55-59	8	3	8	9	2	9
	Females:	50-54	20	10	20	23	8	20
		45-49	23	12	23	28	5	28
		40-45	29	19	26	33	7	28
(C) Sharing surname of head of household:		35-39	9	7	9	26	10	21
		30-34	16	7	15	28	10	21
		25-29	26	14	21	37	22	30
		20-24	26	12	19	62	47	43
	Males:	15-19	55	36	50	103	85	93
	Females:	10-14	71	40	67	82	49	72
		5-9	56	0	51	62	0	55
		0-4	63	0	63	47	0	39



Age / sex structure of (A) tenant population (outline)
(B) landlords' employees (solid).

BROADBOTTOM, Cheshire.

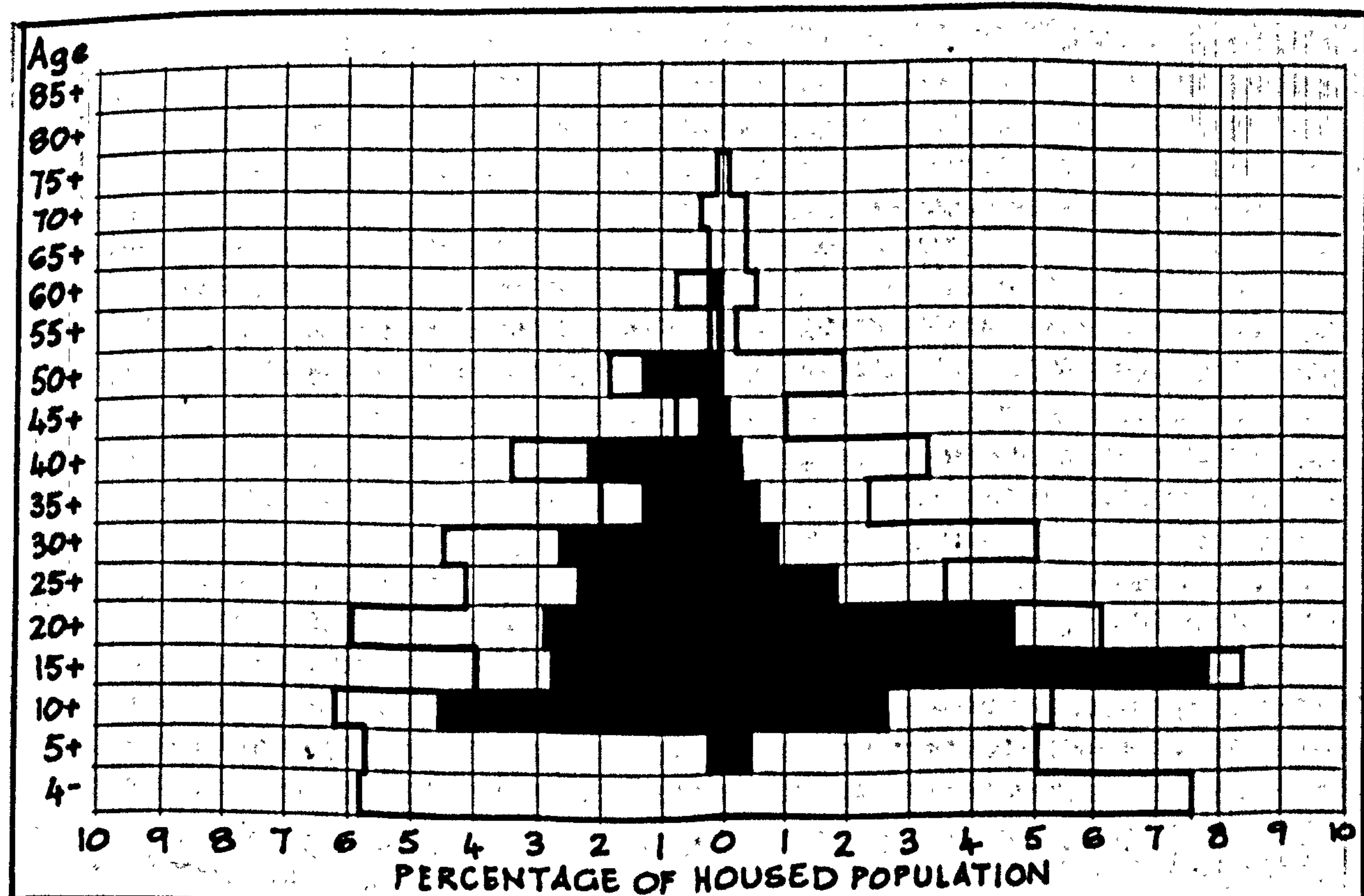
Cottage property of J. Sidebottom in 1841.

Occupied dwellings: 118

Void dwellings: 2

Occupants on 7th June 1841:

(A) Tenant population:		Ages	MALES			FEMALES		
			(A)	(B)	(C)	(A)	(B)	(C)
Males:	350	(47%)						
Females:	397	(53%)	85+	0	0	0	0	0
			80-84	0	0	1	0	0
	747	(100%)	75-79	1	0	0	0	0
			70-74	3	0	3	0	3
			65-69	2	0	1	3	2
(B) Landlord's employees:			60-64	6	2	6	4	4
Males:	159	(21%)	55-59	2	1	2	2	2
Females:	146	(20%)	50-54	14	10	14	15	14
			45-49	6	3	6	8	8
	305	(41%)	40-44	26	16	22	25	24
			35-39	15	10	14	18	14
(C) Sharing surname of			30-34	34	20	27	38	32
head of household:			25-29	31	18	17	27	14
			20-24	45	22	21	46	35
Males:	272	(36%)	15-19	30	21	24	63	59
Females	337	(45%)	10-14	47	34	42	40	20
			5-9	43	2	38	48	3
	609	(82%)	0-4	45	0	35	56	0



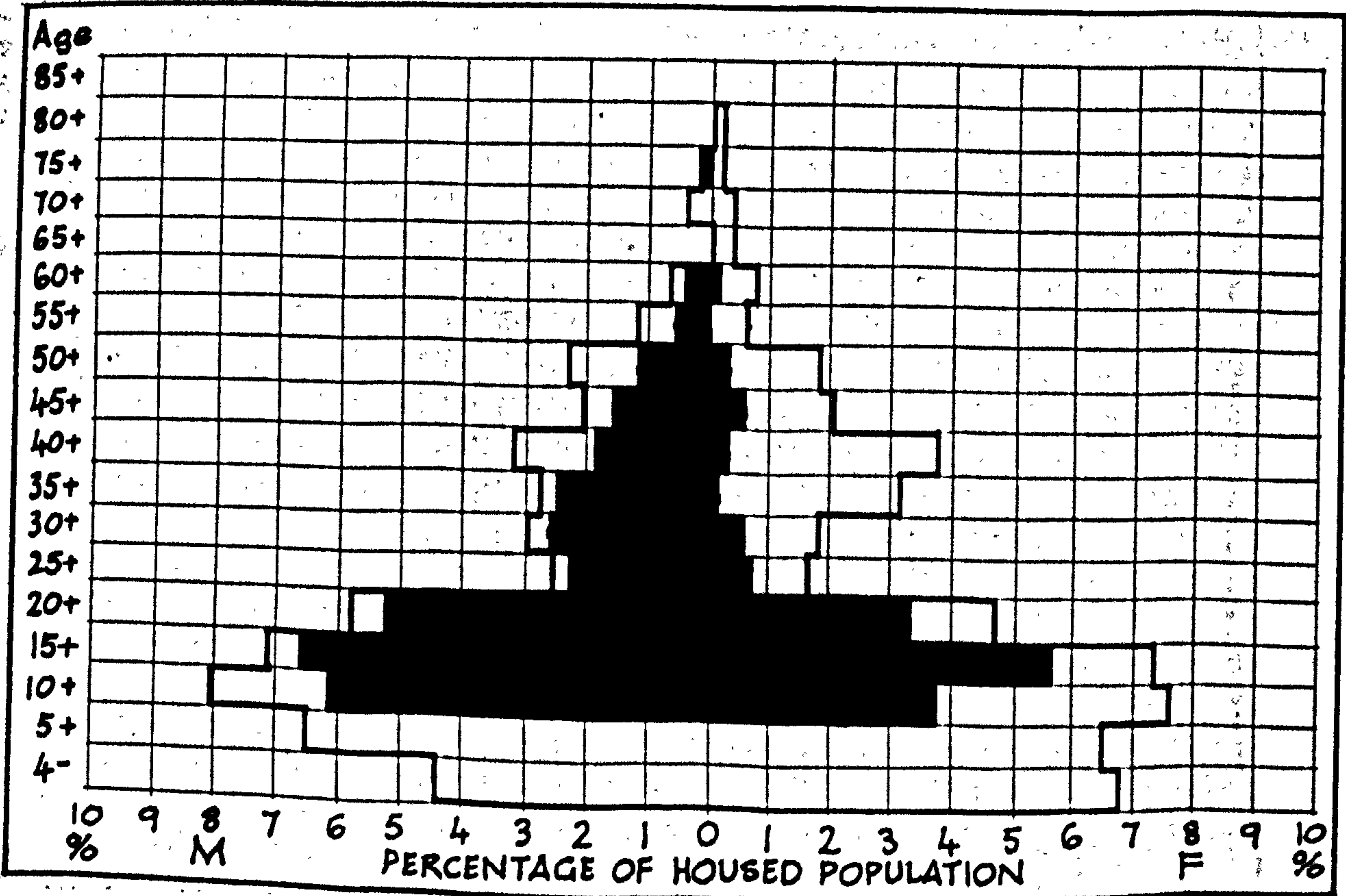
Age / sex structure of (A) tenant population (outline)
(B) landlord's employees (solid).

DOLPHINHOLME, Lancashire.
Cottage property of Hinde and Derham in 1841.

Occupied dwellings: 98
Void dwellings: 5

Occupants on 7th June 1841:

(A) Tenant population:		Ages	MALES			FEMALES		
Males:			(A)	(B)	(C)	(A)	(B)	(C)
318	(50%)	85+	0	0	0	0	0	0
Females:	315	80-84	0	0	0	1	0	0
	<u>633</u>	75-79	1	1	0	1	0	0
	(100%)	70-74	2	0	0	2	0	2
(B) Landlords' employees:		65-69	0	0	0	2	0	1
		60-64	5	3	2	5	1	3
Males:	193	55-59	7	4	6	4	0	4
Females:	100	50-54	14	7	12	12	2	11
	<u>293</u>	45-49	13	10	13	13	4	11
	(46%)	40-44	20	12	17	24	2	22
		35-39	18	15	17	20	1	19
(C) Sharing surname of		30-34	19	17	14	12	4	9
head of household:		25-29	16	14	11	11	5	8
		20-24	37	33	28	30	21	21
Males	260	15-19	45	42	29	46	36	38
Females:	268	10-14	51	39	47	48	24	43
	<u>428</u>	5- 9	42	0	41	41	0	35
	(83%)	0- 4	28	0	23	43	0	41



Age / sex structure of (A) tenant population (outline)
(B) landlords' employees (solid).

MARPLE, Cheshire.

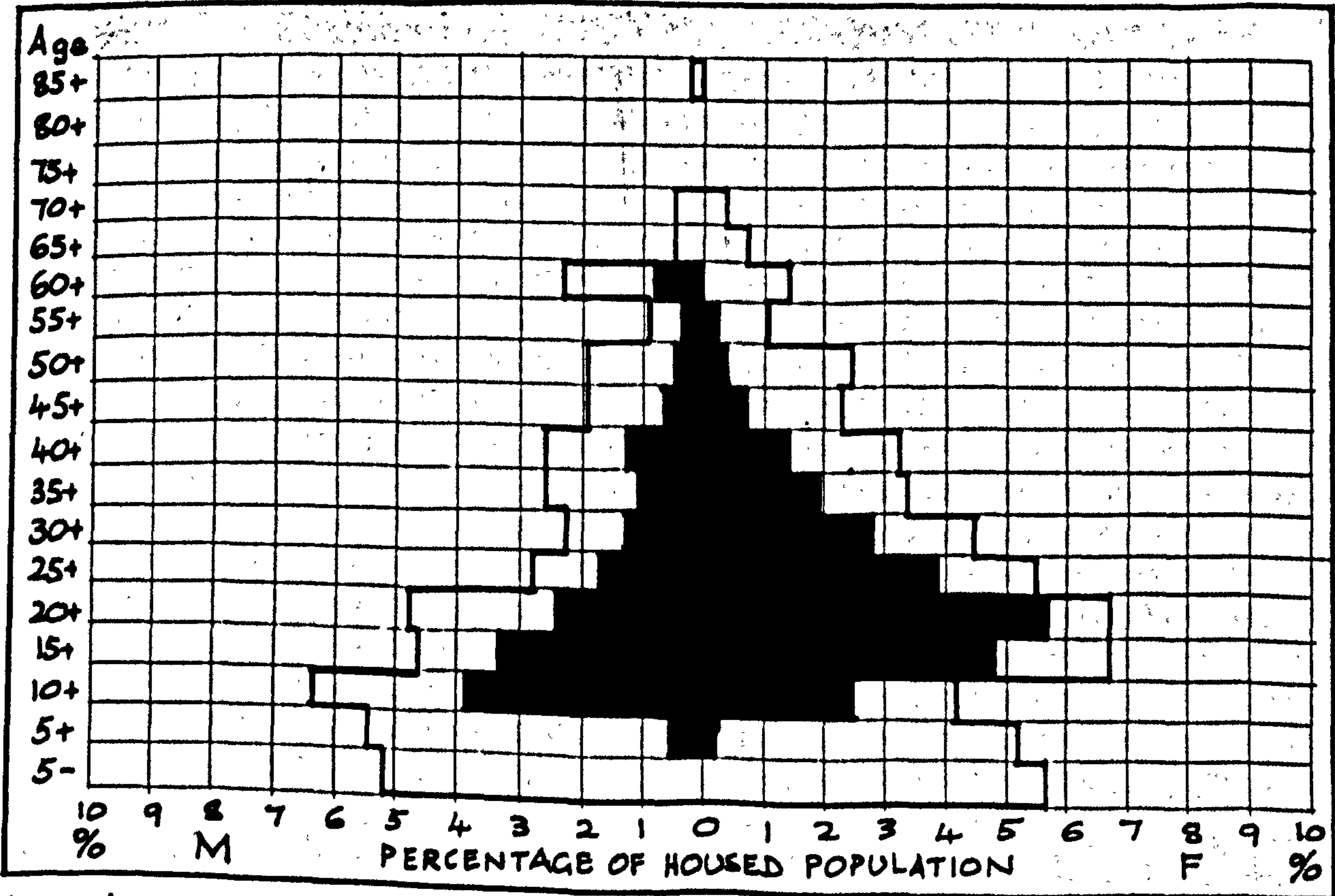
Cottage property of Richard Arkwright in 1841.

Occupied dwellings: 97.

Void dwellings: 15.

Occupants on 7th June 1841:

(A) Tenant population:			Ages	MALES			FEMALES		
Males: 261 (47%)				(A)	(B)	(C)	(A)	(B)	(C)
Females: 300 (53%)			85+	1	0	1	0	0	0
			80-84	0	0	0	0	0	0
561 (100%)			75-79	0	0	0	0	0	0
			70-74	3	0	3	2	0	2
(B) Landlord's employees:			65-69	3	0	3	4	0	2
Males: 102 (18%)			60-64	13	5	13	8	0	7
Females: 138 (25%)			55-59	5	2	5	6	1	6
			50-54	11	3	8	14	2	11
			45-49	11	4	8	13	4	10
240 (43%)			40-44	15	7	15	18	8	14
			35-39	17	6	15	19	11	15
(C) Sharing surname of			30-34	17	7	13	25	16	19
head of household:			25-29	16	10	15	31	22	23
Males: 208 (37%)			20-24	27	14	21	38	32	23
Females: 218 (39%)			15-19	26	19	19	38	27	25
			10-14	36	22	29	23	14	18
			5- 9	31	3	20	29	1	22
426 (76%)			0- 4	29	0	20	32	0	21



Age / sex structure of (A) tenant population (outline)
(B) landlord's employees (solid).

STYAL, Cheshire.

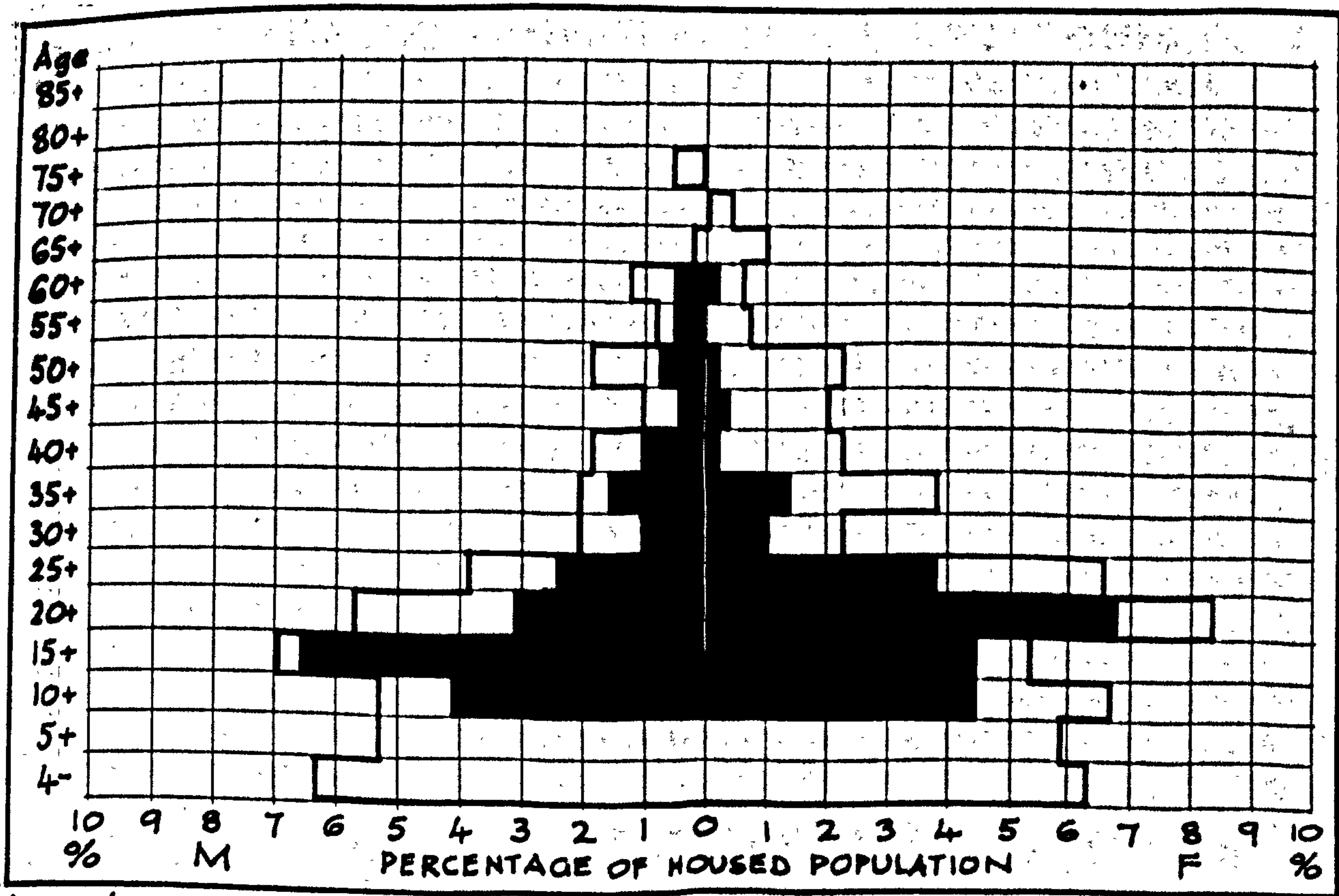
Cottage property of R. H. Greg in 1841:

Occupied dwellings: 85.

Void dwellings: 13.

Occupants on 7th June 1841:

(A) Tenant population:			Ages	MALES			FEMALES		
Males:	221	(45%)		(A)	(B)	(C)	(A)	(B)	(C)
Females:	268	(55%)	85+	0	0	0	0	0	0
			80-84	0	0	0	0	0	0
	489	(100%)	75-79	3	0	3	0	0	0
			70-74	0	0	0	2	0	2
(B) Landlord's employees:			65-69	1	0	1	5	0	5
Males:	109	(22%)	60-64	6	3	6	3	1	2
Females:	114	(23%)	55-59	4	3	4	4	0	4
			50-54	9	4	9	11	1	10
			45-49	5	2	5	10	2	9
	223	(46%)	40-44	9	5	8	11	1	11
			35-39	10	8	10	19	7	15
(C) Sharing surname of head of household:			30-34	10	5	8	11	5	8
Males:	202	(41%)	25-29	19	12	16	32	19	26
Females:	221	(45%)	20-24	28	15	23	41	34	27
			15-19	34	32	31	26	22	19
			10-14	26	20	25	33	22	31
			5- 9	26	0	24	29	0	24
	423	(87%)	0- 4	31	0	29	31	0	28



Age / sex structure of (A) tenant population (outline)
(B) landlord's employees (solid).

MILFORD, Derbyshire.

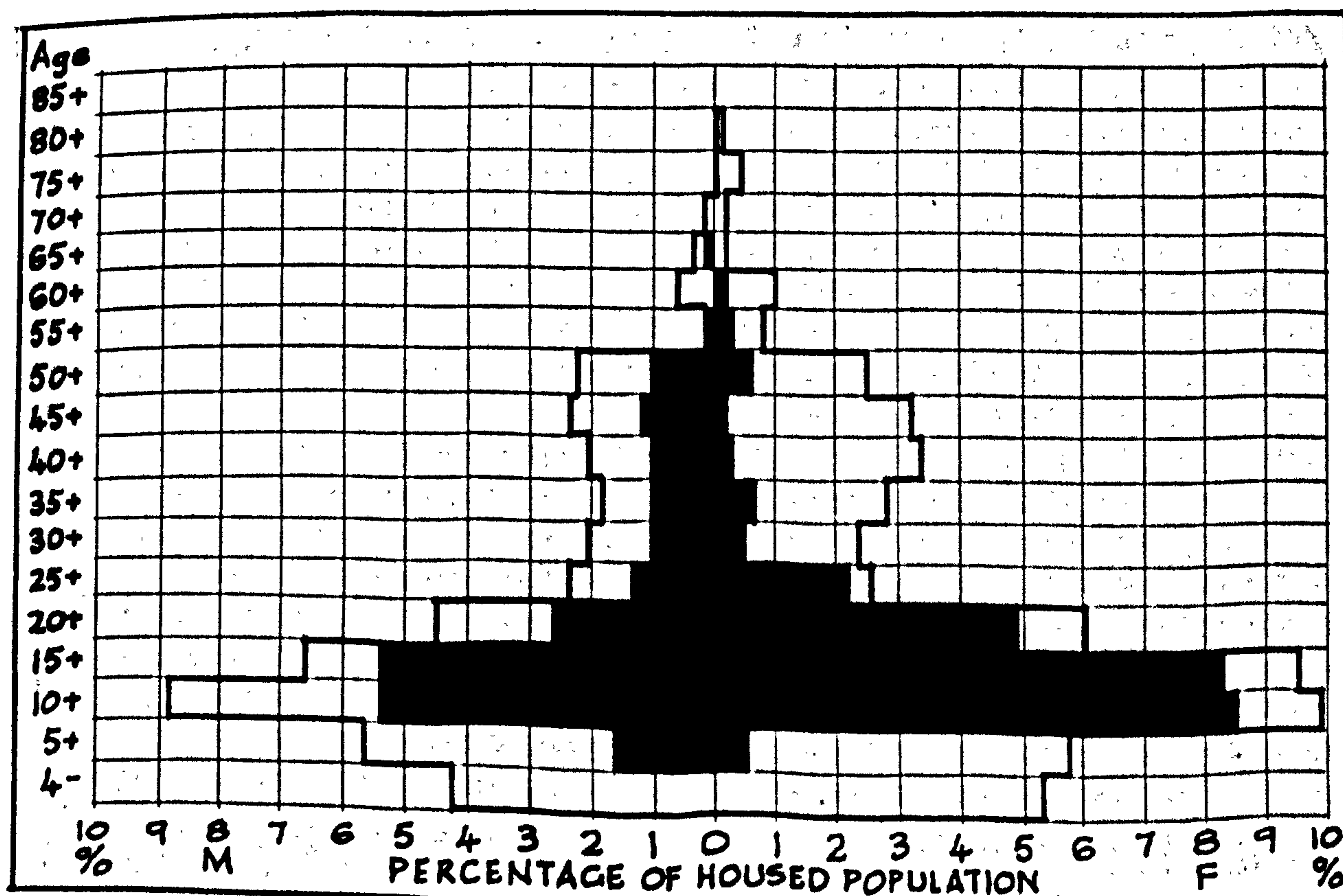
Cottage property of W., G. and J. Strutt in 1841.

Occupied dwellings: 81

Void dwellings: 1

Occupants on 7th June 1841:

(A) Tenant population:			Ages	MALES			FEMALES		
				(A)	(B)	(C)	(A)	(B)	(C)
Males:	260	(44%)							
Females:	327	(56%)	85+	0	0	0	0	0	0
			80-84	0	0	0	1	0	1
			75-79	0	0	0	2	0	1
	587	(100%)	70-74	1	0	1	1	0	0
			65-69	2	1	2	1	0	1
(B) Landlords' employees:			60-64	4	0	4	6	1	6
Males:	125	(21%)	55-59	1	1	1	5	2	4
Females:	161	(27%)	50-54	13	6	12	15	4	12
			45-49	14	7	13	19	1	19
			40-44	12	6	11	20	2	16
	286	(49%)	35-39	11	6	8	17	4	15
			30-34	12	6	10	14	3	12
(C) Sharing surname of			25-29	14	8	10	15	13	11
head of household:			20-24	27	16	18	36	29	28
Males:	207	(35%)	15-19	39	32	24	56	49	45
Females:	274	(47%)	10-14	51	32	42	55	50	52
			5- 9	33	4	31	34	3	27
	481	(82%)	0- 4	26	0	20	30	0	24



Age / sex structure of (A) tenant population (outline)

(B) landlords' employees (solid).

ROCESTER, Derbyshire.

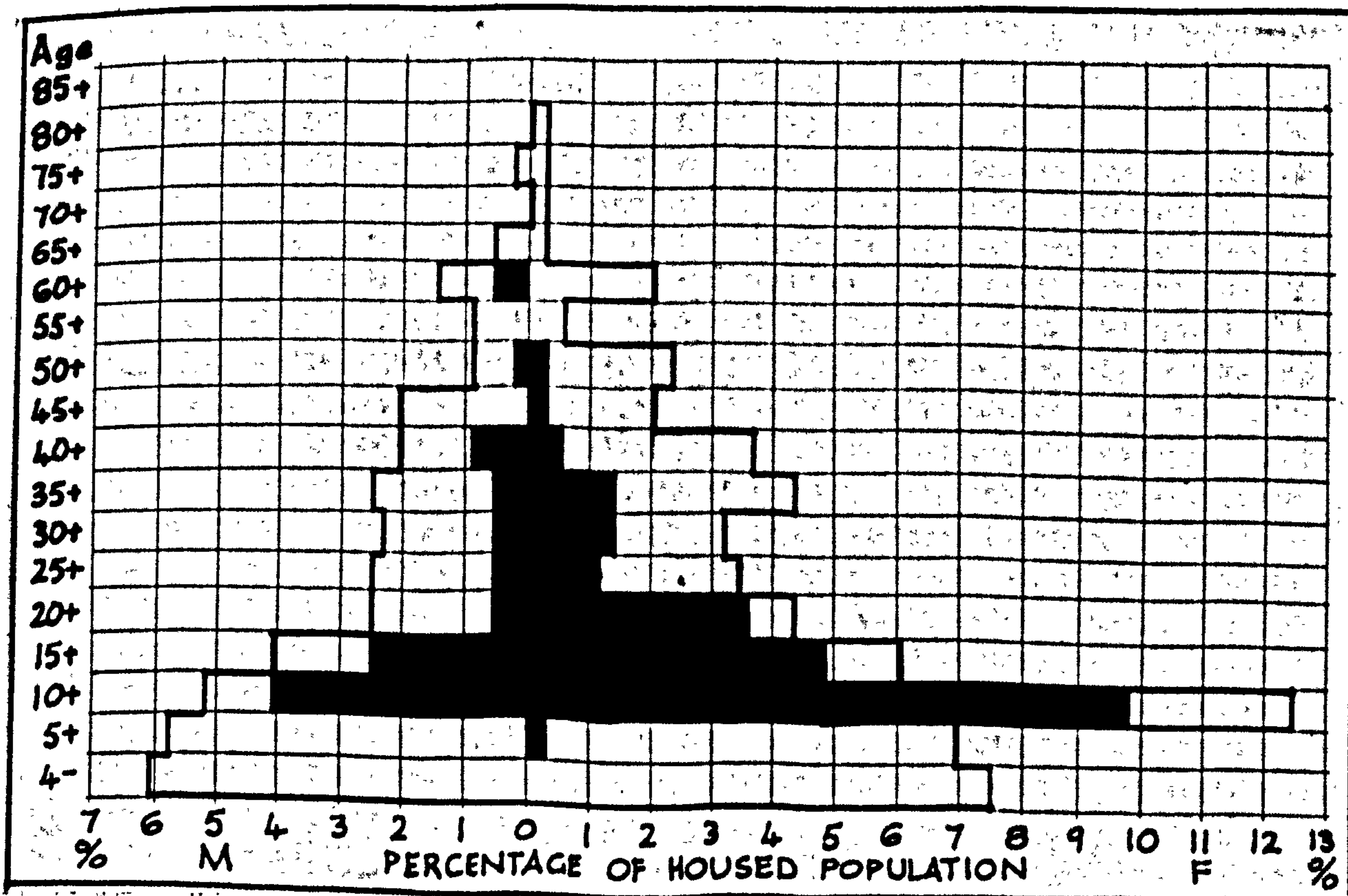
Cottage property of T. Houldsworth and of R. and E. Bridden in 1841.

Occupied dwellings: 56.

Void dwellings: 0.

Occupants on 7th June 1841:

(A) Tenant population:		Ages	MALES			FEMALES		
			(A)	(B)	(C)	(A)	(B)	(C)
Males:	136	(40%)						
Females:	208	(60%)						
	<u>344</u>	(100%)						
(B) Houldsworth's employees:								
Males:	37	(11%)						
Females:	83	(24%)						
	<u>120</u>	(35%)						
(C) Sharing surname of head of household:								
Males:	113	(33%)						
Females:	161	(37%)						
	<u>274</u>	(80%)						



Age / sex structure of (A) tenant population (outlined)
(B) Houldsworth's employees (solid).

GRESSBROOK, Derbyshire.

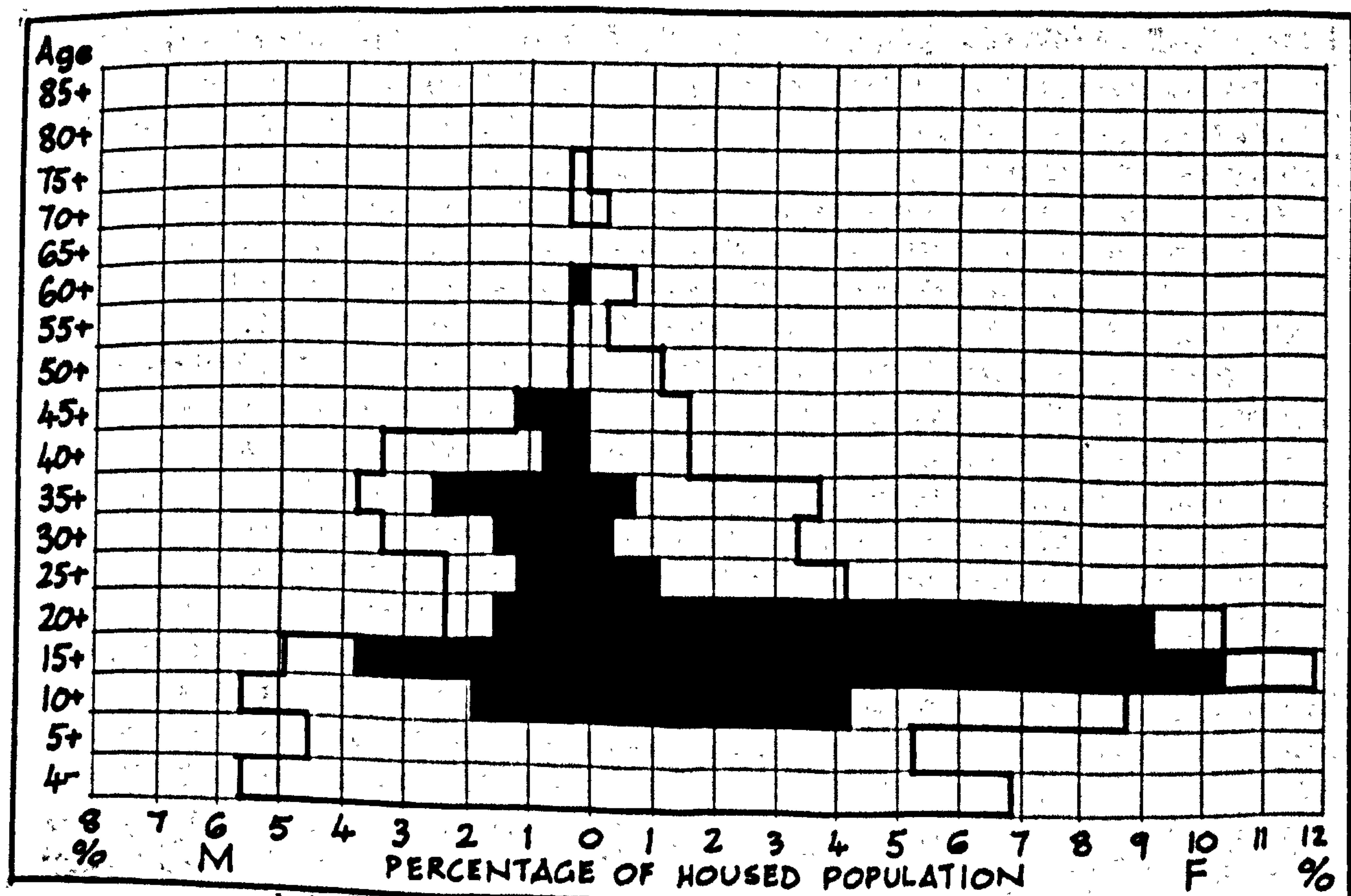
Cottage property of H. and J. McConnell in 1841.

Occupied dwellings: 42.

Void dwellings: 7.

Occupants on 7th June 1841:

(A) Tenant population:		Ages	MALES			FEMALES		
Males:	103	(39%)	(A)	(B)	(C)	(A)	(B)	(C)
Females:	158	(61%)	85+	0	0	0	0	0
			80-84	0	0	0	0	0
	261	(100%)	75-79	1	0	0	0	0
			70-74	1	0	0	1	1
(B) Landlords' employees:			65-69	0	0	0	0	0
			60-64	1	1	1	2	2
Males:	39	(15%)	55-59	1	0	1	1	1
Females:	68	(26%)	50-54	1	0	1	3	2
			45-49	3	3	2	4	4
	107	(41%)	40-44	9	2	9	4	4
			35-39	10	7	9	10	10
(C) Sharing surname of			30-34	9	4	7	9	9
head of household:			25-29	6	3	5	11	8
			20-24	6	4	5	27	7
Males:	89	(34%)	15-19	13	10	12	31	22
Females:	122	(47%)	10-14	15	5	13	23	21
			5-9	12	0	12	14	14
	211	(81%)	0-4	15	0	12	18	17



Age / sex structure of (A) tenant population (outline)

(B) landlords' employees (solid).

SCORTON, Lancashire.

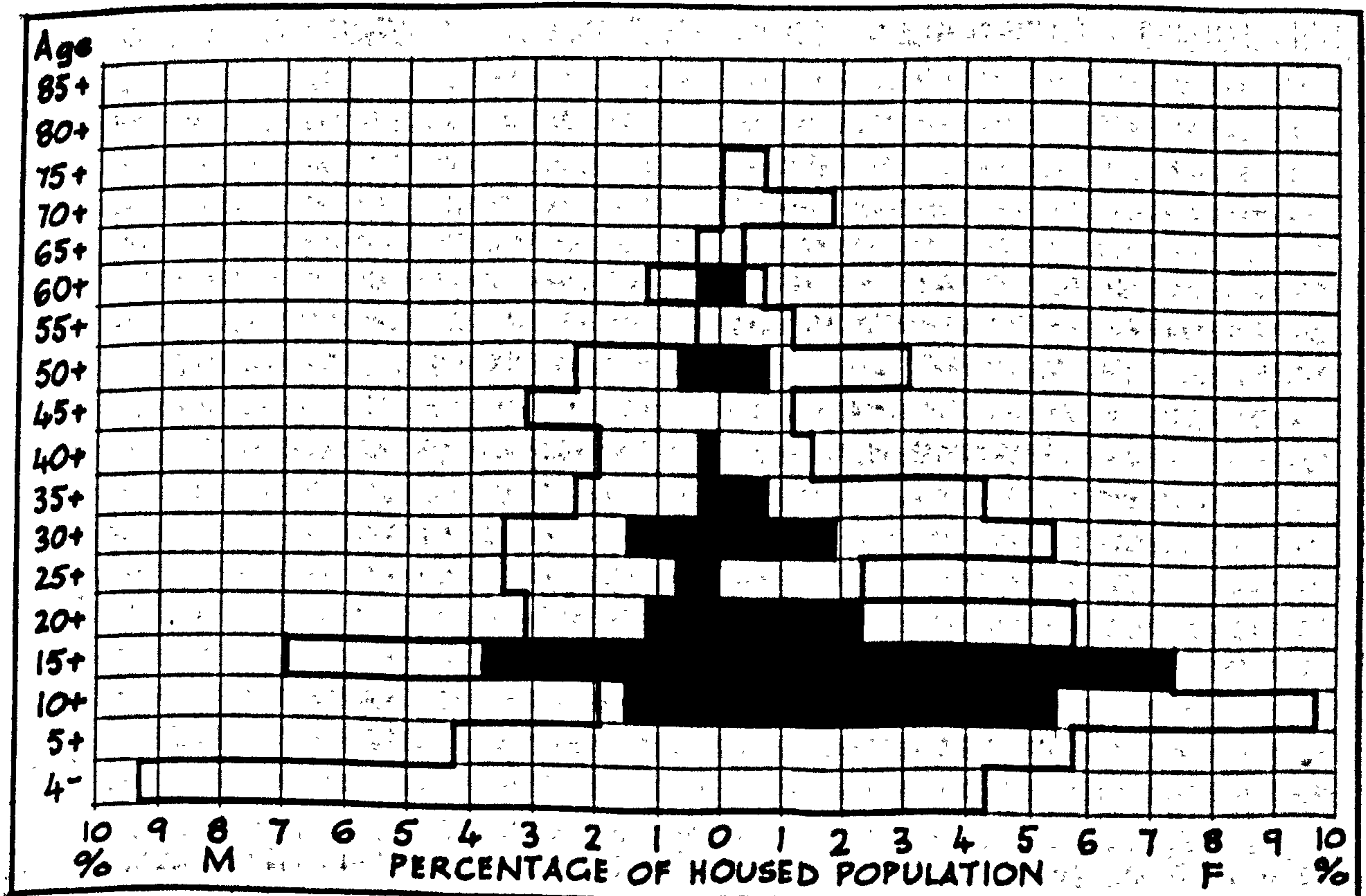
Cottage property of G. Fishwick in 1841.

Occupied dwellings: 42.

Void dwellings: 3.

Occupants on 7th June 1841:

(A) Tenant population:			Ages	MALES			FEMALES		
				(A)	(B)	(C)	(A)	(B)	(C)
Males:	114	(44%)							
Females	144	(56%)	85+	0	0	0	0	0	0
			80-84	0	0	0	0	0	0
	258	(100%)	75-79	0	0	0	2	0	2
			70-74	0	0	0	5	0	3
(B) Landlord's employees:			65-69	1	0	1	1	0	1
			60-64	3	1	1	2	1	1
Males:	28	(11%)	55-59	1	0	1	3	0	2
Females:	51	(20%)	50-54	6	2	6	8	2	8
			45-49	8	0	6	3	0	3
	79	(31%)	40-44	5	1	4	4	0	4
			35-39	6	1	6	11	2	10
(C) Sharing surname of			30-34	9	4	7	14	5	11
head of household:			25-29	9	2	7	6	0	4
			20-24	8	3	4	15	6	11
Males:	93	(36%)	15-19	18	10	14	19	19	18
Females:	121	(47%)	10-14	5	4	4	25	16	21
			5- 9	11	0	11	15	0	13
	214	(83%)	0- 4	24	0	21	11	0	9



Age / sex structure of (A) tenant population (outline)

(B) landlord's employees (solid).

FAZELEY, Staffordshire.

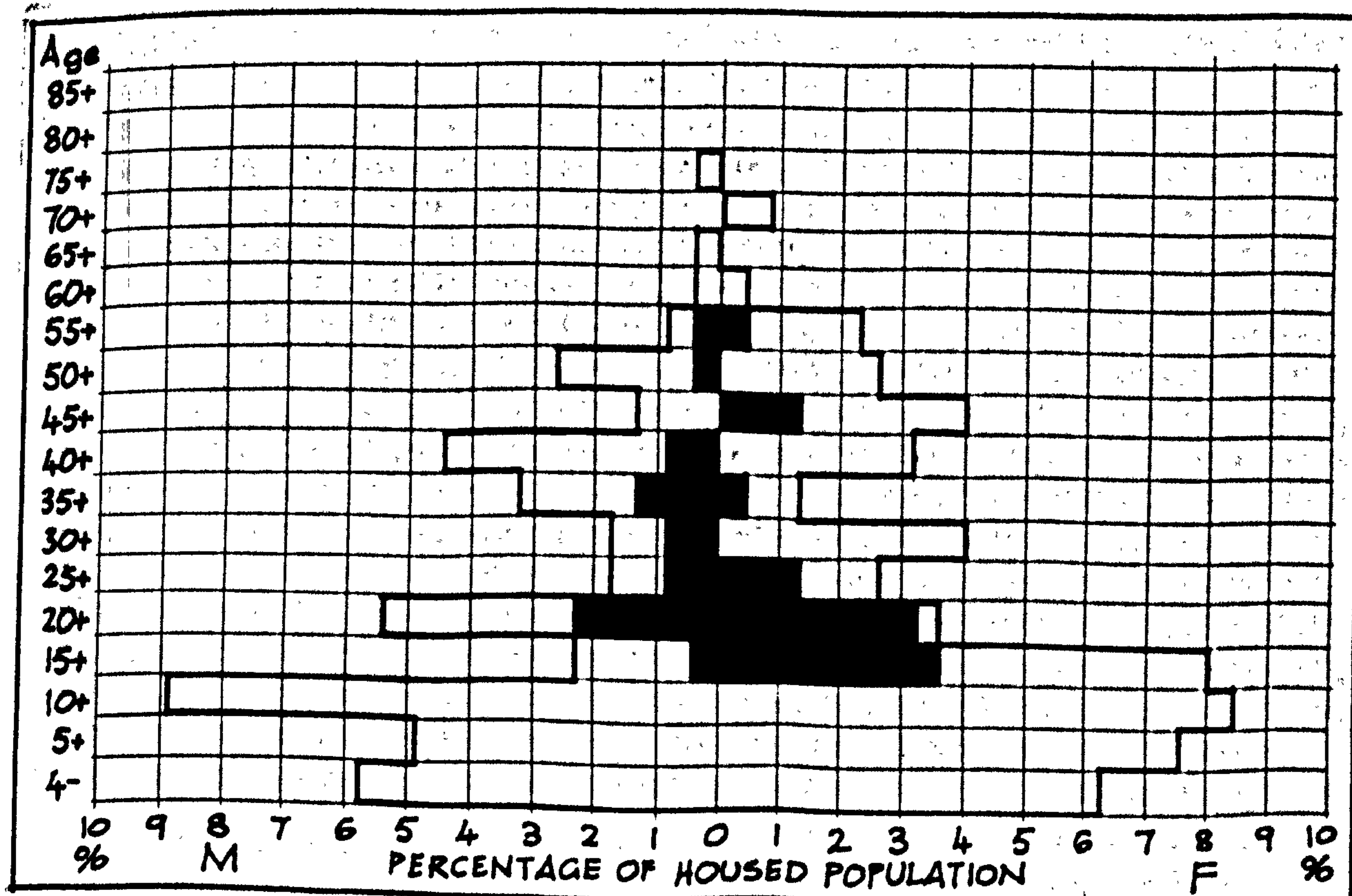
Cottage property of Peel & Co. and Successors in Mill St. in 1841.

Occupied dwellings: 42.

Void dwellings 4.

Occupants on 7th June 1841:

(A) Tenant population:		Ages	MALES			FEMALES		
Males:	100	(45%)	(A)	(B)	(C)	(A)	(B)	(C)
Females:	124	(55%)						
	<u>224</u>	(100%)						
		85+	0	0	0	0	0	0
		80-84	0	0	0	0	0	0
		75-79	1	0	1	0	0	0
		70-74	0	0	0	2	0	2
(B) Landlords' employees:		65-69	1	0	1	0	0	0
Males:	17	(8%)	1	0	1	1	0	0
Females:	23	(10%)	2	1	2	5	1	4
	<u>40</u>	(18%)	6	1	6	6	0	6
		45-49	3	0	3	9	3	7
		40-44	10	2	9	7	0	7
		35-39	7	3	5	3	1	2
(C) Sharing surname of		30-34	4	2	3	9	0	8
head of household:		25-29	4	2	4	6	3	3
Males:	89	(40%)	12	5	10	8	7	6
Females:	106	(47%)	5	1	4	18	8	16
	<u>202</u>	(90%)	20	0	18	19	0	18
		5- 9	11	0	10	17	0	14
		0- 4	13	0	12	14	0	13



Age / sex structure of (A) tenant population (outline)

(B) landlords' employees (solid).

TUTBURY, Staffordshire.

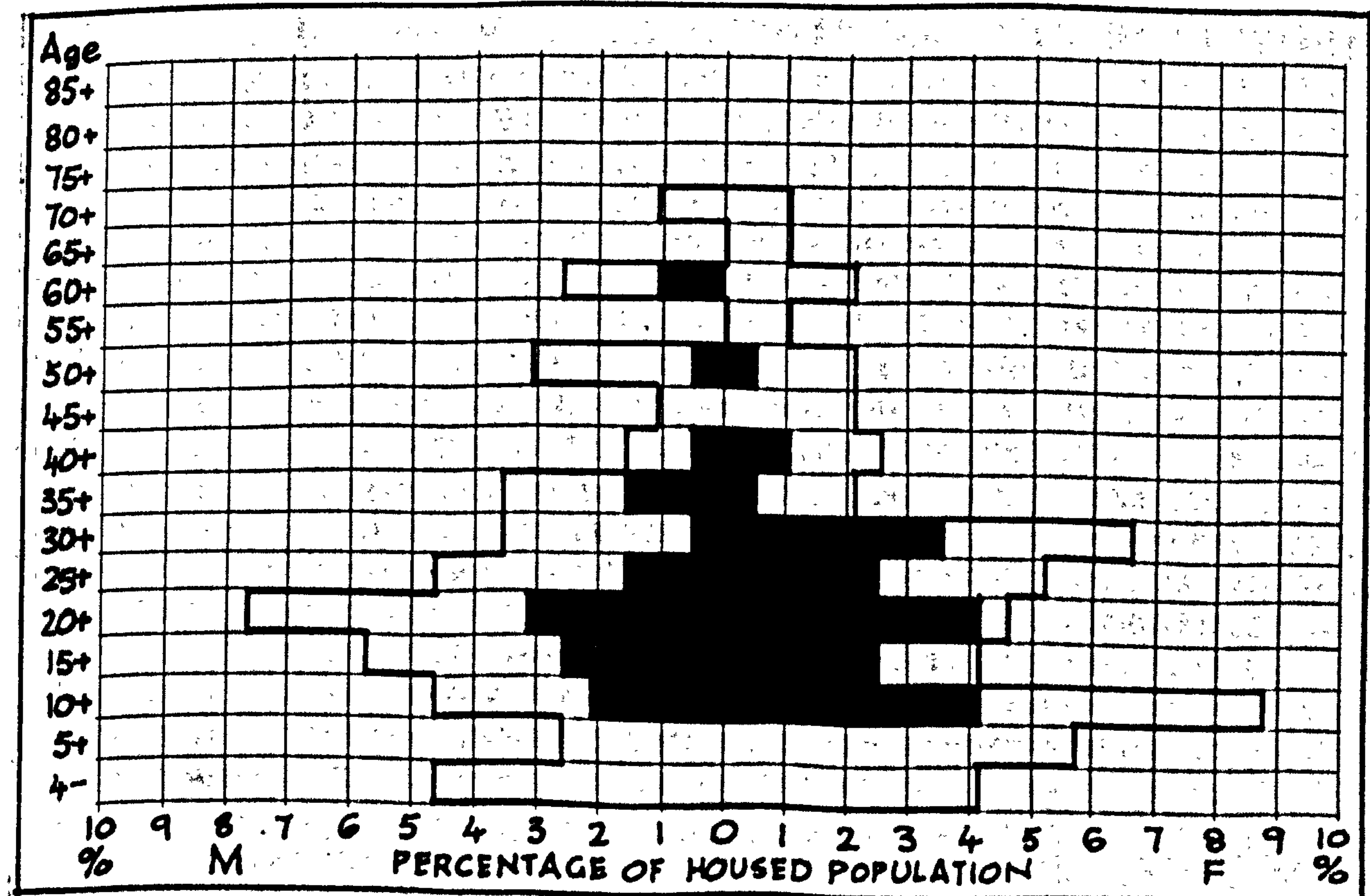
Cottage property of T. Webb and Company in 1841.

Occupied dwellings: 36.

Void dwellings: 0.

Occupants on 7th June 1841:

(A) Tenant population:		Ages			MALES			FEMALES		
					(A)	(B)	(C)	(A)	(B)	(C)
Males:	90	(47%)								
Females:	103	(53%)	85+		0	0	0	0	0	0
			80-84		0	0	0	0	0	0
	193	(100%)	75-79		0	0	0	0	0	0
			70-74		2	0	1	2	0	2
(B) Landlords' employees:			65-69		0	0	0	2	0	2
Males:	28	(15%)	60-64		5	2	5	4	0	4
Females:	39	(20%)	55-59		0	0	0	2	0	2
			50-54		6	3	6	4	1	4
			45-49		2	0	2	4	0	4
	67	(35%)	40-44		3	1	3	5	2	4
			35-39		7	3	6	4	1	3
(C) Sharing surname of			30-34		7	1	7	13	7	6
head of household:			25-29		9	3	5	10	5	7
Males:	73	(38%)	20-24		15	6	12	9	8	4
Females:	76	(39%)	15-19		11	5	8	8	5	7
			10-14		9	4	6	17	8	12
			5-9		5	0	5	11	0	11
	149	(77%)	0-4		9	0	7	8	0	4



Age / sex structure of (A) tenant population (outline)

(B) landlords' employees (solid).

TANSLEY, Derbyshire.

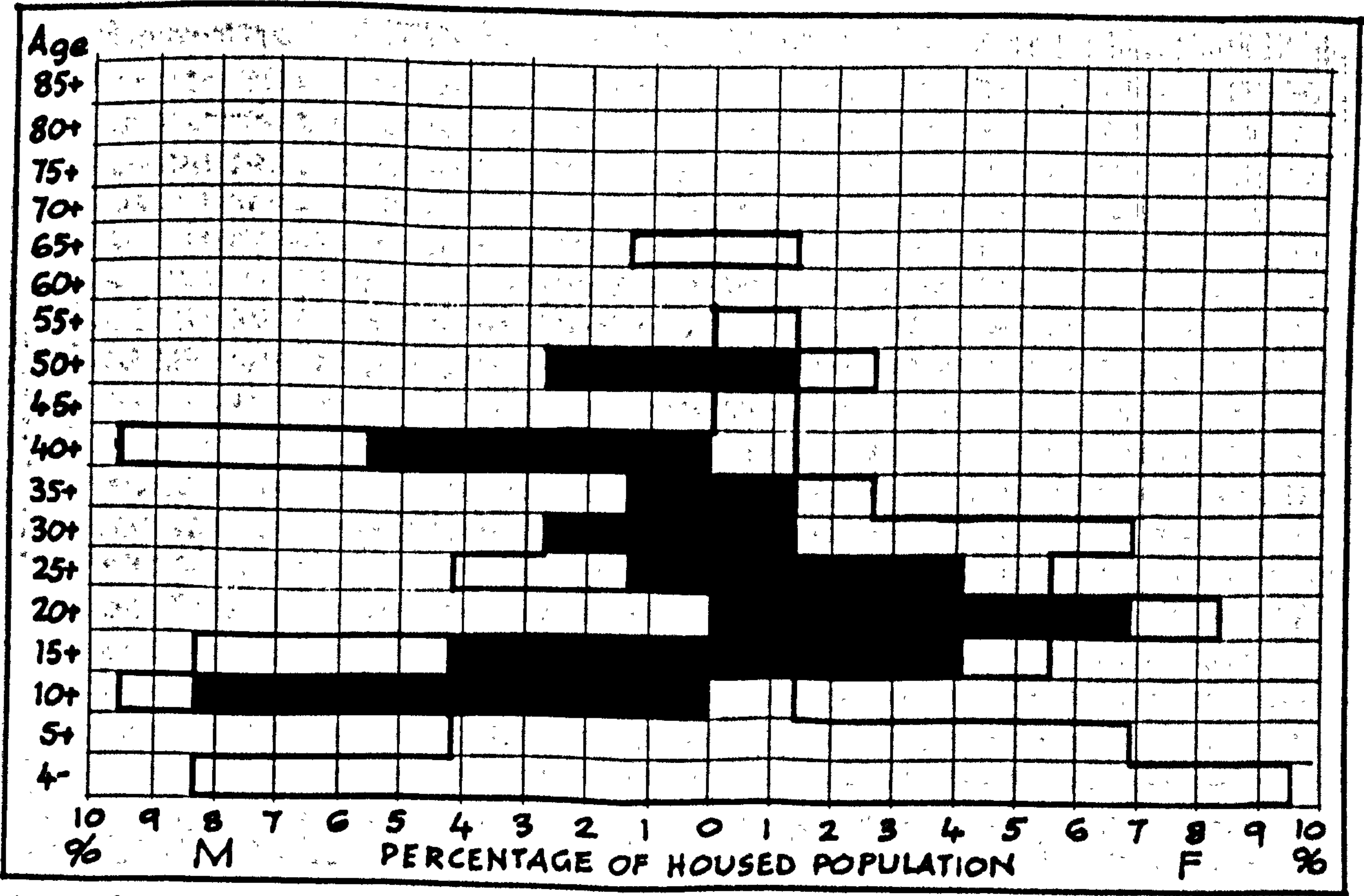
Cottage property of H. Unwin in 1841.

Occupied dwellings: 15.

Void dwellings: 0.

Occupants on 7th June 1841:

(A) Tenant population:			Ages	MALES			FEMALES		
Males:	39	(49%)		(A)	(B)	(C)	(A)	(B)	(C)
Females:	40	(51%)	85+	0	0	0	0	0	0
	—		80-84	0	0	0	0	0	0
	79	(100%)	75-79	0	0	0	0	0	0
			70-74	0	0	0	0	0	0
(B) Landlord's employees:			65-69	1	0	1	1	0	0
Males:	19	(24%)	60-64	0	0	0	0	0	0
Females:	14	(18%)	55-59	0	0	0	1	0	1
	—		50-54	2	2	2	2	1	2
			45-49	0	0	0	1	0	1
	33	(42%)	40-45	7	4	7	1	0	1
			35-39	1	1	1	2	1	2
(C) Sharing surname of			30-34	2	2	2	5	1	5
head of household:			25-29	3	1	3	4	3	2
Males:	35	(44%)	20-24	1	0	0	6	5	4
Females:	32	(41%)	15-19	6	3	5	4	3	2
	—		10-14	7	6	6	1	0	0
			5- 9	3	0	2	5	0	5
	67	(85%)	0- 4	6	0	6	7	0	7



APPENDIX C.

SANITARY AND SOCIAL MANAGEMENT IN SOME RURAL COTTON SPINNERS' HOUSING, 1833

(Answers returned to Question 65 of the Factories Commissioners' Questionnaire, as printed in the Factories Commission Supplementary Report, part ii, P. P. 1834, XX, 1.)

Mill Company

Answer returned to Question:

"Do the workpeople live in the houses of their employers; and if so, is any control or superintendence exercised for their moral or social improvement, or are any arrangements made to enforce domestic cleanliness; if so, specify their nature?"

Henry Barlow,
Brinnington, Ches.

Only two as tenants.

W. and C. Howard
Brinnington, Ches.

Some part of them do, over which there is no particular control or superintendence, further than seeing that the yards, channels and sewers of such houses are kept clean and free from nuisance.

J. Middleton,
Cheadle Bulkeley,
Ches.

Some of them: they are required to whitewash them twice a year, I finding them lime. They are required to keep them in repair, and to be orderly in all things.

S. Armstrong,
Disley, Ches.

Some few, no control.

Thos. Barnes,
Disley, Ches. and
New Mills, Dbys.

A part of our hands live in our houses, and we see that their houses are whitewashed, cleaned, and painted yearly.

Moseley & Howard,
Disley, Ches.

A part of them.

Robinson and
Armitage, Dukinfield,
Ches.

Very few. There is a book society in the mill, to which we subscribe, and of which every individual may become a member by paying $\frac{1}{2}$ d a week.

Randall Hibbert,
Godley, Ches.

Many do, and some in their own. There are several Sunday schools near, to which I subscribe. The tenants are obliged to whitewash several times in the year, for which purpose I give them quicklime. I also require them to keep their back yards and sewer clean. Every yard is paved, fenced in, and has a necessary.

Sidebottom, Longdendale. Ches.	Nearly half live in our houses; and particular care taken in respect to cleanliness by washing and whitewashing.
C. Wood, Prestbury, Ches.	A small part.
Ainsworth, Stayley.	Some under us, others under other landlords, others in their own houses; those under our employ have whitewash and brushes found any time when called for.
Buckley and Howard, Stayley.	Chiefly in their employers' houses. Only with respect to whitewashing the houses.
Jas. Howard, Stayley.	A part do; parents are desired to send their children to Sunday School, which is pretty generally attended to; they are required to whitewash their dwellings twice a year, and keep them clean.
Jesse Howard, Stockport.	Some do, no control.
Chas. Wood, Sutton, Macclesfield.	In a few instances.
Jos. Wilkinson, Tintwistle.	Some of them do. We find them lime to whitewash with.
J. Winterbottom, Tintwistle, Ches.	A part live in my houses.
Ashton, Werneth, Ches.	Part in our houses. In our houses lime and brushes are provided whenever the tenants want for the purpose of whitewashing and when requisite we insist upon the use of them.
S. Greg, Wilmslow, Ches.	Many do; and for their use there is a chapel, infant school, day school, and Sunday school attached, with masters and mistresses. There is a sick club.
Ambrose Brewin, Tiverton, Devon.	A small part of the workpeople occupy houses belonging to the proprietor.
J. Strutt, Belper and Milford, Dbys.	Mostly in our own houses. There are large day schools, Sunday schools, and evening schools.
Walter Evans, Darley Abbey, Dbys.	A great proportion of the workpeople do live in our houses. Nothing is done absolutely to enforce domestic cleanliness, but much pains are taken to encourage it; and when any families continue very dirty we have them sent away from the place. We also regularly whitewash the cottages at our own expense, at least once and generally twice a year, throughout the inside of the cottages.
B. Waterhouse, Glossop, Dbys.	Some live in houses belonging to my establishment.

J. Lund and Nephew,
Blackburn,
Lancashire.

Yes, most of ours do; we give every encouragement to the well conducted and orderly.

Sam. Greg,
Caton,
Lancashire.

Most of them live in our houses, which have been materially improved of late years. They are frequently visited and urged to cleanliness, to neatness. In some cases a workman is paid for that purpose. A day and Sunday school has been established, at our expense, and is well attended. A partner lives on the spot and attends the school. We know that our interest and comfort depend on making our workpeople comfortable and contented, and we have always endeavoured to foster a confiding feeling towards us. (Answer 67: Great pains have been taken to improve the wholesomeness both of mill and cottages...)

Taylor, Hindle and
Co, Halliwell and
Sharples, Lancs.

They generally live in my houses. Schools are provided for their improvement, and encouragement is given to cleanliness.

H. Sidebottom,
Houghton, Lancs.

Some live in our own cottages, and we give them tickets of admission to Sunday schools in the neighbourhood and request them to attend. We make every convenience for hard and soft water.

S. Stocks jnr.,
Heaton Norris,
Lancs.

Many of them do; and some are very clean and some are very dirty, but all the houses are whitewashed every year, or oftener. 95 out of 100 are very clean. Night school and Sunday school on the premises.

H. and E. Ashworth,
Turton, Lancs.

Most of the workpeople in our employ reside in houses belonging to us. We exercise a control and superintendence over them, for their moral and social improvement. Arrangements are made; and at frequent and irregular periods visits are paid to the dwelling of every workman who resides on our premises. The state and cleanliness of their rooms, their bedding and furniture, are very minutely examined, and the condition of their children, their income and habits of life, are carefully inquired into, and remarks thereon are entered in books which are kept for the purpose.

H. and C. Hollins,
Cuckney, Notts.

Many of them do. No superintendence.

E. Unwin, Sutton
in Ashfield, Notts.

Some of them do, but the majority do not.

- J. Chambers,
Mansfield, Notts. They do not, generally; there may be the overlookers and their families; but these persons are moral, attend a place of worship generally, and are fond of domestic cleanliness.
- Levers & Greenhalgh,
Mansfield, Notts. Only two families. No control.
- R. Hardwick,
Mansfield, Notts. Two small families.
- F. Wakefield,
Mansfield, Notts. Some of the men do, many do not.
- G. S. Wells.
Barkisland, W. R. Some in cottages of mine.
- Greenwood and
Whittaker, Burley,
W. R. Mostly in houses belonging to the establishment. Cleanliness is particularly attended to, and the houses and mills frequently whitewashed, lime being found by the proprietors, and frequently applied hot.
- , Erringden,
W. R. In some cases they live in our houses. The children attend a Sunday school.
- Jas. Greenwood,
Langfield, W. R. Some of our workpeople live in our own houses, others do not.
- Sidgwick, Skipton,
W. R. Five families live in cottages belonging to us in the town of Skipton.
- J. Jellicorse,
Sowerby, W. R. Eight cottages in which my workpeople reside. The greater part of the children attend the Sunday school at Sowerby Church, and all may, if their parents would send them.
- N. B. A different form, with no questions on the subject of housing, was sent to the majority of Yorkshire millowners.

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"D" Ledger, 1795-1803	(162-2-70)
"E" Ledger, 1795-1803	(162-3-70)
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Banking Acct. Bk. 1832-42	(162-5-70)

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