‘Passing Through’

The Socio-Economic Effects of the Grand Junction Canal on West Hertfordshire 1791 - 1841

by Fabian Hiscock

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Abstract

The study assesses how the county of Hertfordshire along the Grand Junction Canal developed economically and socially between 1790 and 1840. It considers the impact of the canal upon the various industries of the region, and shows that it was rather greater than has been presented by previous writers. Some paper makers in the west of the county started to use the canal as soon as it was available, and paper went on to become a significant industry: but the silk and cotton throwsters and the brewers used it to a much smaller effect. Agriculture, although really needing a different, less linear, form of transport, was able to take some advantage of the canal to take hay and wheat to London and bring back ‘manures’ for the soil: but the benefit to farmers was limited.

The parishes through which the canal passed were affected in one of two ways. The towns, especially those close to the line of the canal, had an influx of materials and goods through their wharfs as well as the development of some industry. The villages, with nothing round industry could coalesce, gained very little. Population growth, always slow, hardly changed, and the small towns remained so. The pre-existing turnpike which paralleled the canal for most of its course through Hertfordshire saw some loss of tolls, and remained a local rather than a trunk route.

This dissertation concludes that the population of western Hertfordshire was not big enough to sustain true industry, and did not generate enough employment to alter the strongly agrarian nature of the area. The towns changed under the influence of the canal, and those who could afford to buy goods had the chance to do so, but the labouring poor could not. The Grand Junction Canal allowed some industry to develop in the area and so paved the way for the railway, but cannot be said to have made a fundamental difference to western Hertfordshire through which it passed.

Acknowledgements

This study grew out of a personal interest in waterway history which, expanding to encompass the history of Hertfordshire, my adopted county, led me to seek the support of the University in teaching me how to study it in the academic environment. The staff of the History Department have been most generous in their help and advice, and I have had particularly good humoured supervision from Dr Katrina Navickas and Dr Julie Moore, without whose forbearance, prompting and guidance this project would have run into the sand on several occasions. My colleague researchers have also been very important through both their friendship and their academic example and advice, and the History Lab has made a significant contribution to my experience.

I have also been inspired by the work of my several friends working in both waterways and local history, whose work is acknowledged in the text; the members of Rickmansworth Historical Society, Abbots Langley Historical Society, Tring Local History and Museums Society and the Railway and Canal Historical Society have been unstintingly helpful. I am also most grateful to the staff and volunteers of Hertfordshire Archives and Local Studies, the National Waterways Archive, Watford Museum and Dacorum Heritage Trust in particular, as well as the National Archive and British Library: all have made me welcome and have guided my footsteps. Michael Stanyon, in his roles at the Paper Trail and with the Hemel Hempstead Local History and Museum Society, Mary Forsyth at Watford Museum and Nina Glencross at DHT have all been especially generous with time and advice. I am most grateful to them all.

But my special thanks go to my wife, without whose prompting and encouragement little would have been started, let alone finished.

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Abbreviations

BL	British Library
DHT	Dacorum Heritage Trust
GJC	Grand Junction Canal
GJCCo	Grand Junction Canal Company
HALS	Hertfordshire Archives and Local Studies
NWA	National Waterways Archive
TNA	The National Archive

Chapter 1

Introduction and Historiography

'Good roads, canals and navigable rivers, by diminishing the expense of carriage, put the remote parts of the country more nearly upon a level with those of the neighbourhood of large towns… They encourage the cultivation of the remote parts… They are advantageous to towns, by breaking down the monopoly of the country in its neighbourhood… and though they introduce some rival commodities into the old markets, they open many new markets to its produce.'

(Adam Smith, *The Wealth of Nations* (London, 1776))

Introduction

Adam Smith's observation predated the Grand Junction Canal by about 20 years, but relates directly to its course through remote Hertfordshire.[1] The story of the Grand Junction Canal (GJC), and of the Company (GJCCo) which built and operated it, has been told many times. Similarly, the history of Hertfordshire and of its towns and villages occupies many volumes over two centuries. Each theme refers to the other – as they must, since the canal is in the county for over 20 of its 93 miles. But none has addressed in detail the interaction between the two - the impact on the county of the early years of the canal, or the features of Hertfordshire which shaped the GJC and the consequences of that shaping. This study aims to bring together these partly-answered questions, to assess the social and economic impact of the Grand Junction Canal on west Hertfordshire, and in doing so to examine the truth and the effect of Smith's observations. It will argue that the GJC had a modest but real impact on the lives of many of those who lived along its line in western Hertfordshire, providing an initial boost to the process of industrialisation which was

[1] Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* ('The Wealth of Nations') (London, 1776), Vol 1 p.229.

to have a more significant effect as the influence of the railway began to be felt in and after the 1840s.

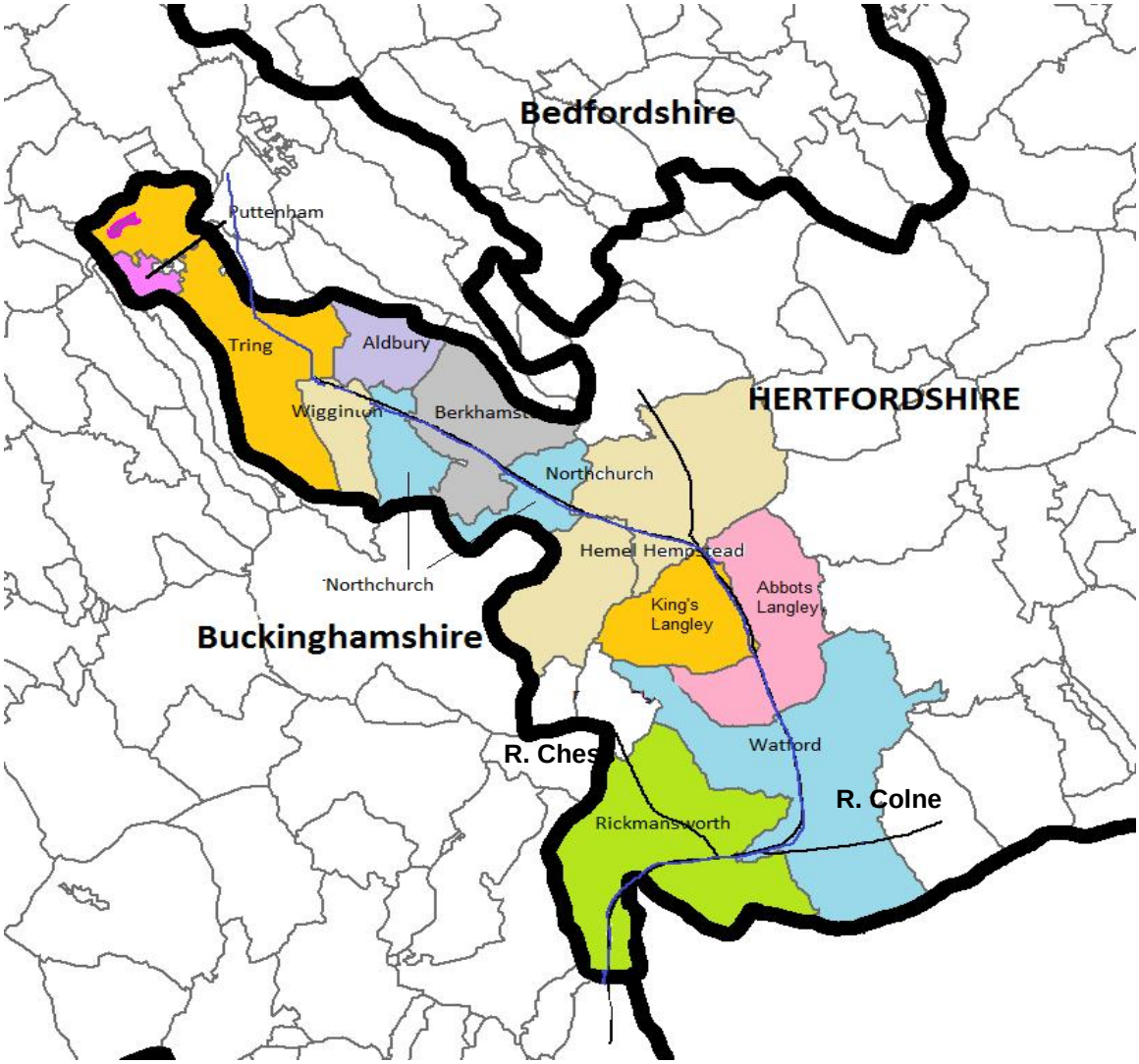

Fig 1.1
The parishes of western Hertfordshire covered by the study, showing the line of the Grand Junction Canal
(R.J.P. Kain and R.R Oliver, *Historic Parishes of England and Wales : an Electronic Map of Boundaries before 1850 with a Gazetteer and Metadata* (2001) [data collection]. UK Data Service. SN: 4348, http://dx.doi.org/10.5255/UKDA-SN-4348-1.)

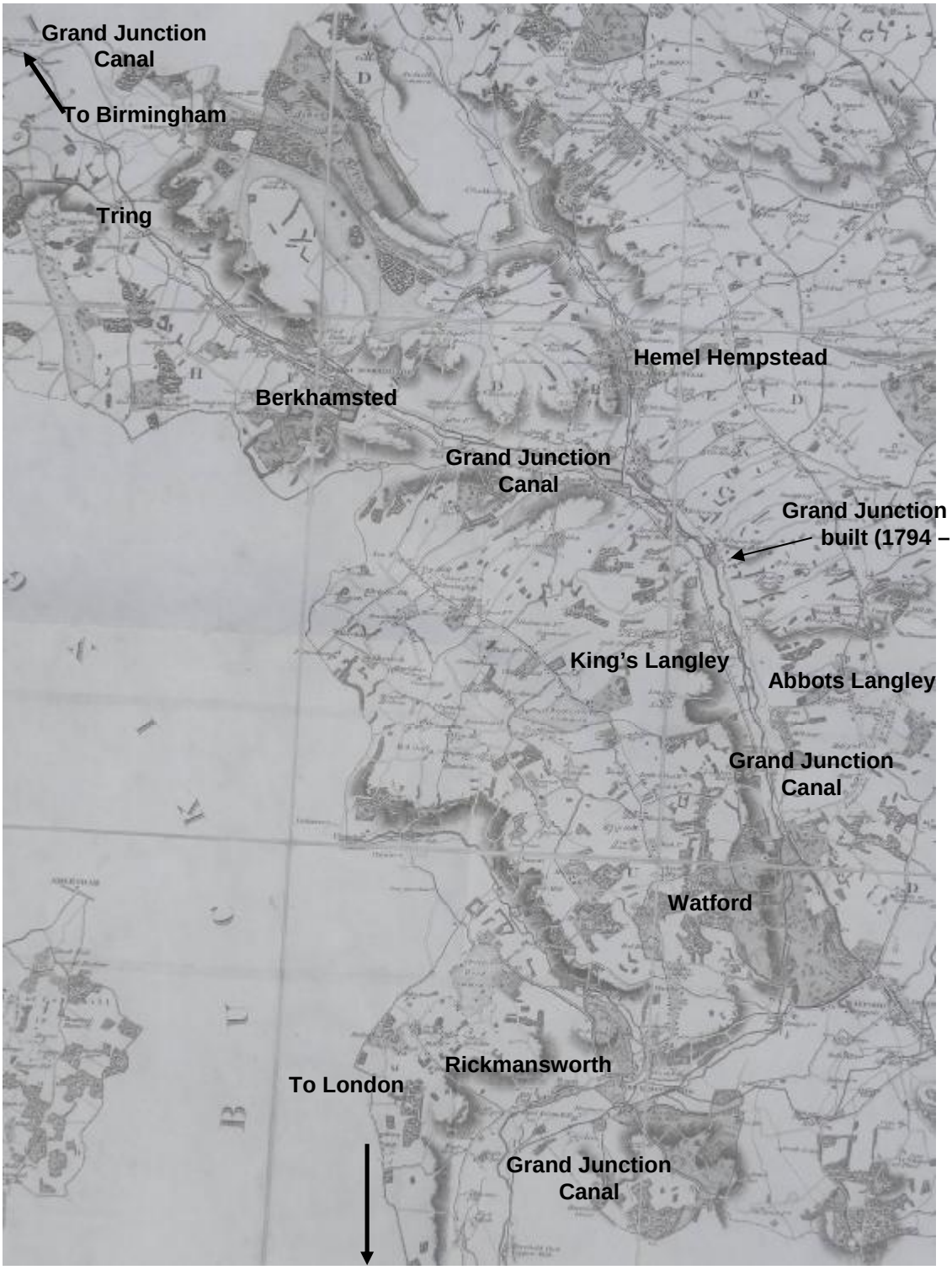

Fig 1.2
West Hertfordshire in 1822 (Bryant)
(Hertfordshire Records Society 2003,
by permission of HALS)

The argument is presented in three main chapters covering the economic state of western Hertfordshire in the early 1790s, before the canal was proposed; the changes due to the building and early operation of the canal; and the state of the area in 1841 as the study closes. The effects of the London and Birmingham Railway on the area from that time are not addressed here.

The period saw the lives of ordinary people begin to change under the country-wide influence of industrial development. There was little check on those seeking to set up 'manufactories', nor on the way in which their work force was treated: wages were driven wholly by the 'market', and people moved to places where the market was developing and where work was to be found.[2] At this time, nonetheless, agriculture still provided the principal employment, and in some areas (Hertfordshire was one) the farmer was almost the only employer.[3] Local life was indeed 'local', with the opportunity and means to travel or to transport goods still limited, not least by cost: the road system was improving under the influence of the wide-spread turnpikes, and canals and navigable rivers were allowing trade of many sorts between places connected by them, but for most people their market town was the main economic influence outside their village.[4] The parish, and to a lesser extent the manor, were the main organisational influences, but at least the 'managers' there were generally known to the inhabitants.

It may well have seemed, therefore, that the coming of the GJC, prompted by considerations wholly remote from the county, promised Hertfordshire something new. That promise is discussed in Chapter 2, the extent to which it was met in Chapter 3 and the resulting state of the county at the end of the period in Chapter 4.

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[2] J.F.C. Harrison, *The Birth and Growth of Industrial England* (New York, 1973) pp.40-43.
[3] Nigel Agar, *Behind the Plough* (Hatfield, 2013), p.13; Pamela Horn, *The Rural World* (London, 1974), pp.17-35.
[4] Harrison, *Birth and Growth of Industrial England*, pp.12, 13.

Historiography

Secondary Sources

This is a study of Georgian Hertfordshire, but is informed by several studies of transport, industry and society in other regions of England. Joyce Ellis provides a number of points of comparison with urban development elsewhere.[5] Kenneth Morgan, in looking at the 'industrial revolution' in the round, cautions that the statistics are poor for this period, and need careful interpretation from inadequate records – and points out that simply looking at the figures 'dehumanises' the driving factor of industrial growth, the efforts of the people, often working in poverty.[6] Pamela Horn, directly attentive to those people, shows how the rural economy developed nationally under the pressures of war and of industrialisation, points out the regional differences and shows in some detail the social and economic conditions - the standard of living - of the rural poor.[7] One effect she perceives is the regional difference in post-war living standards. 'In the north of England, where coal was cheaper and alternative employment existed in industry, the position of the labourers was far better [than in the non-industrial south]', and she goes on to show the life of the agricultural labourer, the mainstay of Hertfordshire's economy, in harsh light.[8] T.C. Barker and Christopher Savage and Philip Bagwell and Peter Lyth explain the development of transport at this time and its economic effect, from which one can see why Hertfordshire, without navigable waterways to connect it to the centres of industry, needed a reasonable but necessarily limited road system.[9] In considering the development of the canal network they draw largely on the specialist work of

[5] Joyce Ellis, *The Georgian Town* (Basingstoke, 2001), pp.25-36, 40-42.
[6] Kenneth Morgan, *The Birth of Industrial Britain* (London, 1999), p.4.
[7] Pamela Horn, *The Rural World* (London, 1980), pp.37-68; and *Life and Labour in Rural England* (Basingstoke, 1987), pp.1-63.
[8] Horn, *Rural World,* p.87.
[9] T.C. Barker and Christopher Savage, *Economic History of Transport in Britain* (London, 2012), pp.13-32; Philip Bagwell and Peter Lyth, *Transport in Britain* (London, 2002), pp.3-20, 37-48; Peter Mathias, *The First Industrial Nation: The Economic History of Britain 1700-1914* (London, 1969), pp.107-113.

Charles Hadfield, the pre-eminent post-war waterways historian, and restrict their analysis to the general case, but they do highlight both the importance of the GJC and its effect on London.[10] Bagwell and Lyth, drawing on Hadfield among others, make the point that, while canals were very effective at moving industrial goods and fuel, they were less so with agricultural products – an important consideration in the case of Hertfordshire, and one recently expanded by E.A.Wrigley.[11]

Very little of the background work outlined above makes direct reference either to Hertfordshire or to the GJC. The broad-brush nineteenth century treatments of Hertfordshire by Robert Clutterbuck (1772 – 1831) and John Cussans (1837-1899) give some background and point towards potentially significant names, but provide little help as social histories.[12] More recently, William Branch Johnson's wide-ranging history of the county's industry considers only briefly the role of the canal, but moves almost straight from road transport to the railway. He notes, correctly but without detail, 'the GJC intertwining with the Colne, Gade and Bulbourne, concerning itself with Hertfordshire less than with long-distance traffic but not without assistance to such towns as Hemel Hempstead and Berkhamsted', with Watford benefitting least of all.[13] He discusses industrial features in the west of the county without going into great depth, and suggests that canal and river navigations in Hertfordshire, regarded as a transit county to be passed through, had tended to boost one or two already long-established industries rather than introduce new ones.[14] His simple observation that 'the opening of the canal seems to have had very little effect' is one of several which gave rise to this study, and is echoed more recently by Tony Rook, who considers the canal as part of the transport infrastructure, notes the interactions

[10] Charles Hadfield, *The Canal Age* (Newton Abbot, 1968), pp.69-87, 105-120; Barker and Savage, *Economic History*, p.43.
[11] Bagwell and Lyth, *Transport in Britain*, p.20; E. A. Wrigley, *The Path to Sustainable Growth* (Cambridge, 2016), p.139.
[12] Robert Clutterbuck *The History and Antiquities of the County of Hertford* (London, 1821-1827); J.E. Cussans, *History of Hertfordshire* (London, 1870-1881).
[13] William Branch Johnson, *Hertfordshire* (London, 1970), pp. 197, 201.
[14] Branch Johnson, *The Industrial Architecture of Hertfordshire* (Newton Abbot, 1970), pp.23.119-121, 140.

between the mill owners and the GJCCo, and observes, again without detail, that 'the canal brought the industrial revolution to west Hertfordshire'.[15]

In considering the effect of the canal on Hertfordshire it was necessary to establish the state of affairs there before its advent. The nature of the county and of the main settlements in the early part of the period was gleaned from the more recent work led by Nigel Goose and Terry Slater and by David Short. These show the main features of the county's economy and that Hertfordshire was, and remained, a sparsely populated county of small towns, at the time of the study heavily dependent on agriculture.[16] Much of their work is, however, related to the east rather than the west of the county, and so interpolation is required. The 'market town' (a term signifying a non-industrialised centre of local commercial activity) is examined by Barrie Trinder in a useful picture of the attributes by which, for the period 1750 to 1850, such a town might be assessed.[17] This model has been applied at Appendix A to the towns (Tring, Berkhamsted, Hemel Hempstead, Watford and Rickmansworth) of greatest interest in this study as it considers how the towns developed under the influence of the canal.

The main sources on the agriculture of the county during the period are found in the recent work of Anne Rowe and Tom Williamson, Nigel Agar, Grant Longman, and the contemporaneous commentary of Arthur Young (1741-1820) analysed by Gordon Mingay and others.[18] Agar in particular shows the developing social and economic state of Hertfordshire in the early years of the period, and makes the key

[15] Branch Johnson, *Industrial Architecture*, p.14; Tony Rook, *A History of Hertfordshire* (London, 1984), pp.81, 100.
[16] Nigel Goose and Terry Slater (Eds), *A County of Small Towns* (Hatfield, 2008), Chs.1, 4, 5, 10, 12; David Short (Ed), *An Historical Atlas of Hertfordshire* (Hatfield, 2010).
[17] Barrie Trinder, 'Market Town Industry - an Analytical Model', in *Industrial Archaeological Review* (XXIV:2, 2002), pp.75-89.
[18] Nigel Agar, *Behind the Plough* (Hatfield, 2005) and 'The Hertfordshire Farmer in the Age of Industrial Revolution' in *Hertfordshire in History*, Doris Jones-Baker (ed) (Hertford, 1991); Anne Rowe and Tom Williamson, *Hertfordshire - a Landscape History* (Hatfield, 2013); Arthur Young, *Review of the Agriculture of Hertfordshire* (London, 1804); G. E. Mingay (Ed), *Arthur Young and his Times* (London, 1975), pp.4-24; E. G. Longman, *A Corner of England's Garden: an agrarian history of South West Hertfordshire* (Bushey, 1977), pp.54-67.

observation that, except for paper making, the industrial revolution of the eighteenth and nineteenth centuries 'passed the county by'.[19] His view that Hertfordshire was not very different from other areas of rural England justifies applying lessons from elsewhere (presented, for example, by Horn) to this county, and allows connections to be made with effects of canals noted elsewhere.[20] Rowe and Williamson write about the landscape of Hertfordshire, and their description of the development of western Hertfordshire during this period includes many clues as to the effect of the canal.[21] Most of Longman's analysis pre-dates the period of this study, but he uses a 1798 Survey of Watford parish to conclude that farming in the area in about 1800 had changed only slowly, becoming if anything more arable; and he makes observations about the farmer's use of the canal which tend to support the conclusions of this study.[22] This suggests that it is reasonable to apply observations from, for example, the 1801 Census and other records to the point 10 years earlier when the canal began to emerge.

Young was a key contemporaneous reporter of the state of agriculture in the county at this time, but his work needs to be put into context. Mingay and his contributors, drawing on the whole range of his extensive writings, decry the later tendency to paint Young as a failure because he was not a successful farmer – they point out that his works were widely published and his international and British contacts very extensive, and conclude that his observations deserve respect.[23] Longman is content to accept generally what Young says, although he suggests that Young's 'throwaway remarks' about common practices may be more significant than his detail of activities on specific, wealthy farms.[24] While Young was reporting the activities of progressive and generally successful farms rather than the 'run of the

[19] Agar, *Hertfordshire Farmer*, p.247.
[20] Agar, *Behind the Plough,* p.1; J Douglas Porteous, *Canal Ports* (London, 1977), Chs 2, 3.
[21] Rowe and Williamson, *Hertfordshire,* pp.1, 88-113, 239-265.
[22] Longman, *Corner of England's Garden*, Vol 1 pp.54, 55.
[23] Mingay, *Arthur Young,* pp.3, 6-8, 11.
[24] Longman, *Corner of England's Garden,* Vol 1, p.62.

mill' ones his reports provide a valid basis on which to draw conclusions, as is done in Chapter 2.

The main industries in the county at this time were paper-making, textiles and brewing, all well established in western Hertfordshire but of small scale – and all potential users of the canal. The most important of these was clearly paper-making, as Branch Johnson concluded, and the general history of its development and conduct in Hertfordshire was found, under the guidance of Michael Stanyon at the Paper Trail, in the recent work of Richard Hills and Austin Pilkington and the older but more detailed accounts of Eric Finerty and Alfred Shorter.[25] More detail of Dickinson's, the main producer, came from the work of Joan Evans.[26] But none of these makes much if any reference to the role of the canal, and this has had to be pieced together from various sources as is shown in Chapter 3. Consideration of the silk and cotton industries in the area draws largely on the work of Sheila Jennings, in both her PhD thesis and her more local studies, and from Wendy Austin's work on Tring, although once again the use of the canal by the silk and cotton throwsters is little remarked.[27] Brewing in Hertfordshire has been shown by Allen Whittaker to be a significant but very local industry which in west Hertfordshire had the canal available from mid-1796; the extent to which it used it has been suggested but not really examined, and an attempt to do this is made in Chapter 3, although the records of the time are at best thin.[28]

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[25] Branch Johnson, *Industrial Archaeology,* pp.55-61; Richard L Hills, *Papermaking in Britain (*London, 1988), pp.45, 46, 55; Austin Pilkington, 'Frogmore and the first Fourdrinier', in *A history of The British Paper Company, 1880-1890,* Ch 3 (published privately by The British Paper Company Ltd, 1990); Eric Finerty, 'The History of Paper Mills in Hertfordshire' in *The Papermaker and British Paper Trade Journal* (April/May 1957) (transcript provided by The Paper Trail, Hemel Hempstead); Alfred Shorter, *Paper Mills and Paper Makers in England* (Hilversum, 1957).

[26] Joan Evans, *The Endless Web* (London, 1955), pp.4-69.

[27] Branch Johnson, *Industrial Archaeology,* pp.62-64; Sheila Jennings, *The Ravelled Skein* (PhD Thesis, University of Hertfordshire, 2002); and 'The Textile Mills at Rickmansworth' in *Rickmansworth Historical Society Newsletter* No 52 (March 2001), pp. 4-7; Wendy Austin, *Tring Silk Mill* (Tring, 2014).

[28] Allen Whittaker, *Brewers in Hertfordshire* (Hatfield, 2006), pp.3, 9-15, 74, 113-115, 162-166, 173-177, 202-206, 215, 223, 224.

The most detailed secondary sources are by the many local historians. These include Broughton, Cornwall, Saul, Jacques and others in Rickmansworth, Henry Williams (a little) and currently Mary Forsyth in Watford, Clive Clark and Scott Hastie in Abbots Langley, Hastie and (earlier) Lionel Munby in King's Langley, Susan Yaxley in Hemel Hempstead, and Hastie and, earlier, Percy Birtchnell in Berkhamsted.[29] In Tring, Ian Petticrew and Wendy Austin have done very wide-ranging work.[30] Care is required in drawing on these, but they give useful pointers and often well-researched insights. Many refer to the coming or the presence of the canal, although few address its impact. The conclusion might be drawn, therefore, that it had little effect, as Branch Johnson says, and it was to verify or disprove this that the study was undertaken.

The GJC itself has nonetheless been closely studied, notably by Hadfield and Alan Faulkner, and with a more local interest by Austin and Petticrew in Tring, and by Geoff Saul in Rickmansworth.[31] Most of the accounts of Hadfield and Faulkner concern the history of the GJC Company - the building of the canal and its commercial history up to and including the 1960s. But even Faulkner's work on the canal in Hertfordshire makes little reference to its economic or social impact on the area, while Hadfield does so not at all. Even Austin and Petticrew, drawing largely on the same National Waterways Archive and National Archive sources, have been unable to find sufficient data, while Saul and others give, in several articles, either a

[29] In particular articles in *The Rickmansworth Historian*; Rickmansworth Historical Society Newsletter (Three Rivers Museum); Henry Williams, *History of Watford* (London, 1884) (Republished Watford, 1976), pp.8, 16, 24, 41; Susan Yaxley (ed), *History of Hemel Hempstead* (Hemel Hempstead, 1973); Clive Clark, *Abbots Langley Then* (Cockfosters, 1997); Lionel Munby (ed), *A History of Kings Langley* (King's Langley, 1963); Percy Birtchnell, *A Short History of Berkhamsted* (Berkhamsted 1972); Mary Forsyth, *Watford* (Stroud, 2015).
[30] Wendy Austin and Ian Petticrew, *The Waterway comes to Tring* (Tring, 2014) and *The Railway comes to Tring* (Tring, 2013); Jean Davis, *Aldbury* (Aldbury, 1987), pp.35, 51, 63, 74, 84, 100.
[31] Hadfield, *Canals of the East Midlands* (Newton Abbott,1965); Alan Faulkner, *The Grand Junction Canal,* (Newton Abbot, 1972); Faulkner, *The Grand Junction Canal in Hertfordshire (2nd Edition)* (Hatfield, 1993); Austin and Petticrew, *The Canal comes to Tring*; Geoff Saul and others*, Articles* in Newsletters of Rickmansworth Historical Society Issues 6, 7, 13, 16, 17, 23, 61, 94; Austin and Petticrew, *A Highway laid with Water - An account of the Grand Junction Canal, 1792 – 1928* (http://gerald-massey.org.uk/Canal/index.htm).

general picture or one related to the Rickmansworth area. John Ward considers in great depth the economics of canal building including the GJC, and looks at the organisation of the companies as well as their shareholder and other sources of funding.[32] He also encapsulates a theory of the relationship between England's economic and population growth, agricultural prices and labourers' wages: the growing population added to demand, so inducing technological innovation in and increased output from agriculture, and redistributing income to landowners and tenant farmers, who bought things, from 'wage labourers', who did not. When rapid growth occurred agricultural prices rose or stayed firm with rapid increases in volume of output; landlords' rent and farmers' profits rose, real wages of labourers fell, and trade flourished, with large volumes of purchases made by those who could. [33] When there was no or slow growth of population the opposite occurred, and Ward sees this as happening from the 1750s onwards without much interruption.

The social and economic impact of the people who actually cut the canal on the areas in which they were working is clearly relevant to this study, and is addressed by Anthony Burton, although most of his examples are from the north of England, and by D.D. Gladwin, presenting much more of the social impact of the canals across the country.[34] One uncertainty about this period is the extent to which labour was drawn from the fields to work on the canal: evidence presented by Burton and others suggests that, in Hertfordshire at least, it was not, and this is examined in Chapter 3. The details of the work involved in the cutting are presented by a number of authors including those mentioned above, but Hadfield and A.W. Skempton in their

[32] J.R. Ward, *The Finance of Canal Building in Eighteenth Century England* (Oxford, 1974), pp.197-125.
[33] Ward, *Finance of Canal Building*, p.167.
[34] Anthony Burton, *The Canal Builders* (Stroud, 3rd Ed 1993*),* pp.131-170; D.D. Gladwin, *The Waterways of Britain* (London, 1976), pp.49-129.

biography of the GJC's consulting engineer William Jessop give useful insights, as does a long essay prepared in 1805 by John Farey sr. in Rees's *Cyclopaedia*.[35]

Economic indicators of the effect of the canal have been taken in simplified form from the work of Wrigley and Roger Schofield and of Neil Tranter.[36] In a useful model (Fig. 1.3) they connect population size and movement to food prices, demand for labour and demand for products and services, and allow consideration of the potential impact of the canal on west Hertfordshire's population in this period, although great care is required in applying a model designed for application at a national level to a small area with a specific issue under examination. Tranter points out regional variations and reasons for them, with clear differences between rural areas such as Hertfordshire, growing relatively slowly, and industrial and commercial areas such as London and the midlands, growing much faster, while Ellis also offers evidence to support the point and Agar relates the general situation to Hertfordshire.[37] Tranter also draws attention to 'the steady migration of people from agricultural to industrial and commercial areas', a point applied later to Hertfordshire by Goose.[38] An analysis of the population data at the end of the period is presented in Chapter 4, with a re-statement of Wrigley and Schofield's model: it was into this system that the GJC introduced one of several exogenous influences, directly affecting the demand for labour and for products, and so real wages. This is also considered in Chapter 4.

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[35] Burton, *Canal Builders,* pp. 68-73; Hadfield and A.W. Skempton, *William Jessop, Engineer* (Newton Abbot, 1979), pp. 10-125; Christine Richardson, *The Waterways Revolution* (Hanley Swan, 1992), pp. 110-126; Phillips, *Inland Navigation,* pp. 121, 585; Farey, sr, John (1806), 'Canals', in Rees, Abraham *Cyclopaedia* (London) Vol 6 Part 11, P:7:1 to Kk:8:2, accessed through www.archive.org/details/cyclopaediaorun06rees consulted 6 April 2016.

[36] Neil Tranter, *Population since the Industrial Revolution* (London, 1973); E. A. Wrigley and R. S. Schofield, *The Population History of England 1541 - 1871* (London, 1981); Kenneth Morgan, *The Birth of Industrial Britain 1750 – 1850* (London 1999), p.14.

[37] Tranter, *Population*, p.43; Ellis, *Georgian Town*, pp.26-29; Agar, *Behind the Plough,* pp.14-17.

[38] Tranter, *Population*, pp.51.54; Goose, 'Population 1801 – 1901', in Short, *Historical Atlas*, pp.56,57.

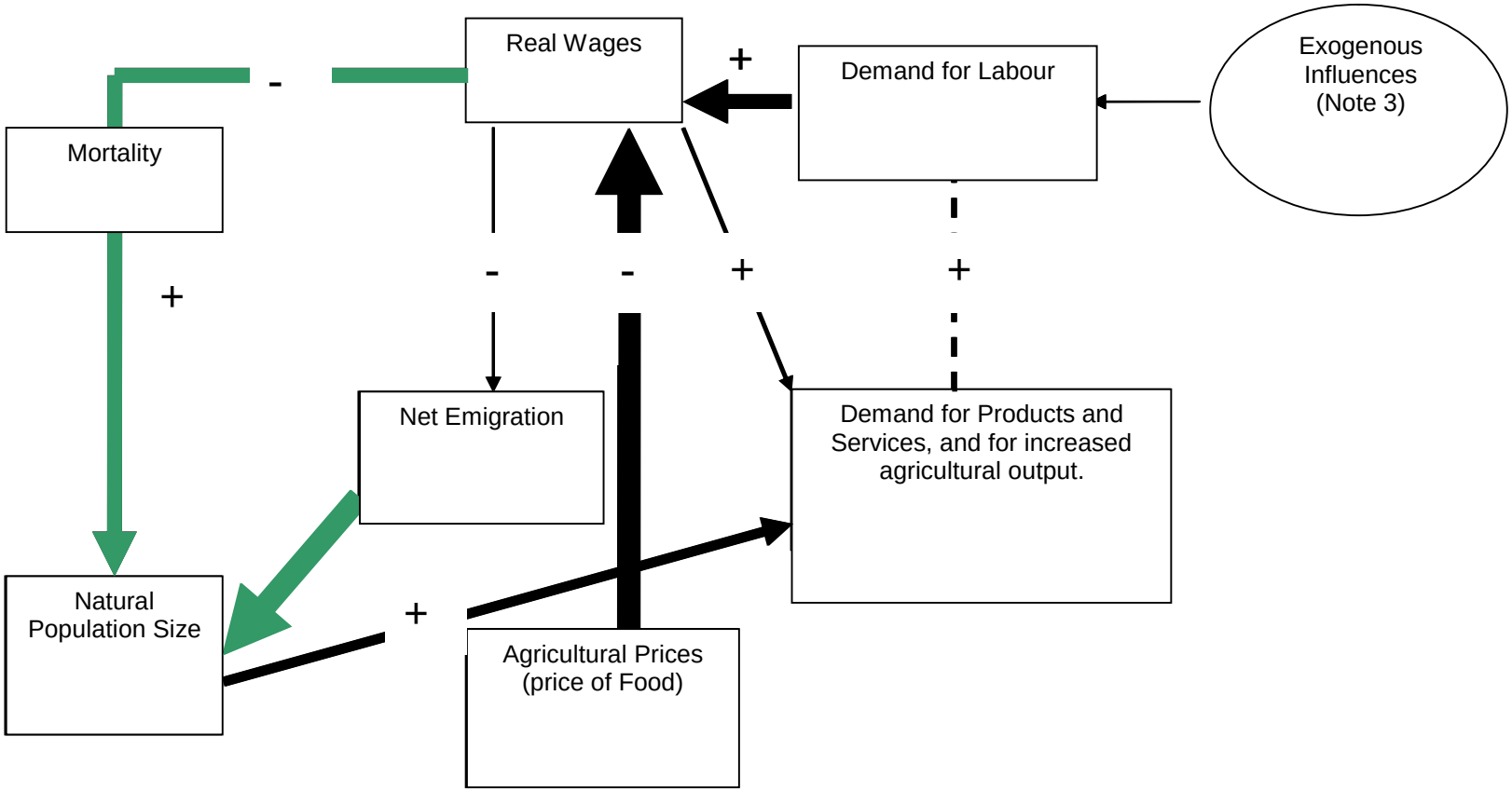

Fig 1.3

A simplified representation of Hertfordshire' economy in the early 1790s,
before the Grand Junction Canal
(After Wrigley and Schofield, *Population History,* p. 470)

Notes on Fig 1.3

1. The strength of the relationship between two factors is indicated by the thickness of the line connecting them. A thin line indicates a firm but not strong link, while a thick line shows that the link is strong and influential over the behaviour of the whole system.

   A broken line ---------- indicates a weak or insignificant connection.

2. The links showing the simple logic that higher fertility, lower mortality and migration all increase the size of the population (and vice versa) in a way that does not change are shown in green.

Exogenous influences:

3. In Fig 1.3 these are limited. Arguably the most significant was the draw of labour towards London, but the weather (for example in 1795) was another. The influences on Mortality include diet, public health (water supply, sanitation, disease control) and other factors outside the scope of this study, but discussed at great length by Wrigley and Schofield.[39]

4. The withdrawal of labour for the Army and Navy at the opening of the war was also significant, but is not addressed in this study.

Primary Sources

The primary sources, some specific to Hertfordshire, are used mainly to follow the development of the parishes closest to the line of the canal. The Census, especially for 1801 and 1841, was used to assess the growth of the populations of the parishes over the period, to inform conclusions as to the economic and social nature of the parishes at the end of the period, and to compare the distribution of

[39] Wrigley and Schofield, *Population History of England,* pp. 454-484.

occupations of adult inhabitants near and away from the line of the canal.[40] In doing so the cautions expressed by Edward Higgs and by Tranter were respected: this is a broad-brush treatment, and does not offer detailed analysis of occupations, nor of the social or economic status of individuals, nor of their place of origin.[41] It was nonetheless helpful to cross-refer the 1841 Census, the first to identify the occupations and places of residence of individuals, to the tithe maps and awards compiled between 1838 and 1844 in order to investigate the use of land along the canal at the end of the period, especially for evidence of canal-based industry. This is done in Chapter 4.

A further indicator of economic effect was expected to be the impact of the canal on the Sparrows Herne Turnpike which ran close to it through much of the county: the Treasurer's Accounts and minutes of the Trustees' meetings were used to build a partial financial model, presented at Appendix G, from which the impact on local transport could be assessed.[42]

Not all the parish records remain extant, but those held by HALS allowed an assessment, especially through the Rate Books and the Overseers' Accounts, of the depth of wealth in the main parishes and of the development of businesses as well as of (for example) the benefit to the poor of canal-carried coal. They also allowed a revision of the relationship after 1798 between the canal and the paper makers of Hemel Hempstead, and revealed the disputes between the GJCCo and the Parishes over their cash contributions to the parish economies through the Rates. These are examined more closely in Chapter 3. Other local primary sources include the records

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[40] TNA HO107/442/5-7 (Tring); HO107/442/9 (Wigginton); HO107/440/1 (Aldbury); HO107/442/2 (Puttenham); HO107/440/5 (Northchurch); HO107/440/3-4 (Berkhamsted); HO107/441/5-8 (Hemel Hempstead); HO107/441/12 (King's Langley); HO107/438/1 (Abbots Langley); HO107/439/5-8 (Watford); HO107/438/20-22 (Rickmansworth), accessed through www.findmypast.com, consulted 4 April 2016.

[41] Edward Higgs, *Making Sense of the Census* (London, 1989), pp.9, 10, 36, 64, 78-92; Neil Tranter, *Population and Society 1750-1940* (London, 1985), pp.10-12.

[42] HALS TP4/28-32, Sparrows Herne Turnpike Treasurer's Journal Accounts; TP4/2-5, Sparrows Herne Turnpike Trustees' Minutes.

of the Manor of Croxley in the Gonville and Caius College Archive and several relating to Dacorum Hundred held by both HALS and Dacorum Heritage Trust (DHT).

The GJCCo records held by the National Archive and the National Waterways Archive were also important in showing the main concerns of the Company and its activities most relevant to Hertfordshire. A number of side-lights were cast on the early interactions with landowners, the problems of sharing water supplies with mill-owners and a number of relevant commercial deals. The gauging registers, containing the details of boats being used on the canal, although not complete, show the owners and bases of boats using the canal through Hertfordshire and allow conclusions, presented in Chapter 3, to be drawn on the extent to which businesses in the county were actively using the new waterway.

The British Library also contained some new material, for example Thomas Baskerfeild's (1751-1816) sketch plans, used in Chapter 2, of each Hertfordshire parish in the early 1790s just before the canal cutting began; and the 1794 booklet of agricultural advice by the Bedfordshire surveyor Joseph Hodskinson (fl.1765–d.1812), which confirms the overall state of agricultural practice at this time.[43] The National Newspaper Archive, *The Times* Digital Archive and newspapers held by HALS provided illustrative detail, as did the Gentleman's Magazine.[44]

Summary

The study was prompted by the paucity of information on how a major infrastructure project such as the Grand Junction Canal could pass through Hertfordshire with so little impact that it merits scarcely a mention in histories of the

[43] Thomas Baskerfeild, *Hertfordshire* (unpublished) – BL, shelfmark AddMS 9062 and 9063; Joseph Hodskinson, *A Farmer's Guide - or an improved method of management of arable land* (London, 1794), Contained in 'Tracts 1794 – 96' (BL, shelfmark 966/f15).
[44] The Gentleman's Magazine, selected issues in Vols 62 (1792) to 76 (1806); *The Times* (selected issues), 17 Feb 1794 to 11 July 1839, accessed through *The Times Digital Archive,* consulted 4 April 2016*; County Press*, 11 April 1835; *Northampton Mercury* (selected issues), 14 April 1786 to 10 June 1809, accessed through http://www.britishnewspaperarchive.co.uk, consulted 23 April 2016.

county. This dissertation seeks to show that it did, in fact, have an impact. It brought, or allowed the development of, industry to an area previously very heavily reliant on agriculture; by doing so it had a modest but palpable effect on the lives of people living or working near it. It also prepared the way for the greater changes due to the London and Birmingham Railway of 40 years later.

Chapter 2

Hertfordshire in the early 1790s and the changes offered by the canal

This chapter considers the parishes and towns on the west side of the county in the valleys of the rivers Gade, Bulbourne, Colne and Chess before the canal's arrival. It is illustrated with plans of the parishes drawn by Thomas Baskerfeild[1] before 1800 and contained in his 'Hertfordshire' compilation in the British Library.[2] It goes on to outline the economic and social effect which would have been expected in west Hertfordshire as the GJC approached.

Hertfordshire had, as is described by Nigel Goose and Terry Slater, at this time neither major towns nor mineral resources, and had always been relatively sparsely populated.[3] But it had nonetheless an important role in providing, in particular, wheat for the London market and (in the east of the county) malting barley for the London brewers.[4] During the eighteenth century the growing sophistication of the national economy, increasingly urban and industrial, resulted in agriculture becoming more specialised and carried out on larger farms, and Anne Rowe, Tom Williamson and Nigel Agar consider the impact of the proximity of London on the development of arable agriculture in Hertfordshire.[5] Agar also points out the importance of the process of enclosure, with landowners consolidating their holdings and letting them to tenant farmers who employed labour and worked on a relatively large scale. Enclosure in west Hertfordshire had been long-standing, largely informal

[1] The spelling of the name is variously Baskerfield and Baskerfeild, and the latter has been used here. See Note 1 to Gordon Cox, 'Thomas Baskerfeild', in *Hertfordshire Past and Present* (3rd Series - Issue No 25, Spring 2015), pp.20-31.
[2] Thomas Baskerfeild, *Hertfordshire,* BL Shelfmark Add MS 9062 and 9063.
[3] Nigel Goose and Terry Slater, *A County of Small Towns* (Hatfield*,* 2005), p.11; Anne Rowe and Tom Williamson, *Hertfordshire – a landscape history* (Hatfield, 2013), p.252; Nigel Agar, *Behind the Plough* (Hatfield,2005), pp.14, 15.
[4] Peter Mathias, *The Brewing Industry in England 1760-1830* (Cambridge, 1959), pp. 396, 405; Agar, 'The Hertfordshire Farmer in the Age of Industrial Revolution', in Doris Jones-Baker (ed), *Hertfordshire in History,* (Hertford, 1991), p.247.
[5] Rowe and Williamson, *Hertfordshire,* p.24; Agar, 'The Hertfordshire Farmer in the Industrial Revolution', in *Hertfordshire in History,* Doris Jones-Baker (ed) (Hertford, 1991), p.247.

and by agreement, although Tring, enclosed by an Act of 1797, is an exception, and Arthur Young was able to observe in 1804 that while these developments were not yet complete their effect would clearly be 'very great'.[6] The increasing productivity of the arable farmer was due partly to enclosure, partly to improving techniques and partly to improvement of the land by draining and manuring (adding any material to the soil): wheat was the main output of the area, although sheep on the uplands contributed also to the arable yield and cattle were pastured in the wet river valley bottoms such as Boxmoor.[7] Rowe and Williamson also note a general shift of economic development from the east of the county to the south, due in part to the development of the turnpikes, and Agar highlights the impact on the county of these improving roads radiating from London.[8] This was a factor in the influx of London money to buy Hertfordshire estates, although because the land was already supporting agriculture well the impact of this on the countryside was limited - the in-coming gentry were buying 'pleasant houses and grounds' to go with their medium-sized rented-out estates, and did not threaten the well-established agricultural activity which generated the rents.[9]

Hertfordshire Industry

Agriculture

The Hertfordshire farmer of the 1790s, like his colleagues elsewhere, was generally a professional. Plenty of advice was available from men like Joseph Hodskinson (1735–1812) and Young who, often borrowing the earlier work of Daniel

[6] HALS DP/111/26/2, Tring Enclosure Map (1797); Arthur Young, *General View of Agriculture in Hertfordshire* (London, 1804), p.44.
[7] Rowe and Williamson, *Hertfordshire*, p.25; Nigel Agar, *Behind the Plough* (Hatfield 2005), pp.24, 40-44; Agar, *Hertfordshire Farmer,* p.248; Roger and Joan Hands and Eve Davis, *The Book of Boxmoor* (Hemel Hempstead, 1994), p.50.
[8] Rowe and Williamson, *Hertfordshire*, p.26; Agar, *Behind the Plough*, pp.4, 5.
[9] Rowe and Williamson, *Hertfordshire,* pp.26/27, 207, 228-234.

Walker, made detailed observations about techniques being used in Hertfordshire.[10] Although not usually owner-occupiers, Hertfordshire farmers were by no means poor: they had incomes up to £300 a year (four times what, for example, the GJC was to pay its pay clerk), employed typically 20 people and often more, and knew their business, markets and cost drivers.[11] Paying an annual rent which varied according to the value and location of the land but typically around 18/- an acre, they farmed largely as tenants of landowners generally interested in the business, and had a key role in the community as rate-payers and members of their parish.[12] Agar emphasises that Hertfordshire, 'no rural backwater', was undergoing changes as profound as those in industry; before 1800, with war-affected shipping for importing food scarce and with road transport for imports still difficult and slow, 'the farmer fed the nation', with the Hertfordshire farmer particularly supplying grain to London.[13]

There seems to be little doubt that enclosure was essential for farming efficiency, but it had a social impact which concerned observers including Young.[14] And it was by the agricultural labourer, the main contributor to the rural economy, that that impact was felt. In the 1790s he and his family were typically living in a cottage not tied to the farm but rented from a landlord, who might have been the owner of the land being farmed but was more usually a local person whose main asset it was.[15] It sometimes had a garden for growing vegetables, and Young noticed a few labourers who themselves had small holdings of land or particular benefits from their

[10] Joseph Hodskinson, *A Farmer's Guide - or an improved method of management of arable land* (London, 1794), in 'Tracts 1794 – 96' (British Library Shelfmark 966/f15); Young, *General View*, pp.148-176.
[11] Young, *General View*, p.17; Horn, *Rural World,* p.24; Agar , *Behind the Plough,* p.1; TNA RAIL830/37, GJC *Committee Minutes,* 17 July 1793. Pamela Horn, *Life and Labour in Rural England* (Basingstoke, 1987), p.34.
[12] Horn, *Life and Labour*, pp.31-35; Young, *General View*, p.28.
[13] Agar, *Behind the Plough*, p.11; John A. Chartres, *Market Integration and Agricultural Output* (University of Leeds, 1993), p.20.
[14] Agar, *Behind the Plough*, p.23; quoting Young, *General View*, p.25; G.E. Mingay, *Arthur Young and his Times* (London, 1975), pp.10, 112-138.
[15] Agar, *Behind the Plough,* pp.150-152.

employer.[16] But generally, earnings of perhaps 9/- per week made life hard for families even in work, especially since wages remained fixed during the high inflation of the mid-1790s: Agar in particular examines the importance of the straw plait industry in supporting the Hertfordshire rural poor, but even that did not become widely established until the start of the 19th Century (although William Branch Johnson differs).[17] The farm labourer had real skills and great experience, but very limited scope to capitalise on them: he was, to a very large extent, stuck where he was in both location and status.[18]

Although Hertfordshire was an agricultural county, the 1801 Census shows that only about 21% of its inhabitants - the farmers themselves, their labourers and their specialist farm workers such as ploughmen or shepherds - were directly employed in agriculture. The rest were 'not specified', although many, especially the women and children of farm-workers' families, were no doubt labouring; or in trades, of which many - blacksmiths, carters, grain merchants - supported agricultural activity; or in some other employment, for example domestic service. Agriculture and the estates of the wealthy were not, of course, the only economic activities in the west of Hertfordshire – the role of the many water mills, producing paper, silk thread and flour, will be considered below, and brewing, brick making and iron working were also widespread.

Paper making

There was an appreciable industry in paper making in west Hertfordshire in the 1790s. The paper historian Eric Finerty has pointed out that the requirements for a paper mill included plentiful and reliable clean running water for the preparation of the pulp and for driving the machinery; a centre of population nearby to secure

[16] Young, *General View*, p.222.
[17] Agar, *Behind the Plough*, pp.64, 71, 72; William Branch Johnson, *Industrial Archaeology of Hertfordshire* (Newton Abbot, 1970), pp. 70-73.
[18] Agar, *Behind the Plough*, p.62.

labour, rags as a raw material and a ready market for the product; reasonable transport to that market; and, preferably and provided the other requirements were met, proximity to existing mills as a source of skills.[19] Hertfordshire in the late eighteenth century had all these attributes, and of 21 mills identified in the county 14 were in the south-west on the Rivers Gade, Colne and Chess; seven are directly relevant to the Grand Junction Canal. Finerty's article and the work of Austin Pilkington and (earlier) Alfred Shorter identify five (Bourne End, Two Waters, Frogmore, Apsley and Nash) near Hemel Hempstead (Fig 2.1), as well as two near Rickmansworth (Batchworth, which became a cotton mill sometime between 1774 and 1786, and Mill End) - four more there and two on the Colne near Watford do not feature in the early history of the canal.[20]

Fig 2.1.
Part of the Deposited Plan for the Grand Junction Canal, 1792,
showing four paper mills near Hemel Hempstead.

For reasons unknown the fifth, Frogmore, is not shown. It lay between
Two Waters and Apsley.
(National Waterways Archive/Canal and River Trust, BW99/12/1/7)

[19] Eric Finerty, 'The History of Paper Mills in Hertfordshire' in *The Papermaker and British Paper Trade Journal* (1957) (courtesy of The Paper Trail)
[20] Austin Pilkington, 'Frogmore and the first Fourdrinier', in *A history of The British Paper Company, 1880-1890,* Ch 3 (published privately by The British Paper Company Ltd, 1990), pp.27-29; A.H.Shorter, *Paper Mills and Paper Makers in England 1494-1800* (London, 1957), pp.175-179; Richard Hills, *Paper Making in Britain 1488-1988* (London, 1988).

By its nature papermaking, using bulky machinery to grind the rags into pulp, had to be carried out in dedicated premises - it could never have been a 'cottage industry'. But the actual making of the paper was by hand, and the processes required for true industrialisation were yet to appear. The numbers were small, and the economic impact limited: at the end of the eighteenth century the number of mills in England was between 450 and 500, with about 5000 employees producing about 15,000 tons annually, which suggests that in west Hertfordshire the mills mentioned will together have employed only something over 100 people (notably rag-cutting labourers), to produce by hand and distribute by road of the order of 350 tons of paper each year.[21]

Silk

The manufacture of silk thread in Hertfordshire is well described by Sheila Jennings.[22] She suggests that, in the towns in which they were located (Rickmansworth, Watford, St Albans and later Tring), the silk throwing mills - spinning thread from raw silk imported mainly through London from Italy, India or China - were a significant part of the local economy.[23] Like paper mills, they required a power supply, transport links and labour: all three were available in Hertfordshire from the middle of the 18th Century, and a little later at least some of the production moved from the traditional London throwing centre at Spitalfields to Watford and Rickmansworth, where the availability of water power and labour was better.[24] The importance of silk cloth, a luxury product, was being rapidly eclipsed by cotton, but most of the Hertfordshire thread was going for the manufacture of ribbons rather than

[21] George T Mandl, 'The Case for Common Sense', in Mandl (ed), *300 Years of Paper,* (London, 1985) p.14.
[22] Sheila Jennings, *A Ravelled Skein – A History of the Silk Industry in SW Hertfordshire*, PhD Thesis (University of Hertfordshire, 2002).
[23] Jennings, *Ravelled Skein*, p.54.
[24] Jennings, *Ravelled Skein,* pp.38/39.

fabrics, which will have provided a measure of robustness in the market.[25] Jennings does not try to calculate the numbers employed in the throwing mills in the 1790s, but she shows that, although not large, they were significant employers especially of pauper labour – evidenced also by the 1792 agreement between the master of the Ruislip workhouse and the Watford silk merchant Thomas Watson - as well as of paid workers, and made a real contribution to the prosperity of the county.[26] The large Tring Silk Mill, recently studied by Wendy Austin, was important but came later.[27] The only cotton spinner in this area, Strutt, was at Batchworth (Rickmansworth) from 1786, and there are few records: but the skills required are likely to have been similar, and Batchworth too will have had a local impact.[28]

The Towns in the 1790s

The returns from the 1801 Census allow an assessment of each of the canal-line parishes 7 or 8 years earlier (Table 2.1). While this almost certainly over-states the population it allows comparisons, although it seems unlikely to have recorded the full extent of agricultural employment, often seasonal, among women and children, so that many of the 'not detailed' occupations were in fact agricultural.[29] A useful indicator of wealth and of growth derived from the ranking prepared by Goose and Slater of towns in Hertfordshire in 1801 is shown for each.[30] Trinder's 'market town model' is also used to assess the degree to which these 'market towns' were in fact typical (Appendix A), and the first Trade Directory, the Universal British Directory, has been used where possible.[31]

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[25] Jennings, *Ravelled Skein*, p.63; EV Parrott, 'Survey of Industrial Archaeology of Rickmansworth (part 2)', in *Rickmansworth Historian* no 27 (Spring 1974), pp. 672 - 675.
[26] Jennings *Ravelled Skein*, p.178; HALS D/EB1157 B11 (Draft Articles of Agreement, Feb 1792); Eileen Wallace, *Children of the Labouring Poor* (Hatfield, 2010), pp.69-89.
[27] Wendy Austin, *The Tring Silk Mill* (Tring, 2013).
[28] Jennings, 'The Textile Mills at Rickmansworth', in *Rickmansworth Historical Society Newsletter No 52 (March 2001)*, pp.4-7.
[29] Higgs, E., *Making Sense of the Census* (London, 1989), pp.78-92.
[30] Goose and Slater, *County of Small Towns*, pp.114-119.
[31] Universal British Directory of Trade, Commerce and Manufacture (Vols II, IV) (London, 1792-98), referenced at HALS.

Parish[32]	Pop. 1801	% Agricul-tural	% Trade	Goose/ Slater rank
Tring	1621	8%	10%	13
Berkhamsted	1690	10%	11%	8
Hemel Hempstead	2722	15%	28%	14
Watford	3530	9%	20%	5
Rickmansworth	2975	17%	15%	18

Table 2.1
Principal Characteristics of the main towns of
the study (1801 Census)
(north to south)

The parishes will be considered briefly in turn, starting with the market towns from north to south. Baskerfeild's plans, dating from about 1793 and not showing the canal, are used to show the disposition of the various settlements of each, with key features indicated.

Tring (fig 2.2) lay near the end of the Turnpike with the toll gates at Veetches and New Ground nearby, although their small receipts (Appendix G) suggest that trade along it related to the town was limited. Tring was mentioned but not listed in the Universal British Directory, and there was little manufacturing except small-scale canvas weaving.[33] There were three significant estates and several other sizeable landowners, but of the 161 owners identified in the Enclosure Award of 1797 about 70 owned just one house or cottage, and several of these will have been owner-occupiers.[34] Enclosure was necessary for efficient farming, but there was a serious disadvantage to the poor, and these effects were being felt in these years.[35] The

[32] Goose and Slater, *County of Small Towns,* p.117.
[33] Universal British Directory of Trade, Commerce and Manufacture (London, 1792-1798); Sheila Richards, *Tring* (Tring, 1974), p.49.
[34] HALS CD CP111-26-2 (Tring Inclosure Map, 1797).
[35] Mingay, *Arthur Young and his Times***,** pp.98, 113, 115; HALS DP111/8/19 (Tring Vestry Minutes, 1782-1815).

picture emerges of a small town with a local market but little real industry, well connected to the turnpike road and with a number of property owners dominated by three large estates. Agriculture was the most prominent single occupation, but even that did not employ as large a proportion of the inhabitants as in other parishes.

Fig 2.2
Tring parish
before 1800

Berkhamsted (fig 2.4) was arranged along the main road formed by the Sparrows Herne Turnpike, whose Trustees always met in the town.

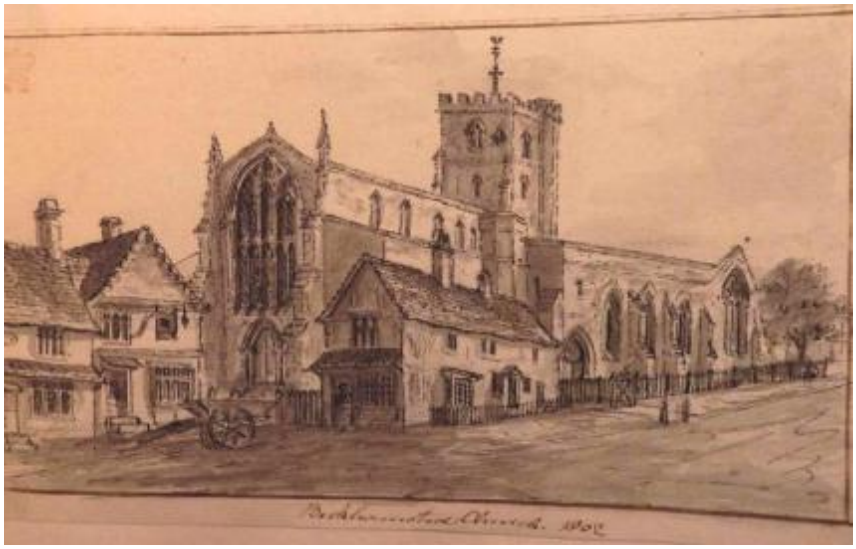


Fig 2.3
Berkhamsted Church and
marketplace in 1802

It was seen by Slater as a fine example of a 'street town' with its market place to the west of the church (fig 2.3).[36] Despite its two water mills and grammar school it was small, dominating a parish of large area but small population. The Universal British Directory as abstracted by Percy Birtchnell lists 98 different local tradesmen in Berkhamsted, implying that most were working alone or with unrecorded 'family' labour.[37] Baskerfeild's plan confirms this impression: the Common was huge, and the only other settlements were on its edge. There were several large estates, but Birtchnell observes the discrepancy between the elegant mansions and the condition of the townspeople, living mainly in the High Street and on the north side in Castle Street, Mill Street and Water Lane.[38]

[36] Goose and Slater, *County of Small Towns*, pp. 84-5.
[37] Percy Birtchnell, *A Short History of Berkhamsted* (Berkhamsted, 1972), p.79.
[38] Birtchnell, *Berkhamsted*, pp.14/15.

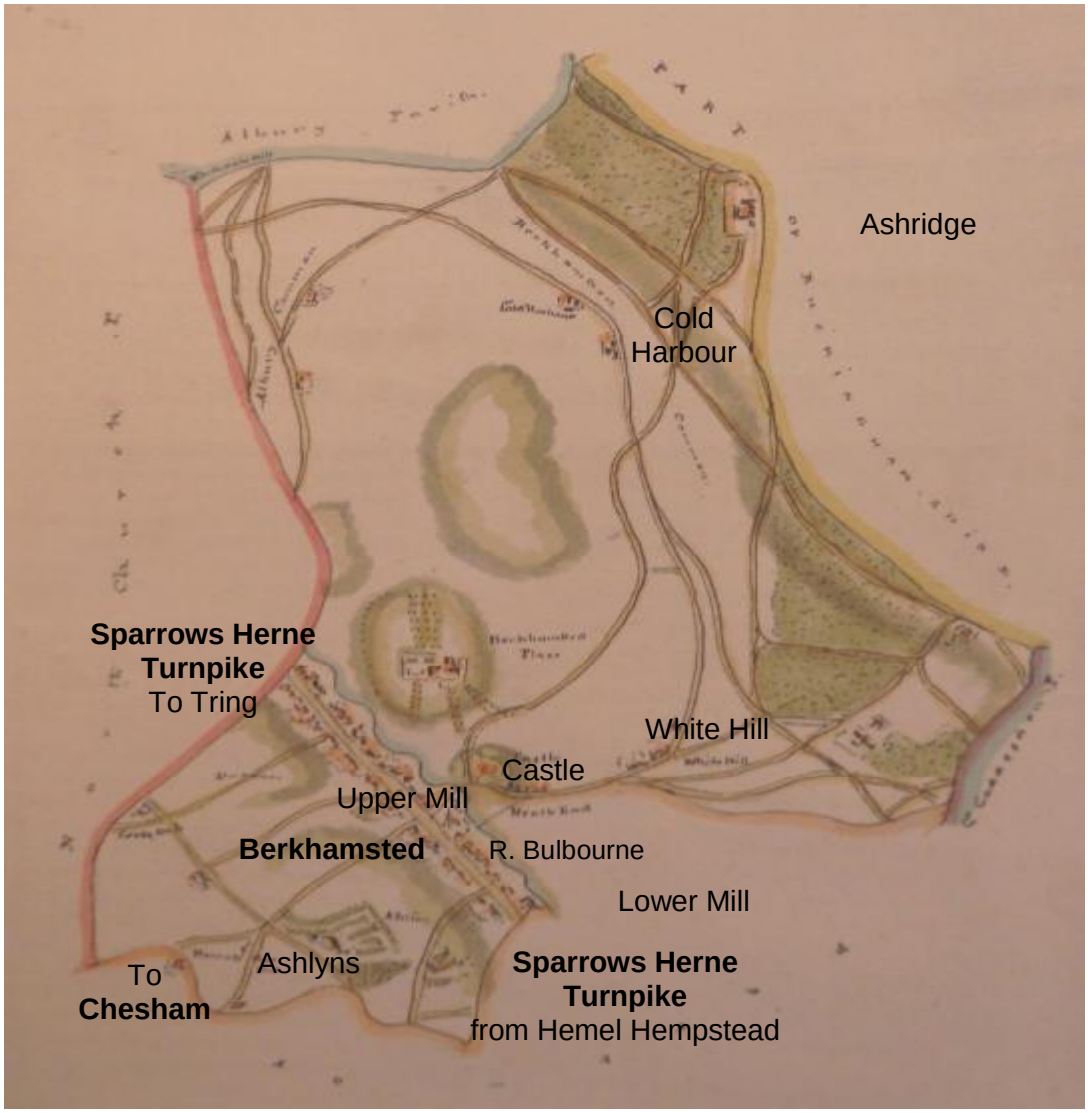


Fig 2.4
Berkhamsted parish before 1800
© The British Library Board
(Thomas Baskerfeild – British
Library, Add MS 9063 Folio 325)

Birtchnell also notes the Vestry Minutes telling of grinding poverty, and a 1799 report of the market as 'shabby and decayed', perhaps following the 'commodity to retail' path described by John Chartres.[39] So Berkhamsted at the end of the 18C was not well off: despite being a place to which wealthy people had begun to move, it was a rather small and shabby town, formerly prosperous enough to have 'pretentions' but now struggling.

[39] Birtchnell, *Berkhamsted*; pp.14, 75; John A.Chartres, *Markets and Fairs* (University of Leeds, 1993), p.24.

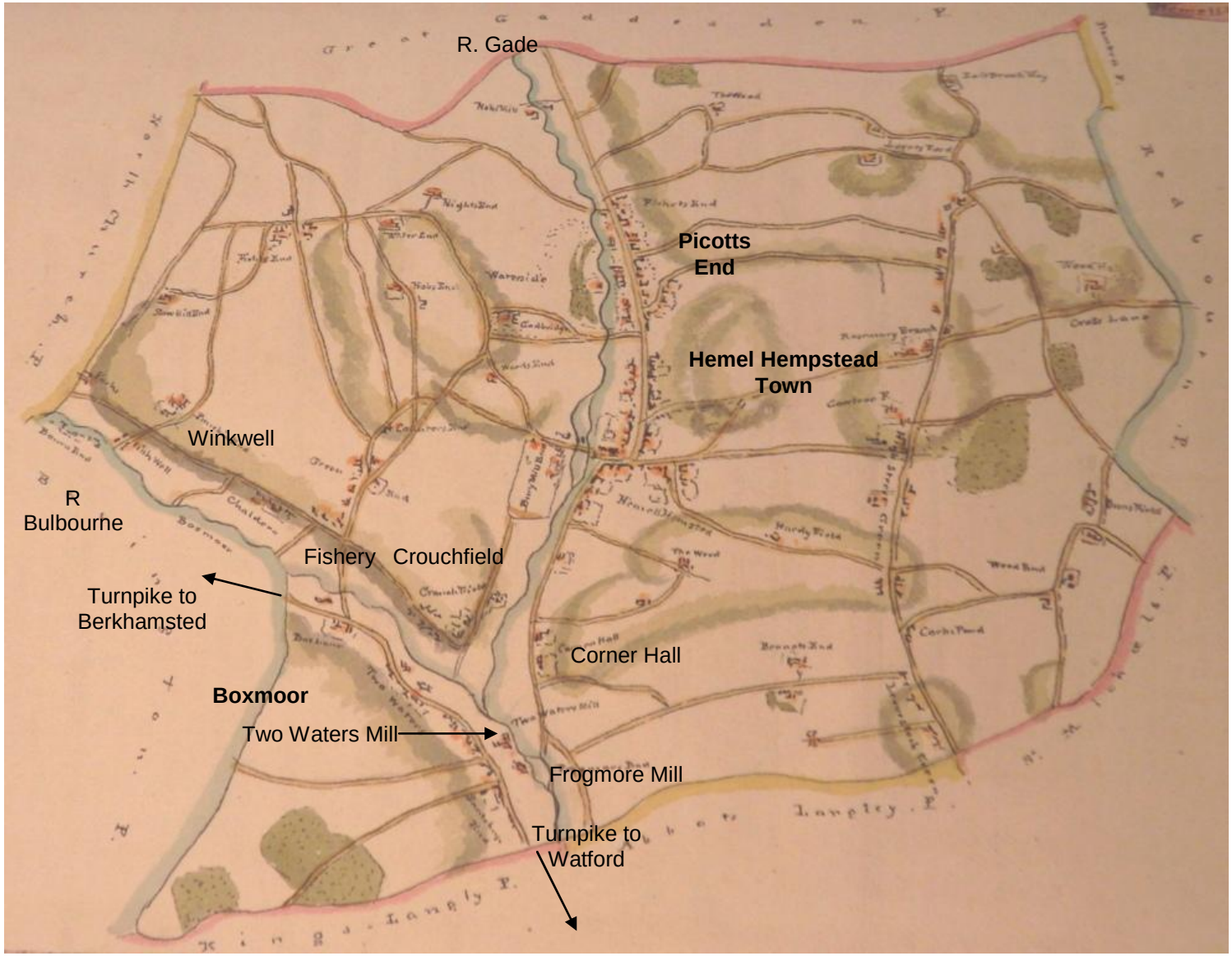


Fig 2.5
Hemel Hempstead parish before 1800

(Thomas Baskerfeild – British Library, Add MS 9063 Folio 294b).

Hemel Hempstead was surrounded by good, corn-growing land, described by Cobbett in 1822 as '…the very best corn land that we have in England'; while the Universal Directory of 1792 reports 'one of the greatest markets for wheat in this county, if not in England, £20,000 being often returned in it only for meal'.[40] The Baskerfeild plan (fig 2.5) shows that most of the settlement in the parish was in the town, a strip along the road running off the turnpike north along the Gade towards Leighton Buzzard. The turnpike by-passed the town to the south of the river, with paper mills at Two Waters and Frogmore End. The very long list of traders and professionals in the Universal Directory tends to support the high Census figure of those 'in trade', but it includes no carters or carriers. The further comment in the Directory that 'the road is [by the eleven pairs of mills] continually torn, so that it is one of the worst turnpike ways to London' is surprising, even more since the Sparrows Herne Turnpike minutes report all sorts of problems but not this one. The impression is, despite its low Goose and Slater ranking, of a town with a prosperous market in grain, a large and thriving professional and trading community, and the nucleus of industry in the paper mills.[41]

Watford (fig 2.6) contained by some way the largest town and the homes of the Earls of Essex and of Clarendon. Running for a mile north along the Sparrows Herne Turnpike, Watford had developed on a different pattern from other Hertfordshire towns, with 991 'families' living in 661 houses, suggesting a high proportion of single people, small families and multiple occupation of dwellings, especially in the crowded alleys and yards.[42] The Universal British Directory shows

[40] William Cobbett, *Rural Rides* (London, 1822), quoted by Dorothy Cromarty in Susan Yaxley (ed), *History of Hemel Hempstead* (Hemel Hempstead, 1973), p.14; Universal British Directory (1792 – 1798) Vol II.
[41] M. Gwennah Robinson and Valentine J. Wrigley, 'Hemel Hempstead in the Nineteenth Century', in Susan Yaxley (ed), *History of Hemel Hempstead* (Hemel Hempstead, 1973), pp.100, 103.
[42] Mary Forsyth, 'Watford', in Goose and Slater (eds), *County of Small Towns*, pp.276/277, 279, 289, 295/6; Branch Johnson, *Industrial Architecture,* pp.138, 140; 1801 Census (Hertfordshire), consulted at HALS.

that ‘the principal manufacture is of silk thread’, with three mills, two powered by horse and one, Paumier’s large Rookery Mill, by water; but its listing of traders is relatively short.[43]

Fig 2.6
Watford parish before 1800

[43] Universal British Directory (1792-1798), Vol IV pp.688-704.

Agriculture was less dominant here than elsewhere, and there were manufacturers and vendors of farming implements and of an increasing range of other goods.

The main outlet for Watford's trade was London, and coach services to London and to Tring, Berkhamsted, Chesham, Leighton and Birmingham were advertised as well as two waggon services scheduled weekly to London (but nowhere else). Again, however, the Directory lists no specialist carters or carriers based in the town. The River Colne, with several branches and always liable to flooding, was crossed by the turnpike at the bottom of Chalk Hill, and although not navigable drove the silk, paper and corn mills.[44] Watford was in the 1790s a large and fairly prosperous place with silk thread and paper manufacture, varied commerce and good connections to London and elsewhere.

Rickmansworth was a very large parish, and Baskerfeild's plan (fig 2.7) shows a sprawling collection of settlements around the town. Its 1801 population exceeded those of both Hemel Hempstead and Berkhamsted, and its high proportion of agricultural inhabitants suggests that, while it had a local market in some decline and several mills, farming was the main interest.[45] Although the rivers Colne, Gade and Chess powered the paper, cotton thread and flour mills none was navigable and all transport was by road. Although well off the Sparrows Herne Turnpike, Rickmansworth was on the Hatfield to Reading Turnpike, which crossed the river Gade from Watford at Cassio Bridge and then went past Croxley Green before forming Rickmansworth High Street and heading out towards Chorleywood, so it had road connections to several sizeable towns including Watford 5 miles away, although the London road through Pinner and Harrow was yet to be turnpiked. Although relatively large and with some industry and two large estates Rickmansworth was not

[44] Henry Williams, *History of Watford* (London, 1884) (Republished Watford 1976), p.96.
[45] George Alexander Cooke, 'Topographical and Statistical Description of the County of Hertford', (London, c.1805 – 1810), pp. 137-139, quoted in Sheila Jennings, *The Textile Mills at Rickmansworth,* Rickmansworth Historical Society Newsletter No 52 (March 2001), pp.4-7.

listed in the Universal British Directory, although it was in Holden's Directory of 1811.[46] The impression is of a dispersed parish heavily dependent on agriculture despite a leavening of other occupations.

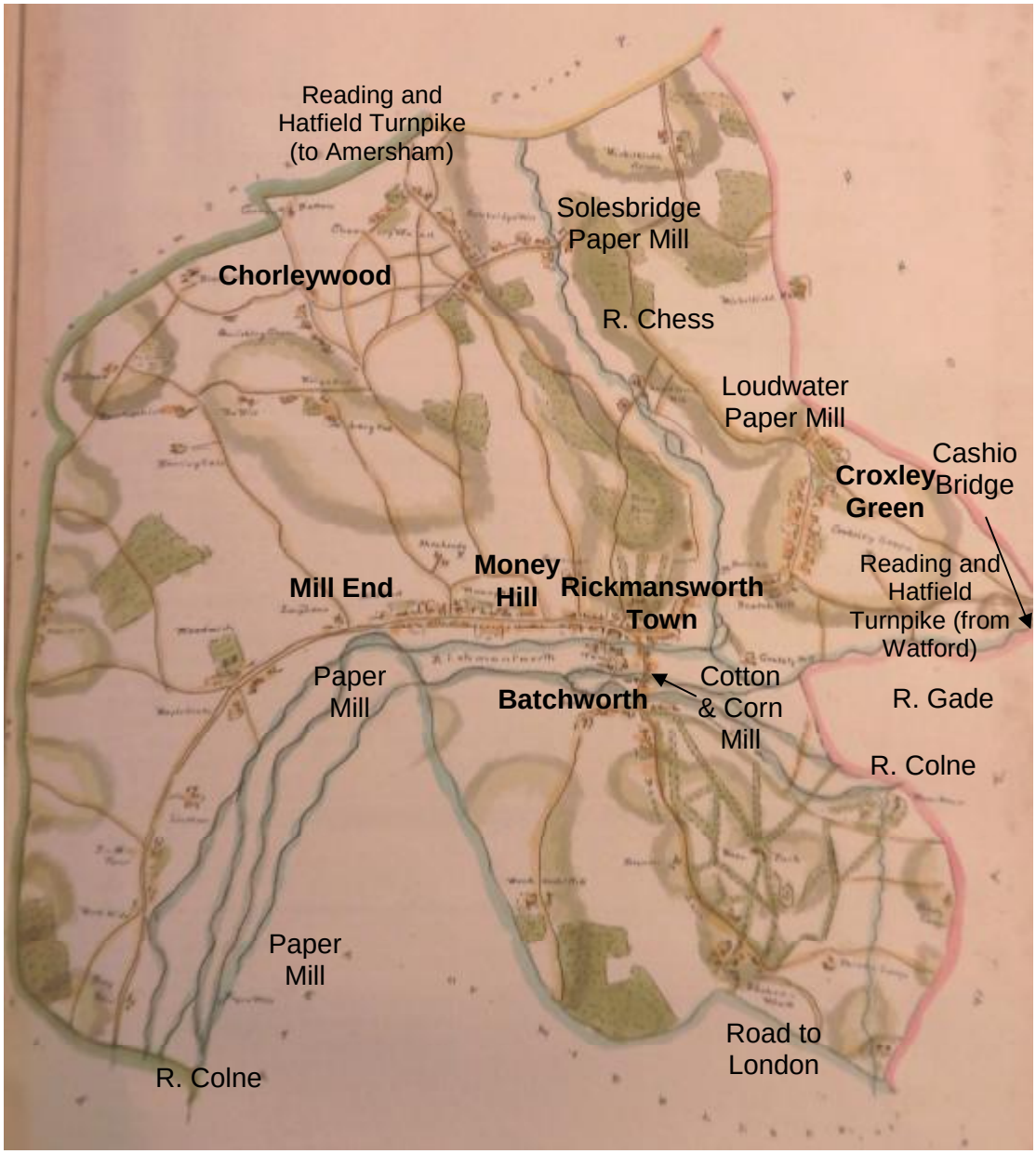


Fig 2.7
Rickmansworth Parish before 1800
© The British Library Board

(Baskerfeild – BL Add MS 9063 folio 216)

[46] Holden's *Annual London and County Directory for the year 1811*, Vol III (London, 1811) consulted at HALS.

None of the smaller parishes of the study had a real town. **Northchurch** (fig 2.8) had a large area cut in two by Berkhamsted. It contained a single village with outposts near Dudswell, Woodcock Hill and Little Heath, while Berkhamsted Lower Mill was divided by the boundary. Both the turnpike and the small River Bulbourne bisected both halves of the parish, and to some degree Northchurch was an extension of Berkhamsted; but in so far as it was a single community it was an agricultural one.

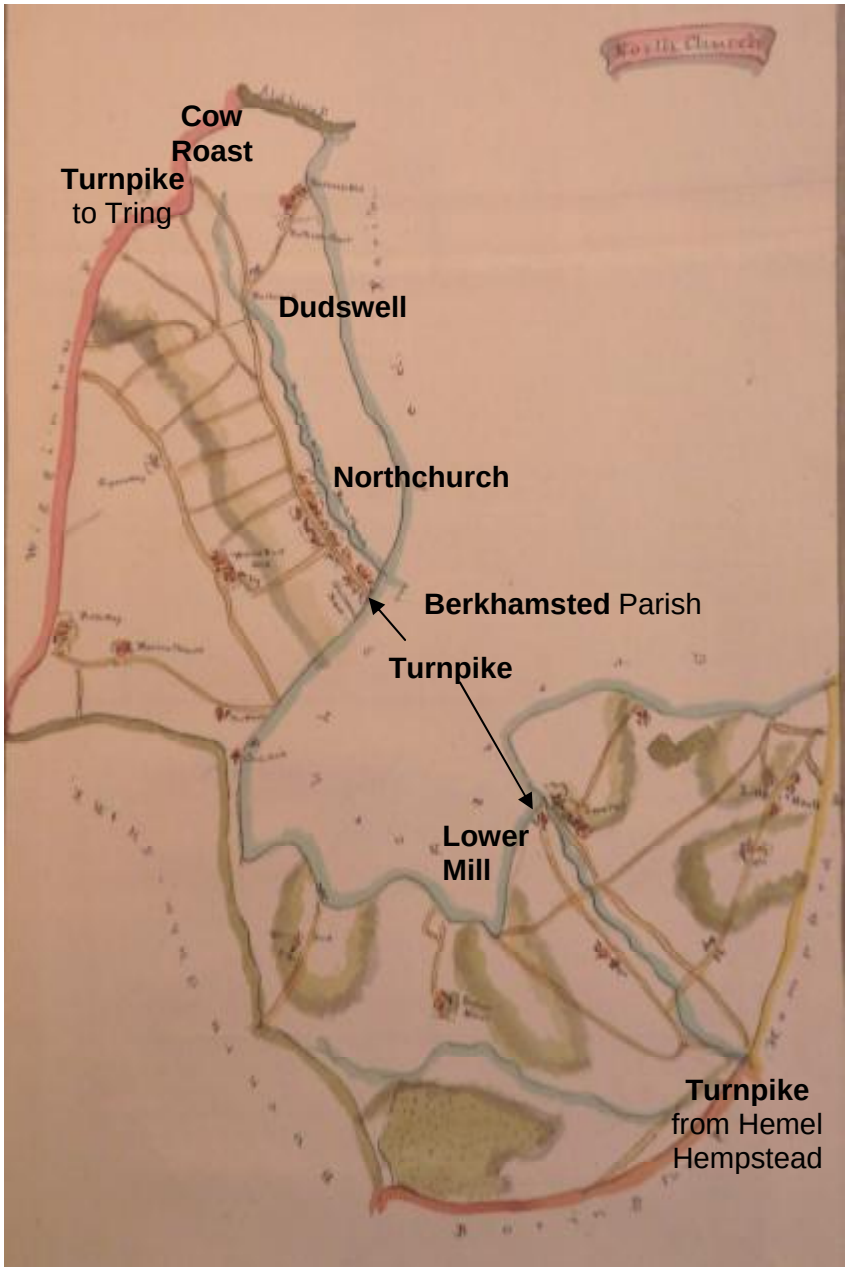


Fig 2.8
Northchurch before 1800

King's Langley (fig 2.9) was another almost wholly agricultural parish, with the River Gade forming the boundary with Abbots Langley. Of some size, it has been studied closely by J.P. Haythornthwaite, Munby and more recently by Hastie.[47] Chipperfield Common on the west side had the only other sizeable settlement, while Apsley paper mill in the north and Toovey's flour mill to the south were both powered

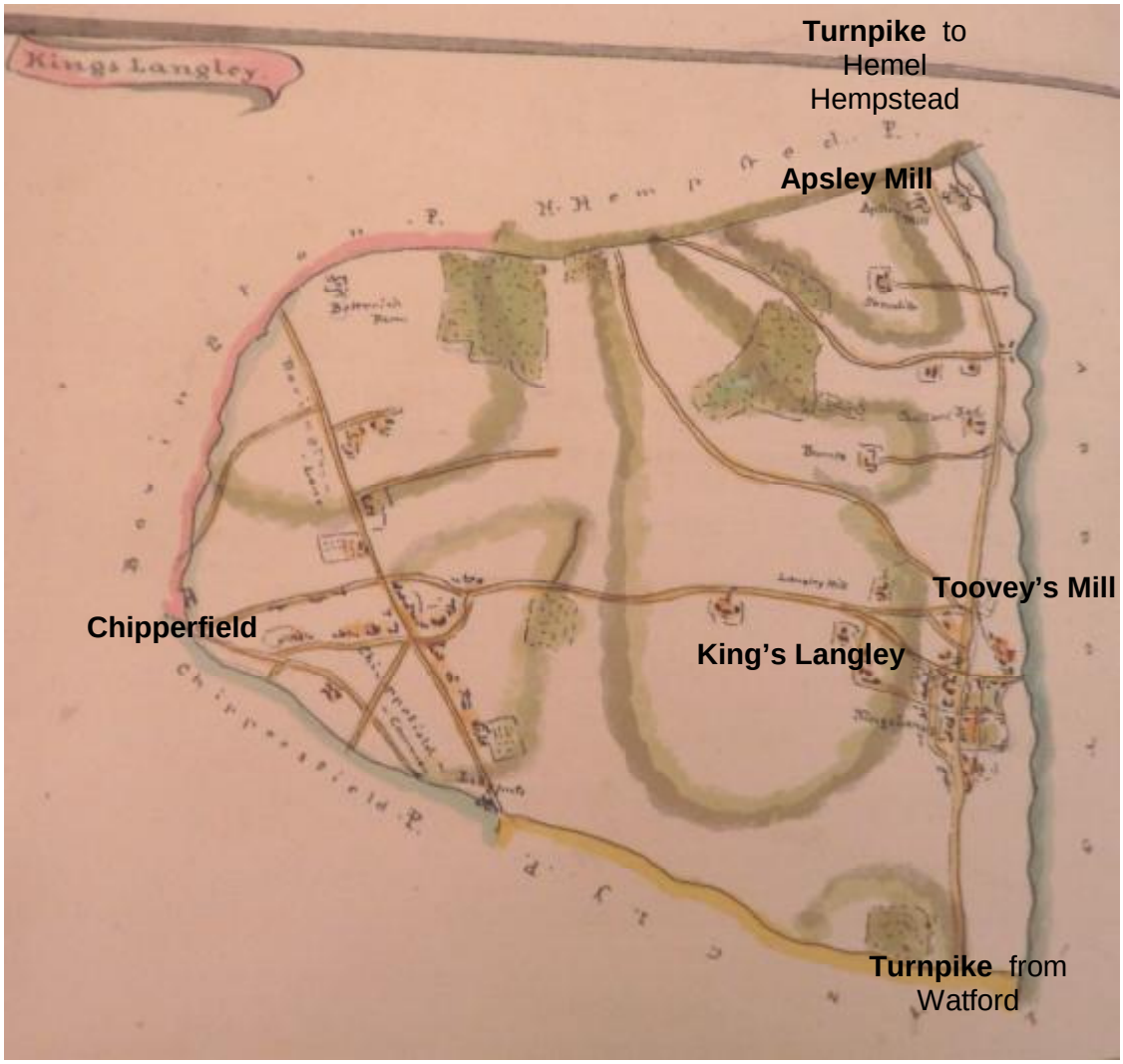


Fig 2.9
King's Langley before 1800

[47] J.P.Haythornthwaite, *The Parish of King's Langley* (London, 1924); Lionel Munby (Ed), *A History of Kings Langley* (King's Langley, 1963); Scott Hastie, *King's Langley* (King's Langley, 1991).

by the River Gade. The Turnpike passing through the village allowed it to be well served by coach and waggon services. This all suggests a self-contained and reasonably prosperous agricultural parish.

Abbots Langley (fig 2.10) lay to the east of and above the Gade, with its main hamlet, Bedmond, a little to the north. Hunton Bridge and its corn mill lay on the river, which the turnpike from Watford crossed and the road led off to the village from it. On the hill to the west of the river was the main mansion, Langleybury. This too was a sizeable parish, albeit without any industrial activity outside the Nash paper mill.

Fig 2.10
Abbots Langley
before 1800

A developing problem during the 1790s, however, was that of poor relief, and Clive Clark notes concern at a growing imbalance between the unable and the unemployed in the disbursements in Abbots Langley, which will not have been unique in this.[48]

The remaining smaller parishes form a group. **Aldbury** (fig 2.11), closely studied by Jean Davis, was very much dominated by its farms.[49] High on the Chiltern crest and enclosed only to a limited degree and by agreement, its farming was in open fields dominated by the Stocks estate and by nearby Ashridge, and aside from the usual village-support occupations the inhabitants were agricultural.

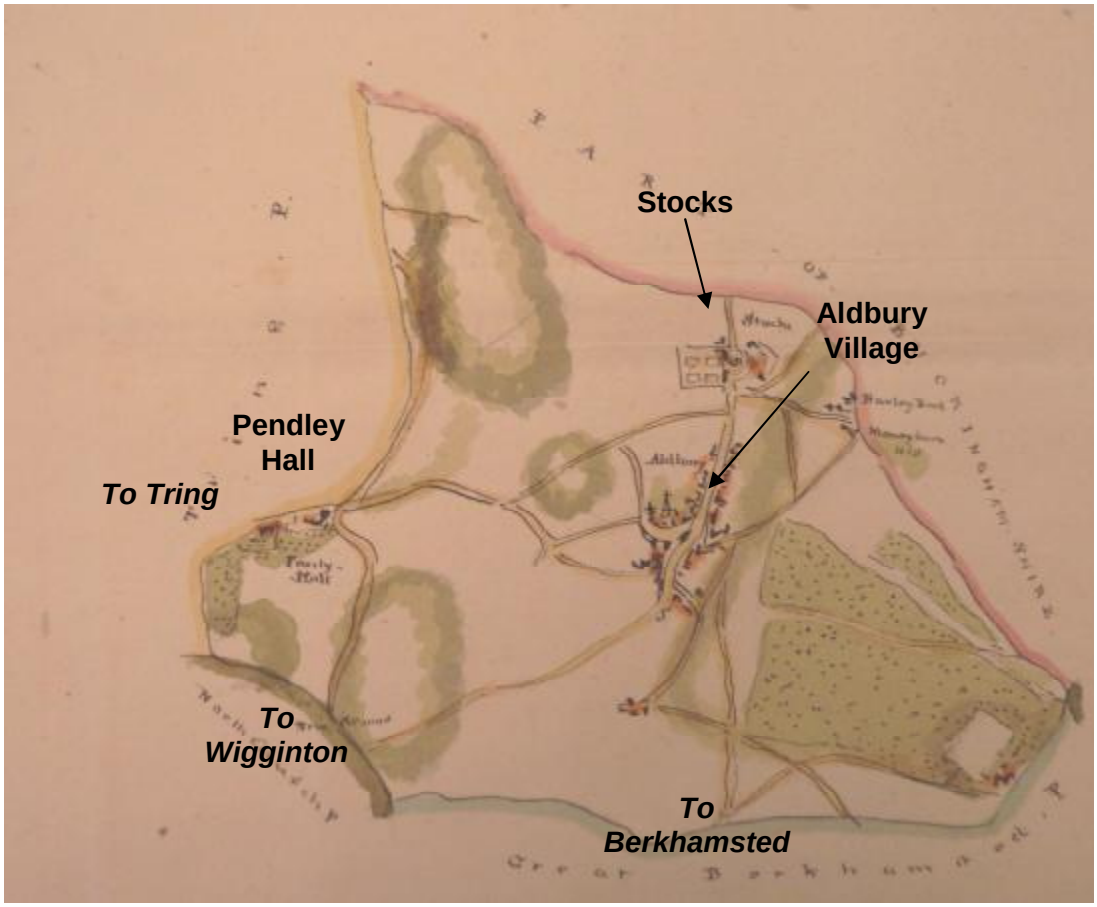


Fig 2.11
Aldbury before 1800

[48] C.W.Clark, *Abbots Langley Then* (Cockfosters, 1997), p.65.
[49] Jean Davis, *Aldbury* (Aldbury, 1987).

The turnpike passed along the southern boundary of the parish, but the road connections from Aldbury were with Tring to the west, Hemel Hempstead to the south east and into Buckinghamshire to the north.

Puttenham (fig 2.12) was a minute agricultural settlement to the north of Tring, with population in 1801 about 130: the only settlement outside the village was at Astrope, and the only occupations were related to agriculture. Cussans noted, later but still relevantly, that both men and women of Puttenham were 'undersized and puny' due to straw plaiting, and that the children of such mothers were 'wanting in stamina and inferior in appearance compared to the population usually met with in country districts'.[50]

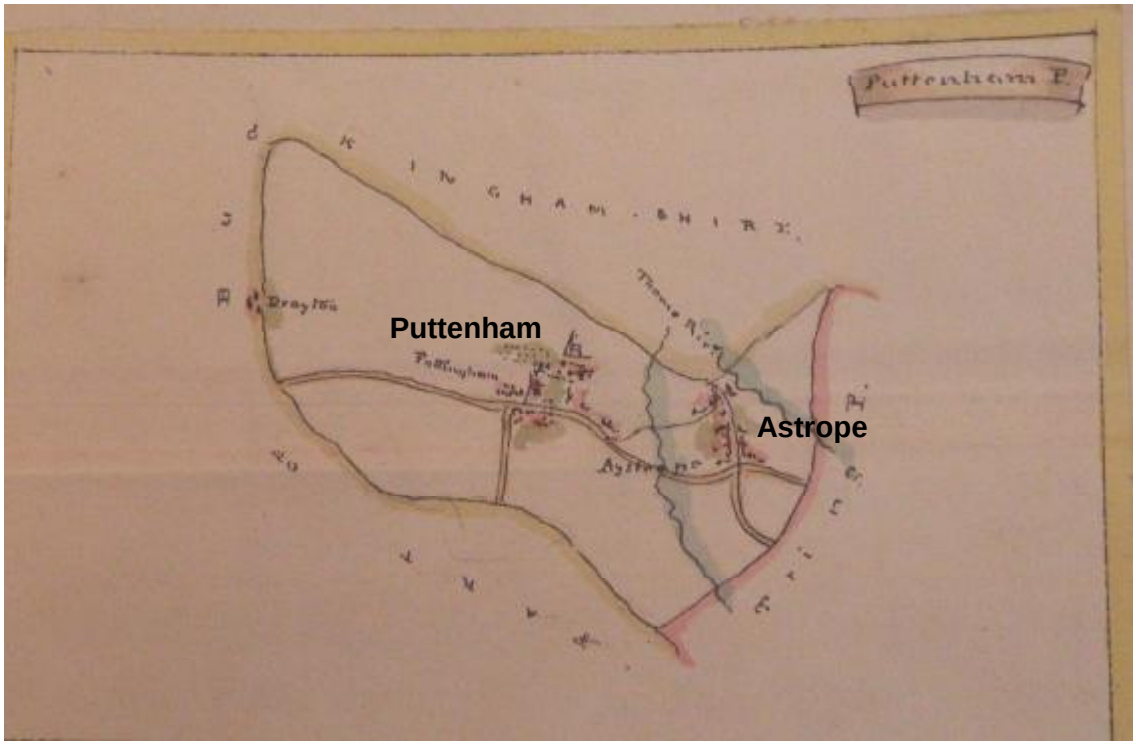


Fig 2.12
Puttenham before 1800

[50] J.E. Cussans, *History of Hertfordshire Vol III* (Hertford, 1881, republished Wakefield, 1972), p.6.

Wigginton (fig 2.13) was another small, agricultural parish with a single village on the ridge overlooking the Bulbourne valley. Its eastern extremity touched the small settlement at Cow Roast, on the ancient drove road to London, and the turnpike skirted the eastern boundary with the New Ground Toll Booth just in the parish; but the basically agricultural nature of the parish remained intact.

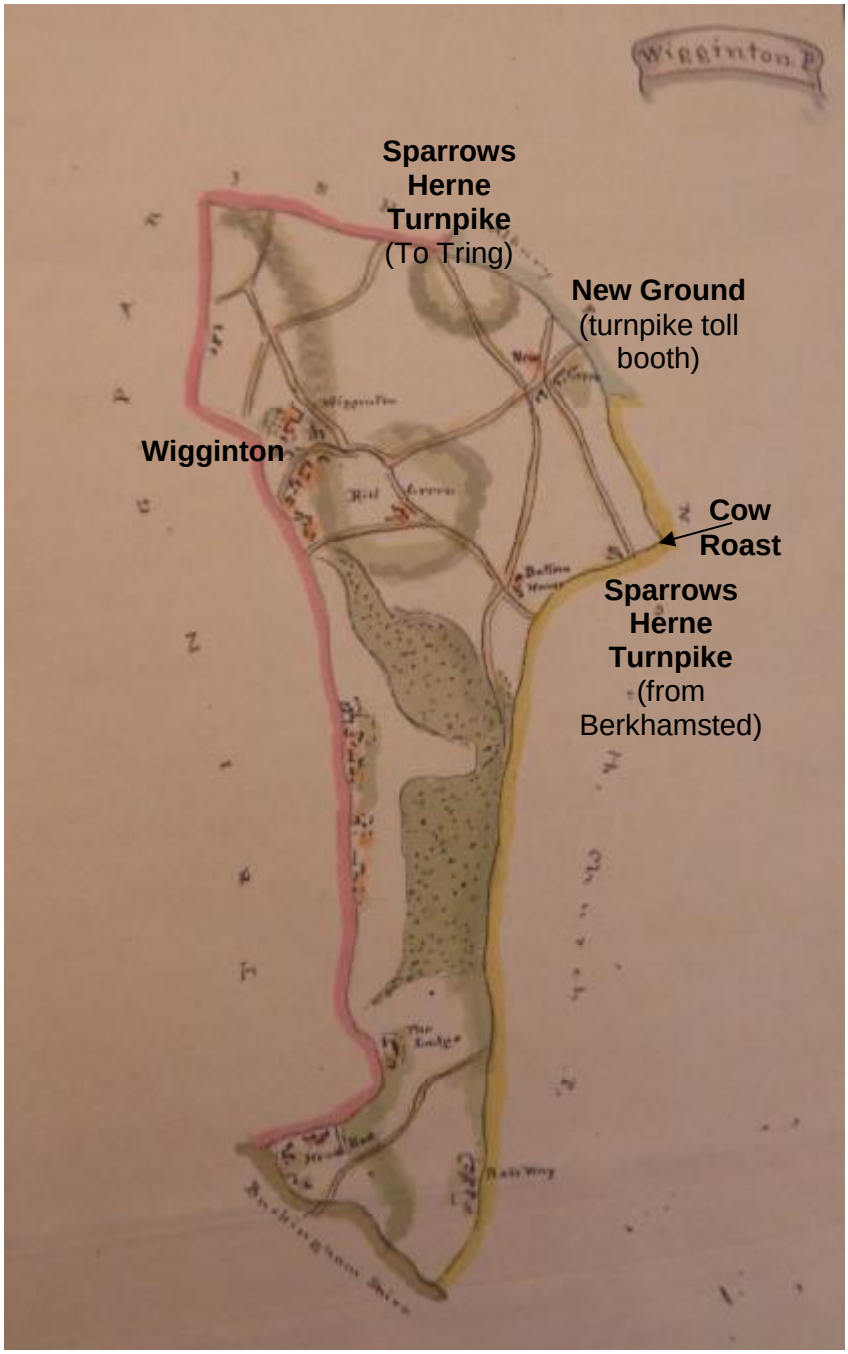


Fig 2.13
Wigginton before 1800

(Baskerfield, BL AddMS 9063 folio 349b)

The Promise of the Canal

In early 1792 the inhabitants of these small towns and rural parishes will have started to hear of the approach of the Grand Junction Canal, and to see the chains and theodolites of the surveyors - the first newspaper article appeared in the Northampton Mercury in April 1792.[51] Only some will have understood what it might mean or what was promised.

By 1791 the value of canals to both national and local industrial interests, and their investors, had been established for nearly 30 years. The headline then, and often now, presented was that the price of coal was reduced in towns which found themselves on or near a canal.[52] But the range of goods carried, and the benefits conferred, were much greater – Hadfield notes that finished goods, raw materials and fuel all found their way to new markets from the 1760s, and Hassell summarised the impact of the new canals on Birmingham in particular.[53] During the 1780s the enormous expansion of manufacturing industry in the midlands and north demanded a commensurate expansion of transport at a time when waterways were the only realistic option; the trade carried on the canals radiating from Birmingham gave industrialists and investors ample evidence of the value of canal transport. When, therefore, the prospect of a canal directly to London was being canvassed there was great and widespread interest.[54] The promoters and proprietors of the early canals had generally been local people interested in their own business and that of their town, county or area, but by 1792, as the Grand Junction was being planned, the benefits to investors were much more widely anticipated – hence the enthusiasm to

[51] Quoted in Faulkner, *Grand Junction Canal*, p.18.
[52] Charles Hadfield, *British Canals* (London 1952), p.95; D.D Gladwin, *The Waterways of Britain* (London, 1976), pp. 13-17.
[53] Hadfield, *British Canals*, pp.33/34; John Hassell, *A Tour of the Grand Junction Canal* (London, 1819), p.61; David Blagrove, *At the Heart of the Waterways* (Bugbrooke, 2003), p.10.
[54] Faulkner, *Grand Junction Canal,* p.18.

invest which gave rise to the 'Canal Mania', especially coming as it did at the end of the economic depression which followed the American War of Independence.[55] The perceived benefits of these projects were by 1792 attracting serious money to a number of wildly optimistic schemes, but none had yet offered the industrial midlands a direct link to London. The Grand Junction therefore promised something genuinely new, and this was summed up by the concise statement by William Jessop, the engineering consultant employed by the Grand Junction Committee in late 1792 to review the survey completed earlier in the year. He wrote of

> 'Making a Direct Communication between the Great Northern Manufacturies and the Port of London.
>
> 'Reducing the cost of Coal to the Inland Counties where it is now extremely expensive.
>
> 'The carrying of provisions of all kinds to the Metropolis, where the consumption is almost unbounded,'

which '…must banish all doubt from the minds of those who have an opportunity of observing the effect produced by Canals already existing, in situations where the objects are much more limited.'[56]

Given Jessop's reputation, this must have been a very strong encouragement to invest. But there is no suggestion of any other benefit to places between London and Birmingham, although branches ('collateral cuts') already envisaged to places off the main line were addressed by Jessop in the same report. There was no suggestion that the main line itself might be made to deviate to Buckingham, Dunstable, Daventry, Watford, St Albans or Hemel Hempstead - London was the

[55] J.R.Ward, *The Finance of Canal Building in Eighteenth Century England* (Oxford, 1974), pp.86-88.
[56] British Library General Reference Collection, shelfmark 713.i.27(2.), William Jessop, *Report to the Committee of the Subscribers to the Grand Junction Canal* (Northampton, Dec 1792).

destination, and nothing would interfere with that, a good example of Philip Bagwell and Peter Lyth's observation that canals were generally built between centres of population.[57]

The importance of coal

Coal in the later eighteenth century was to a large extent the only fuel available for industrial or domestic consumption. Wood had for practical purposes been exhausted by the 16C, and what remained was reserved for ship- and house-building.[58] The Hertfordshire commons were covered with a range of scrub, gorse (furze), broom, heather and bracken, much of which was useful for firewood both domestic and commercial - bracken especially on Aldbury, Tring and Berkhamsted commons.[59] But it was increasingly scarce, and Rowe and Williamson point out a number of measures taken to limit consumption: the population was growing, and with it local uses such as baking, brewing and brickmaking. Peat was not an option in England, so coal was essential to life and work, and the need to transport it in large quantities drove the development of, firstly, river navigations and, subsequently, canals in the industrial areas of the north and midlands of England – indeed, the Duke of Bridgewater held that 'a good canal should have coals at the heels of it'.[60] London was for many decades protected from these pressures because it was served by sea from the north-eastern coalfields, and remained so even after the arrival of the railways in the 1840s – it was indeed to protect this monopoly that the GJC was at first prohibited from bringing coal closer to London than Watford.[61]

In west Hertfordshire, however, the fact that coal was available in London will have been of less interest than the extra cost of obtaining it from there. It will have

[57] Philip Bagwell and Peter Lyth, *Transport in Britain* (London, 2002), p.14.
[58] Philip Bagwell, *The Transport Revolution from 1770* (London, 1974), p.88.
[59] Rowe and Williamson, *Hertfordshire,* p.102.
[60] Bagwell, *Transport Revolution,* p.23.
[61] Alan Faulkner, *Grand Junction Canal* (Newton Abbot, 1972), p.110.

been almost entirely sea-coal shipped to London and carried out by cart along the turnpikes – even in January 1802 the cost of road carriage of Newcastle coal was 2/- per chaldron (about 1.25 tons) for the first mile and 1/- per mile thereafter, which would have added 50% to the 52/- cost at (say) Berkhamsted.[62] Coal in Hertfordshire was, therefore, expensive: hence the significance of the aim of the GJC promoters, as expressed by Jessop, to reduce the cost of coal in places between Birmingham and London. Until then coal is unlikely to have been generally available, especially not to the agricultural labourer, and fuel poverty seems very likely to have been a real concern. Whether the coal came from London or from the Midlands, it was the reduction in the cost of moving it that was the promise of the Grand Junction Canal.

Existing Road Transport in west Hertfordshire

The planned line of the canal followed the long-established road from London through Watford via Tring to Aylesbury and the south midlands, which had been the Sparrows Herne Turnpike from 1762. It would be expected for the canal to affect its traffic, perhaps initially as a customer with material to move and then as a competitor with a closely-parallel route, as Hadfield observes about a similar relationship:

> 'When the canals were built, the takings of turnpike trustees of roads that ran parallel with canals fell sharply: for instance, those of the Loughborough-Leicester road fell from £1800 in 1792 to £1162 in 1802 after the Leicester Navigation opened in 1794…. Roads that suffered from canal competition had two consolations, that the removal of heavy traffic saved road users a great deal in upkeep costs, while the waterway was useful to carry roadstone to the nearest part of the road.'[63]

[62] Advertisement by Henry Golding, coal merchant, *The Times* 15 Jan 1802.
[63] Charles Hadfield, *British Canals* (London, 1952), p.102.

Fig 2.14
The route of the Sparrows Herne Turnpike
in Hertfordshire (Bryant)
(Hertfordshire Records Society 2003, by
permission of HALS)

The minutes of the Trustees, however, make no reference to the canal at this time. An analysis of the financial model presented at Appendix G does not suggest that the turnpike was, in fact, a major artery of industrial traffic to or from London. Even in 1793 the total toll revenue was only £1428, and the remarkably consistent pattern of toll revenue at the different gates (Fig. 2.14) (Watford busiest, Ridge Lane 70% of that figure, New Ground 35%, Veetches 15%) suggest that the traffic was generally local and concentrated around Watford. The road itself seems to have been reasonably diligently managed: Young, widely travelled and unsparing in his criticism of poorly maintained roads, observed of Hertfordshire merely that the roads were good, 'with 6 great turnpikes'.[64] The Sparrows Herne was responsible for about 26 miles, most of it in Hertfordshire, and the Treasurer's account books show that between 1786 and 1793 the annual spend on the road per mile rose from £22 in 1786 to £49 in 1793, averaging £31, which suggests that investment in this turnpike was in line with national practice.[65] The promise of the GJC, therefore, seems to have been not so much an alternative to an existing artery through this area, but rather a completely new one; the impact of this on the area will be examined further in Chapter 3, but the Trustees (some of whom, notably the Clerk, were GJC shareholders) must have been aware of the threat – and promise.

The promise to Investors

By the time the GJC became available as an investment vehicle canal projects were already very familiar to those with money to spare. In his analysis of the financing of the canals Ward observes that they were generally funded by people resident in the areas served.[66] But for the Grand Junction, as we have seen, it was the manufacturing and coal producing areas of the midlands and the importing and

[64] G E Mingay, *Arthur Young and his Times* (London, 1975), p.154; Young, *General View,* p.221.
[65] Bagwell, *Transport Revolution*, p39.
[66] Ward, *Finance*, p.79.

exporting interests of London which were 'served', and not the areas through which it passed. It is, therefore, unsurprising to find that relatively few Hertfordshire residents felt sufficiently strongly to make major contributions: Ward identifies a number of residents of midlands towns, including Aylesbury, but makes no mention, at least in the first 'tranche', of any in Hertfordshire.[67] As T.C. Barker and Christopher Savage observe, a significant part of the investment cadre by this stage of the canal age was formed by speculators.[68]

That is not to say that no Hertfordshire residents took up investment options, and comparison between Land Tax and GJC records does reveal a few names from the area – see Appendix F. Some were landowners, whose position is described below.[69] A few, for example Drummond Smith of Tring, were invited directly to do so in order to join the committee or a sub-committee, and some were no doubt attracted by the investment returns. The motives to invest included benefit to business, improving the value of land, making a reliable family investment, to support a special interest in the canal as a job - or to make quick money. [70] By the start of the 1793 Canal Mania investor returns in the early canals were considerable and well known. Dividends were high, with Ward able to identify average returns at this time of 30-40%.[71] And the price of shares had rocketed: as Burton notes, the £140 shares in the Birmingham Canal in 1767 had reached £370 by 1782 and £1170 in 1792, just as people began to consider investing in the Grand Junction.[72] In one of the surprisingly few references to canal investments in the Gentleman's Magazine, we find concern expressed as to the effect of the wild speculation of the time:

[67] Ward, *Finance*, p.45.
[68] T.C. Barker and Christopher Savage, *Economic History of Transport in Britain* (London, 2012), p.41.
[69] TNA RAIL830/37, GJC Committee Minutes 1 Jun 1793; Ward, *Finance*, p.43.
[70] Hadfield, *Canal Age*, pp.37,38.
[71] Ward, *Finance*, p.135.
[72] Anthony Burton, *The Canal Builders* (Cleobury Mortimer, 1993), p.62.

> 'I know that it has been said that the proprietors of the shares in some canals (particularly the Grand Junction) will, in a few years after they are completed, obtain at least 25 or 30 per cent interest on their money.'[73]

In fact the Grand Junction was to pay more like 7% overall, but investors will have been conscious of the 30% rate, comparing it with the 'blue chip' investments of the day: Government 3% Consols, and Bank of England and East India Company shares at about the same rate.[74] Nonetheless, as considered briefly in Appendix F, it does not appear that the promise of the GJC was seen as widely attractive in western Hertfordshire.

The Promise to Landowners

Landowners could capitalise on an approaching canal project by selling land to the company, or by taking advantage of the fact that their land was suddenly on the line of a major through route and transport artery. In 1792 Hertfordshire landowners had the opportunity to do both. It was recognised that landowners could not be allowed to refuse to sell land to a canal once approved by Parliament. Compulsory purchase was enshrined in the Acts of canals as of both river and road improvements, with commissioners appointed to make sure that land was correctly valued and appropriate compensation paid. It was required very little in Hertfordshire, where most of the landowners were content, although some agreements were greeted with relief by the Committee.[75] Ward observes that the landowner had more interest than just to improve his estate and exploit mineral wealth beneath. There was often a need to maximise capital by selling land for canal building – land is an illiquid asset and this offered one way of monetising it, although optimising one's

[73] The Gentleman's Magazine Vol 62 (1792), quoted in Burton, *The Canal Builders*, p.65.
[74] Hadfield, *British Canals* (London, 1952), pp.158, 159.
[75] For example Harcourt of Pendley - TNA RAIL830/37 *General Committee Minutes* 1 June 1793.

returns had to be balanced against the risk of unintentionally delaying the project.[76] We will see in Chapter 3 how the GJCCo's land purchases were realised, but we note that land purchase typically required a canal company to lay out about 10% of the total cost, while for the GJC it was more like 20%, although this may have been distorted by the very high payments to the Earls of Essex and Clarendon to divert the main line at Watford, and by relatively high prices in Middlesex.[77] The right of selling landowners to buy shares at face value was clearly attractive: the company set aside 1000 shares in trust to cover the commitment, and many (not all) were taken up.[78] Ward estimates that overall 50% of the GJC landowners did so - for the contemporaneous Kennet and Avon Canal it was 10% - although Appendix F suggests a lower proportion in Hertfordshire.[79]

We do not, however, see much evidence here of the other suggested reason for landowner enthusiasm, the benefit to their business interests (Ward's 'economic motive')[80]. With most of the land agricultural rather than industrial, and with little prospect of new canal-related business developing quickly, Hertfordshire landowners did not expect to suddenly own manufacturing premises, and only Griffith Jones of Nash Mill (Abbots Langley) of the papermakers and none of the silk throwsters invested in the new canal. There was, though, some promise to farmers, although Jessop did not refer to it in his synopsis. 'Manures' from London had been transported by road into Hertfordshire for many years, as Young reported: the use of canals in allowing produce to reach markets was already well known, and some Acts (including the GJC's) made special provision for the short-distance transport of agricultural materials.[81] But London, the main market, was relatively close by road,

[76] Ward, *Finances*, pp.143, 153, 156.
[77] Arthur Young, *Enquiry into the progressive value of Money in England* (London, 1812), quoted in Ward, *Finances,* p.144.
[78] Ward, *Finances,* p. 44.
[79] Ward, *Finance*s, p.157.
[80] Ward, *Finances,* p.126.
[81] Young, *General View*, p.17; Faulkner, *Grand Junction Canal,* p.23.

and E.A. Wrigley points out the problem of serving farms by canal: for the farmer off the line of the canal much of the benefit of canal transport was lost once goods had to be put into carts.[82] On balance, then, there was little perceived benefit to either the agricultural or the industrial interest: the promise to the Hertfordshire landowner was limited to the prospect of selling their land for cash.

The Promise to the Towns

In 1792 John Phillips was already able to write that 'the canals have entirely changed the appearance of the counties through which they flow.'[83] Arthur Young among others had already written in highly-approving terms in 1770 of the developments and workings of the Birmingham Canal and of the Duke of Bridgewater's operations at Worsley.[84] It was widely anticipated that considerable economic benefit would accrue wherever a canal was to pass. Townspeople, traders and professionals along a proposed canal, well aware of the opportunities offered by canals elsewhere over the previous thirty years, will have been to be keen to exploit them.

As we have seen, Hertfordshire towns were at this time small, largely dedicated to agriculture and local rather than regional in influence.[85] Most of those on the western side of the county had a small element of local manufacturing as well as the trades and services usual to a market town, and benefits will have been expected.[86] Many factors, however, affected those benefits, and not all were encouraging to Hertfordshire interests. We have already seen that the main drivers of the GJC were at each end, and that the greatest influence on rapid development

[82] E.A.Wrigley, *The Path to Sustainable Growth* (Cambridge, 2016), p.139.
[83] J. Phillips, *A General History of Inland Navigation, Foreign and Domestic* (London,1792 - reprinted Newton Abbot, 1970) (British Library Shelfmark Gen Ref 192.a.15), p.viii.
[84] G E Mingay, *Arthur Young and his Times*, pp.145-154.
[85] Goose and Slater, *County of Small Towns*, Ch1.
[86] Barrie Trinder, '18th and 19th Century Market Town Industry', in *Industrial Archaeology Review*, XXIV:2, 2002, pp. 75-89.

elsewhere was the presence of minerals, absent from Hertfordshire. Other drivers had to be found if major development was to occur here. But early 1790s Hertfordshire had little manufacturing, with fuel expensive and hard to obtain; agriculture was well-organised and relatively prosperous, with its main market in London reasonably accessible by road. Elsewhere new prosperity came to a new range of local entrepreneurs: but it reached west Hertfordshire mainly through those who had made, or were still making, their money in or through London, and they had little need to set up new enterprise in Hertfordshire.

With the canal approaching, the traders of Watford, St Albans and Hemel Hempstead, none planned to be on the main line, were all keen to have their 'collateral cut' (as promised for Watford and St Albans in the original or amending Acts); and all protested strongly when it began to emerge that they were not to get them.[87] Connection to a canal was widely expected to increase both prosperity and population – indeed, Douglas Porteous notes that at least some inland towns given canal access had become 'ports' as well as manufacturing centres. [88] Towns needed a constant supply of both food and fuel, and the cost of transporting it was a key economic consideration in Hertfordshire as elsewhere. West Hertfordshire was already reasonably well provided with road transport, and the addition of a waterway might have allowed at least some of these towns to develop as ports. But Porteous points out that towns which did grow in this way, for example Kendal, typically made active preparations for their new opportunity, with roads improved and wharves and warehouses prepared in advance, and suggests that although major manufacturing was not necessarily a pre-requisite for canal-generated prosperity action of some sort was needed.[89] The extent to which this was done here will emerge in later chapters.

[87] Faulkner, *Grand Junction Canal in Hertfordshire,* p.9; H.C.F. Lansberry, 'The St Albans Canal', in *Hertfordshire's Past* Vol 7 (1967) pp.3-8; Faulkner, *Grand Junction Canal,* pp. 68/69.
[88] J. Douglas Porteous, *Canal Ports* (London, 1977), p.25.
[89] Porteous, *Canal Ports*, p.33.

Summary

In the early 1790s western Hertfordshire was overwhelmingly agricultural, with small parishes and villages scattered around towns of no great size. The main road had little effect on most, despite providing reasonable links to London and the Midlands, while the small rivers powered corn mills and small pockets of industry, mainly but not only paper-making. London dominated the market for the main agricultural product, wheat.

As the Grand Junction Canal began to emerge in early 1792 it offered a range of opportunities to a public including both local landowners and business people, all well aware of the success of the earlier canals and of the remarkable developments they had enabled in the new industrial towns. The main aim was to connect midlands industry and London, but it offered towns along the line a chance to develop in a new way. The overall promise of the Grand Junction Canal was a strong and attractive one: the extent to which it was realised in western Hertfordshire will be examined in the chapters to follow.

Chapter 3

The early impact of the Canal

This chapter considers how the promise of the canal was fulfilled in Hertfordshire in the first few years of its operation. It will show that the canal generated considerably more activity than often recognised, but that the beneficiaries were limited.

The Building of the Canal

The canal's building started at both ends immediately after the Act received Royal Assent on 30 April 1793.[1] It opened northwards progressively from the Thames at Brentford, reaching Uxbridge in November 1794, King's Langley by September 1797, Two Waters early in 1798 and Berkhampstead in the autumn of that year. The Tring summit pound, a major task completed in early 1797 along with the Wendover arm running to the north of Tring, was connected in early 1799, so finishing the whole Hertfordshire section. In 1801 the line to Paddington was completed, while the line northwards from Tring was finished in early 1801, although transhipment by railroad across Blisworth Hill was to remain an expensive inconvenience for a further 4 years. By the start of 1801, therefore, the new waterway was ready for business.

[1] Alan Faulkner, *Grand Junction Canal* (Newton Abbot,1972), pp.27-41; Charles Hadfield, *The Canals of the East Midlands 2nd Edition* (Newton Abbot, 1970), pp.110-113.

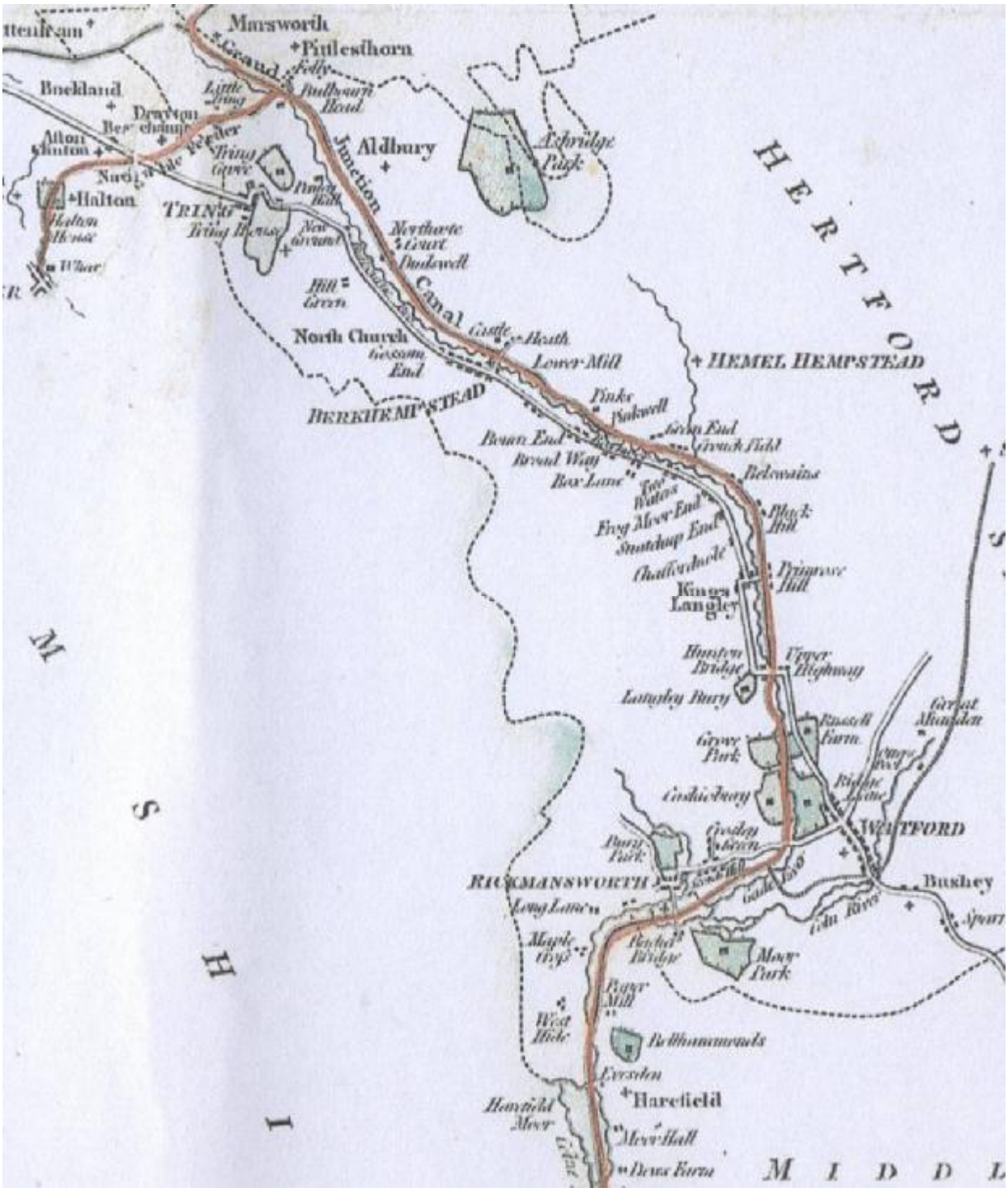


Fig 3.1
The Grand Junction Canal through Hertfordshire
(C.S. Smith (London, 1810))

(By permission of CanalMaps Archive
www.canalmaps.net, A0863)

Manpower and People

Except for major specialist projects, notably the tunnels, the Grand Junction was to be built by directly-employed labour, and in July 1793 the first paymaster was appointed.[2] By this time the early model of canal building, with labourers drawn from an area learning 'on the job' and using the tools and techniques familiar to them, estate carpenters building lock gates and fences and miners tunnelling, had been found unsatisfactory. Few areas had enough men willing to do the work, and many observers were concerned that these were often farm labourers whose absence at critical times, for example the harvest, caused disruption.[3] A different model, described in detail by Mike Chrimes and Hugh Ferguson, D.D Gladwin and Anthony Burton, was in place by about 1780, with large gangs of itinerant but dedicated men, usually employed by specialist contractors, cutting lengths of canal before moving on to the next, possibly many miles away.[4] A Bill failed in 1793 to prevent the employment of agricultural labourers on canal workings during the harvest, at least in part on the grounds that many of the labourers had no farming background.[5] In fact the canal-cutting workforce was very mixed and varied from place to place: some were English and may well have come initially from farms, often but not only in the north, but a significant proportion were from deeply-impoverished Ireland or Scotland.

There are three reasons for arguing that the impact of the Grand Junction on Hertfordshire farming was limited. Firstly, the skills required were not really transferable from agricultural labouring. The standard of work was for one man to dig 12 cubic yards (about 20 tons) in a day, the technique to do that day after day being a specialist skill even had he been physically fit enough.[6] The labourers needed to

[2] TNA RAIL830/37, GJC Committee Minutes, 17 July 1793.
[3] D.D. Gladwin, *The Waterways of Britain* (London, 1976), p.53, Anthony Burton, *The Canal Builders (1st Ed)* (Cleobury Mortimer, 1993), pp.157, 158.
[4] Burton, *The Canal Builders,* pp.158-171, 188-209; Gladwin, *Waterways of Britain,* pp.49-75; Hugh Ferguson and Mike Chrimes, *The Contractors* (London, 2014), pp.22-25, 110,111.
[5] Ferguson and Chrimes, *The Contractors*, p.114; Burton, *The Canal Builders*, p.161.
[6] Burton, *The Canal Builders,* p.134; Nigel Agar, *Behind the Plough* (Hatfield, 2005), pp. 153, 154, 158.

understand how the work was organised, how a barrow run operated, how explosives were used, even where to stand to avoid being 'run down' by others, and it becomes clearer why canal labourers were by the 1790s generally being found from organised and specialist gangs. Secondly, the impact on the harvest, which would have been especially sensitive in arable Hertfordshire, appears not to have been much remarked upon locally. The cutting of the canal occupied the harvest seasons of 1794–98, with the parishes of Tring, Aldbury, Wigginton, Northchurch and Puttenham especially vulnerable all that time: there is no suggestion in the available parish records of any undue effect.[7] Thirdly, had agricultural labour migrated wholesale to the canal the call on parish support to the poor would, one supposes, have been reduced: those left behind would have been needed to do at least some of the work vacated by those who had gone, and so become less reliant on relief. But vestry minutes and overseers' accounts of the parishes under review make neither reference to this sort of effect nor suggestion that pauper men might be sent to work on the canal. There are a few mentions of casual relief to families of 'navigators', but generally they were separate and did not fall on the parish.[8]

A related effect would have been an increase in agricultural wages in response to the higher ones being paid by the GJC – wage inflation on the canal in these early years of the War was one of the causes of cost overrun, with a labourer's wage having increased from 2/- to 3/- a day, 18/- weekly.[9] This was far in excess of the local agricultural labour rates reported by Arthur Young in 1803/4 - 14/- per week in winter in the Watford area, 10/- per week round Berkhamsted (up from 7/- in the 1790s) and an average across the county of 10/- to 12/- per week.[10] It is true that

[7] HALS DP2/8/1, Aldbury Vestry Minutes 1702–1822; HALS DP111/8/19,Tring Vestry Minutes 1782-1815; HALS DP74/8/1, Northchurch Vestry Book 1650-1806.
[8] For example in HALS DP19/12/3, Berkhamsted Overseers Accounts 1800 and DP47/12/3, Hemel Hempstead Overseers Accounts 1797.
[9] Faulkner, *Grand Junction Canal, p.72.*
[10] Arthur Young, *General View of Agriculture in Hertfordshire* (London, 1804), pp.217-220.

Young wrote five years after the canal cutting in Hertfordshire had moved on: but agricultural wages had not changed much in the interval.

So there is little evidence of a strong call by the GJCCo on local agricultural labour, although there was indeed a shortage of manpower at times on the Grand Junction, as the experienced Chief Engineer Jessop expected in 1792.[11] There was potentially, however, a different impact on agricultural output: a lack of horses. For example, with bricks in short supply as the canal approached Berkhamsted and Tring, the real constraint was horses to pull the barges carrying them from Southall, which was attributed to the spring sowing of 1798.[12] There was a tussle between the demands of the canal and of the farmers, but the farmers seem to have won. The effect was on the canal and not the local economy.

Once the canal was in use a few specialists were required, but were brought in. In 1817 the toll clerk at Paddington was to be moved to Braunston, the junction with the Oxford and the gateway to the canal, and given a bonus of 100gns with an increased salary of £150 per annum.[13] As early as 1805 the District Superintendant had pointed out that there was no toll clerk between Boxmoor and Cowley, the last lock before Paddington, although there were 7 wharfs – he was allowed to employ a dedicated lock-keeper and to pay him extra to look after the traffic moving between those locks.[14] In 1825 a general shuffle of the toll clerks saw the Boxmoor man paid £60 moving to Gayton for £70, and he to Paddington for £90.[15] In September 1805 a carpenter, responsible for bridges, lock gates etc, was employed at 24/- a week and housed at the Company's Bulbourne workshop.[16] Early in 1809 the pay of lockkeepers, a crucial operational role, frozen at 15/- a week plus either

[11] Charles Hadfield and A.W. Skempton, *William Jessop – Engineer* (Newton Abbot, 1979), p.38, quoting Jessop's letter to Lord Sheffield of 3 Sept 1792, in E Sussex Record Office.
[12] Faulkner, *Grand Junction Canal*, p.38; Gladwin, *Waterways of Britain*, p.53.
[13] TNA RAIL830/35, GJC Minutes, 17 April and 3 November 1817.
[14] RAIL830/42, GJC Minutes, 22 October 1805.
[15] RAIL830/35, GJC Minutes, 10 March 1825.
[16] RAIL830/42, GJC Minutes, 10 Sept 1805.

accommodation in a Company house or an allowance of 2/6d a week, was revised: 1st Class to 17/6d weekly, 2nd class to 19/6d, 3rd class to £1.1.0, with men to be promoted as vacancies occurred.[17] The policy was not to recruit locally for these posts, and when the Earl of Essex later asked to put one of his trusted 'old retainers' into the Cashiobury Lock position the Company agreed only 'exceptionally'.[18]

Land purchase and usage

The first meeting of the General Committee made arrangements for the detailed survey and valuation of the land required, and agreed the terms of the purchases.[19] The engineer was encouraged to complete the laying out of the line so that land ownership could be accurately assessed, and the purchases proceeded quickly, with valuations varying widely but generally in the range £60 - £80 per acre. Bridges were sometimes demanded, but were usually 'bought out' by payment of compensation - to the landowner rather than to the farmer whose operations were inconvenienced. A sample of the land purchases in the county is at Table 3.1, derived from the minutes of successive Committee meetings.[20]

It seems that they were still being made in Hertfordshire surprisingly late, in many cases after work had already started: although the landowners must have agreed it shows the pressure to keep the work moving once started – in 1796 the Clerk was to ask Caius College for permission to enter their land at Croxley to proceed with the work.[21] Each mile of canal needed about 8 acres, making provision for wharfs and locks but not the statutory requirement to purchase entire parcels, if the land owner required, when the residue was less than 2 acres – in Hertfordshire, therefore, at least 208 acres, and in practice much more, were needed.

[17] TNA RAIL830/42, GJC Minutes, 14 March 1809.
[18] RAIL830/35, GJC Minutes, 12 May 1825.
[19] RAIL830/37, GJC Minutes,1 June 1793.
[20] RAIL830/37, GJC Minutes, various dates.
[21] RAIL830/38, GJC Minutes, 3 May 1796.

Parish and Landowner	Area bought[22] (Acres.Roods.Perches)	Price paid	Value per acre (approx)
Rickmansworth			
H F Whitfield	1.1.3	£74.0.3	£56
Samuel Leightonhouse	3.0.34	£171.4.8	£53
Joseph Skidmore	3.3.17	£308.10.0	£77
Joseph James	0.1.35	£37.10.0	£81
Joseph Hone	0.0.25	£4.13.9	£36
Aldenham Commoners (for Reservoir)	10.0.0	300.0.0	£30
Lot Mead:			
Unnamed	1.0.18	£66.15.0	£60
James Bovingdon	8.0.0	£640	£80
Solomon Weedon	4.0.20	£318.2.6	£77
Jedidiah Strutt	2.3.0	£206.5.0	£75
Geo. Philip Ehret	2.0.0	£160.0.0	£80
Robert Clutterbuck	1.3.20	£140.12.6	£75
Joseph Skidmore	1.0.0	£75	£75
Caius College (Common Moor)	4.3.11	£108.8.5	£23
Caius College (Croxley Hall, Cashio Bridge Farms)	6.1.17	£226.17.6	£36
Hemel Hempstead			
Boxmoor Trustees	9.2.0	£300.0.0	£32
Corner Hall	2.0.0	£160.0.0	£80
Corner Hall - Tan Yard Meadow (Mrs Rebecca Shipton – for the wharf?)	2.0.0	£120	£60
Watford			
Earl of Clarendon (The Grove)	1.2.7	£100.6.10½	£63
Northchurch	4.2.33	£282.7.6	£60
Abbots Langley			
Matthew Sutton	0.2.0	£42.10.0	£85
Francis Cromack	0.0.25	£16.8.1½	£100
Belsize Farm	2.0.14	£62	£30
John Strange	1.0.6 (meadow) 1.1.15 (arable)	£123.6.3[23]	£53

Table 3.1

A sample of land purchases and valuations in Hertfordshire, 1796/97

[22] 40 Perches = 1 Rood; 4 Roods = 1 Acre. 1 Acre = 4840 sq yards = 1 furlong (220 yds) x 1 chain (22 yds).

[23] The valuer's valuation was £90, but the Company paid pragmatically on demand.

The length across Boxmoor, 1 mile 3 furlongs 10 poles, needed 9 acres and 2 roods.

Damages were also a feature of canal building, and were usually paid up without demur having been assessed by the surveyor. In Rickmansworth, for example, three farmers were paid a total of £120, in King's Langley an orchard was damaged (£12 - £7 was rejected), damage at Northchurch was due to a spoil bank and broken fencing (£2.14.6), similarly at Tring and Aldbury (£12.6.0 and £37.5.6); while £50 was paid for a plantation of trees during a widening operation at Tring.[24] Many of the claims were two or three years retrospective, but were generally met: the Company was keen not to alienate its neighbours.

The Effect on the Turnpike

The Sparrows Herne Turnpike Trust had been set up in 1762, and continued to operate throughout the building of the canal and the period of this study.[25] As suggested in Ch 2, it might have been expected to suffer damage to its long-distance traffic, but to have picked up other traffic more locally. A simple model of the finances of the Trust derived from the Account Books and Trustee Minute books is presented at Appendix G.[26] The toll revenue was always small; the bulk of tolls were paid at the gates on either side of Watford (Watford and Ridge Lane gates), increasing only slowly in the years to the start of canal cutting in Hertfordshire, with outgoings growing much more strongly. This resulted in an operating loss in almost every year after 1793, with a distinct decline in tolls after a peak in 1796, when the canal began to carry from London into Hertfordshire. The bottom was in 1800, as the canal was opened throughout the county. The tolls were 'farmed' progressively from late 1805, and the engineer/surveyor McAdam was appointed in 1821 to act, in effect, as a

[24] For example TNA RAIL830/38, GJC Minutes, 8 May, 17 Oct 1796, 14 March, 21 April 1797; Dacorum Heritage Trust DAHCT 51.015, Receipt for Payment (Richard Bard Harcourt) 20 May 1801.
[25] 2 Geo. III c. 63 (Sparrows Herne Turnpike)
[26] HALS TP4/28-32, Sparrows Herne Turnpike – Journal accounts of income and expenditure, 1786-1865.

maintenance contractor: so the accounts do not really show enough detail to justify analysis after 1806.[27] A number of conclusions can nonetheless be drawn.

Firstly, and despite Wrigley's general observation, it seems unlikely that the Sparrows Herne was ever an artery of industrial traffic between the midlands and London.[28] The toll distribution is too concentrated on Watford for much to have been moving along its length: flow from and to London as far as Berkhamsted can be seen, but not as far north as New Ground gate between there and Tring. The canal did not therefore act in competition with it as a long-distance route. Secondly, the cutting of the canal may account for some of the increase in toll revenue between 1794 and 1799, and increased wear on the road may account for some of the increase in costs: but if so the effect on tolls was small and that on costs disproportionately high. Thirdly, the reduction in toll revenue after 1797 was due almost entirely to the Watford gates, which suggests that they were by-passed by the canal carrying goods from London to Watford, Hemel Hempstead and Berkhamsted - the gates further north, always small, saw almost no change. It appears that while the canal and the turnpike were not in competition for long-distance goods traffic the traffic on the southern end of the turnpike was affected by the canal carrying goods from London into Hertfordshire; but whether this was really significant in view of the inexorable rise in costs is doubtful.

The canal was, however, used by the turnpike. Road stone began to be carried from the granite quarries near Hartshill, Warwickshire, on the Coventry canal as roads surfaces began to improve under McAdam and Telford from about 1805, and it starts to appear in the Sparrows Herne accounts from 1812.[29] That it came by canal is evidenced by the fact that stone, including granite, was sometimes noted as

[27] HALS TP4/2/4, Sparrows Herne Turnpike Trustees - Minutes, 12 March 1821.
[28] Wrigley, *Path to Sustained Growth,* p.145.
[29] Christopher M Jones, 'Working on the Waterways: Stone Boating', in *Narrow Boat* Magazine, Summer 2015, pp.30-37; HALS TP4/30, Sparrows Herne Turnpike Accounts, Feb-Aug 1812.

being delivered to a wharf; and in 1836 50 tons were purchased, a formidable load for a train of waggons but just two narrow boat cargoes.[30] But there seems to be little other interaction between canal and turnpike.

Using the Canal

In the early days, with canal carrying settling down, volumes of trade were already high. A Coventry carrier in 1806 transferred the 5,000 tons of bar and pig iron he brought annually to London via the Thames or by ship from Hull to the GJC for a rate of ¾d per ton mile, and it is likely that at least some of this went to the small ironworking businesses in the Hertfordshire towns.[31] An idea of the range of goods being carried on the canal in about 1816 comes from an exchange with a connecting canal which refers to sugar, molasses, porter, soap, tallow, oil and hides ('new and tanned') from London to Nottingham, and cheese, ale and iron from Nottingham to London, and about that time there are many other references to glass, nails, salt, coke, stone and timber.[32] Throughout the minutes offers of deals were being declined and accepted, made and withdrawn to affect business along the length of the canal.[33] One local user was Thomas Toovey, the corn miller of King's Langley, whose 1817 claim for damages was for £120 expressly 'occasioned by want of water of the locks in 1814 and 1815, and for boats waiting turns in those years by which he was deprived of considerable Trade and Damages'.[34] He was paid, but clearly was already doing good business on the canal.

Coal Dealing

Volumes of coal carried were considerable: in 1809 the Company directed 3000 tons of Staffordshire coal to be supplied to Paddington, to be followed by a further 7,000 tons either there or to 'the Company's wharf at Cashiobury as required'

[30] HALS TP4/2/5, Sparrows Herne Turnpike Minutes, 25 July 1836.
[31] TNA RAIL830/42, GJC Minutes,11 Feb 1806.
[32] RAIL830/35, GJC Minutes, 2 May 1816; Hadfield, *Canals of East Midlands,* p.119.
[33] RAIL830/42, GJC Minutes, 8 April 1806.
[34] RAIL830/35, GJC Minutes,11 Dec 1817.

- business at Watford was already growing.[35] We also have one of the few direct references to its price – the back-pumping steam engine near Nash Mills was to be supplied with coal at 30/- per ton delivered plus 6d per ton to unload and stack it, the lowest bid.[36] This was, of course, wholesale: but comparison with the sales to the Hemel Hempstead poor house of 13 tons at £2.15/- a ton (delivered) late in 1808 by the Boxmoor wharfingers allows an estimate that the householder will have been paying about £3 a ton, which used only for cooking would last much of a year – it was perhaps beginning to be affordable to the working tradesman, if not yet the labourer.[37] Twenty years later Dickinson had 175 tons at Nash Mill at 27/- a ton, suggesting that the price of coal in Hertfordshire had if anything declined a little.[38] There were coal dealers in each town, and the large amounts which came to be used in the poor houses of Hemel Hempstead and King's Langley especially shows how its use had grown: no record has been found of a parish buying coal before the arrival of the canal (Hemel Hempstead Overseers in particular were buying small but increasing amounts from 1798), but ten years later it was in regular use.[39]

Agriculture

Agricultural use of the canal was problematic. As E.A. Wrigley argues, it needs 'dendritic' transport, with widely spread branches: serving fields by canal was difficult, and for most purposes road transport would have sufficed.[40] Nonetheless, some Hertfordshire farmers did use it: the early gauging records as well as descriptions of wharfs show several references to hay as a cargo for Paddington and the Thames, as well as manures as a return load.

[35] TNA RAIL830/42, GJC Minutes, 7 Nov 1809.
[36] RAIL830/42, GJC Minutes,11 July 1809.
[37] HALS DP47/12/4, Hemel Hempstead Overseers Rates 1804–1811.
[38] RAIL830/44, GJC Minutes, 18 Dec 1828.
[39] HALS DP47/12/3, Hemel Hempstead Overseers Accounts, Nov 1798; DP/64/12/4, King's Langley Overseers Accounts, 29 Mar 1805.
[40] E.A.Wrigley, *The Path to Sustainable Growth* (Cambridge, 2016), pp.136, 139.

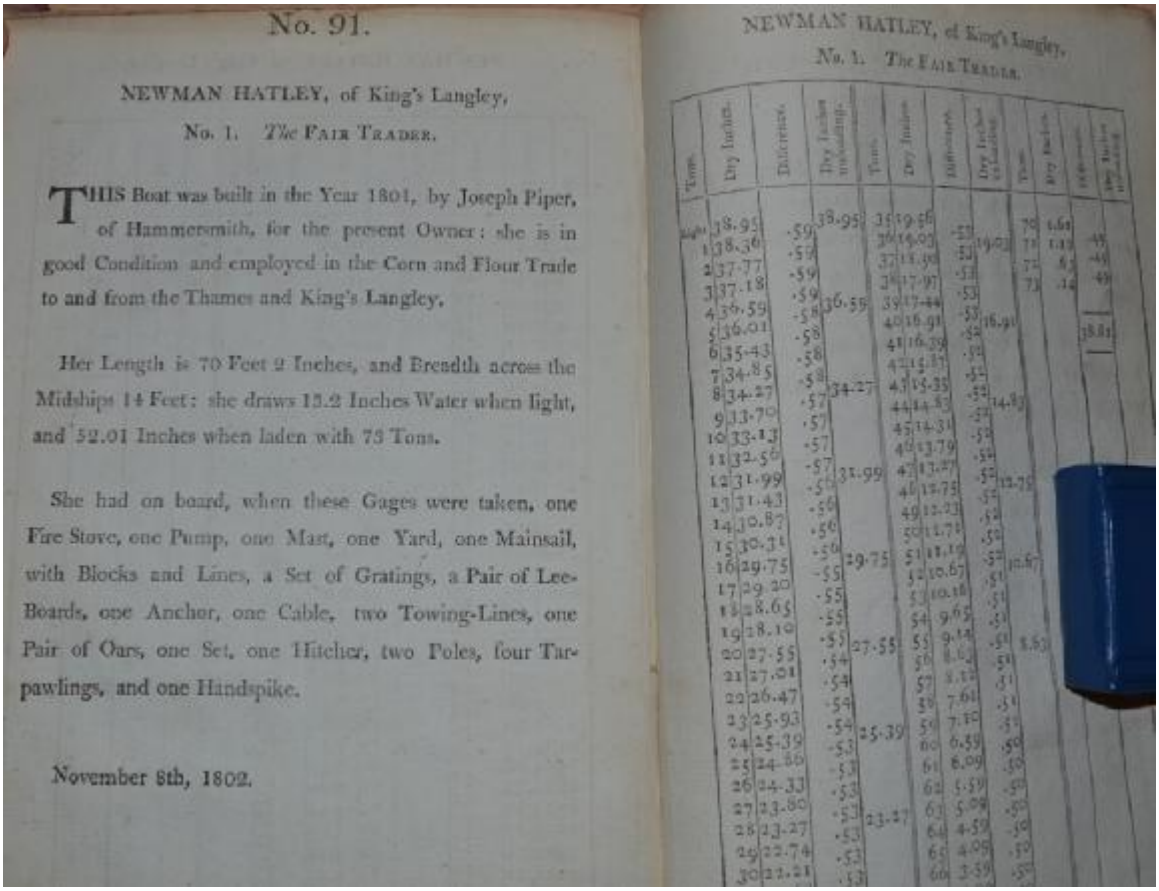
Fig. 3.2

A horse-drawn hay barge at Winkwell. Although captured in the early 20th century this scene will have been common on the Grand Junction 100 years earlier.

(Hemel Hempstead Local History and Museums Society)

In 1801 the King's Langley farmer Newman Hatley commissioned a sailing barge to carry 'corn and flour' from King's Langley to the Thames, although the original idea seems to have been to improve his supply of London manure (fig 3.2).[41] In 1804 he gave Arthur Young, who described him as 'a considerable farmer', an account of his experiences.[42] His barge cost £262/10/-, one man [with three horses] and a boy cost £2/12/6d a week, another man 17/-, which gives wages for a boatman broadly in line with, but above, agricultural wages for skilled men and labourers of about 2/- a day in winter.[43]

[41] NWA BW99/6/5/1, GJC Gauging Register Vol 1.
[42] Arthur Young, *General View of the Agriculture of Hertfordshire* (London, 1804), pp.16, 17.
[43] Young, *General View*, p.16, 217, 218.



No. 91.

NEWMAN HATLEY, of King's Langley,

No. 1. The FAIR TRADER.

THIS Boat was built in the Year 1801, by Joseph Piper, of Hammersmith, for the present Owner: she is in good Condition and employed in the Corn and Flour Trade to and from the Thames and King's Langley.

Her Length is 70 Feet 9 Inches, and Breadth across the Midships 14 Feet: she draws 13.2 Inches Water when light, and 52.01 Inches when laden with 75 Tons.

She had on board, when these Gages were taken, one Fire Stove, one Pump, one Mast, one Yard, one Mainsail, with Blocks and Lines, a Set of Gratings, a Pair of Lee-Boards, one Ancher, one Cable, two Towing-Lines, one Pair of Oars, one Set, one Hitcher, two Poles, four Tarpawlings, and one Handspike.

November 8th, 1802.

NEWMAN HATLEY, of King's Langley,

No. 1. The FAIR TRADER.

Fig 3.3
Gauging Record, barge 'Fair Trader' owned by
Newman Hatley of King's Langley.

(National Waterways Archive, BW99/6/5/1, folio 91)

But Hatley complained that the arrangements at Paddington were not good enough to avoid expensive transhipment of produce as well as manures onto road vehicles, so at this time his use of the canal was probably still tentative and seems to have remained wholly focussed on agriculture – he did, however, owe tolls of £65.0.6¾d, due two years before, for which the company was about to proceed.[44] Meanwhile, Young gives other details of the traffic: for Hatley, it took 10 days, and the tolls totalled £5 for a load of composted 'night soil and sweepings' costing £12 on the 50-mile round trip (as quoted by Young – in fact it is about 66 miles *in toto*, but

[44] TNA RAIL830/42, GJC Minutes, 10 Dec 1805; *Northampton Mercury,* 10 April 1802 (opening of hay and straw market at Paddington).

the speed still seems very low).[45] Rooper of Berkhamsted (who in 1805 was to get a swing bridge to serve his farms better) saved £30 per year in coals and ashes, while Leech, who when the canal first opened bought raw stable dung in London at £20 per 60-ton barge load covering 5 acres 'slightly', then needed 12 wagons to haul it to the required fields and found the whole arrangement not cost-effective.[46] Other canal users noted by Young included Kingsman of King's Langley and Dorrien of Berkhamsted, where the use of ashes was 'universal' and their cost as having reduced due to the canal from 2/6d to 1/6d 'per sack' (size unspecified), although Rooper continued to send carts, empty if necessary, to London for them. Night soil was brought to Berkhamsted and Kings Langley for the first time, at £27 per barge-load to treat 10 acres, although Young does not record the customer.[47] For him it was the inconvenient arrangements at Paddington which prevented the canal being used more to serve Hertfordshire agriculture.[48] But Hatley, for one, persisted: in 1826 he, with his landlord the Earl of Essex, was allowed to unload boats over the towpath at the wharf which had been built for him by the Company in 1822, mainly but not only for manure.[49]

Paper making

The state of the paper industry before 1792 was outlined in Chapter 2. Increasing demand for paper due to growing economic and industrial activity then drove a level of production whose scale grew to supplant imports and generate exports.[50] The canal was not an immediate panacea: competition for water as a power source caused many of the disputes between the mill owners and the canal company. Well into the nineteenth century water power was often preferred to steam because it was easier to control - even Croxley mill, opened in 1830, was driven in part by a water

[45] Young, *General View*, p.16.
[46] Young, *General View*, p.16; TNA RAIL830/42, GJC Minutes, 8 Oct 1805.
[47] Young, *General View,* p.166.
[48] Young, *General View*, p.18.
[49] HALS D/ECp.T11, Indenture (Hatley and Essex vs GJCCo), April 1826.
[50] Richard L Hills, *Papermaking in Britain* (London, 1988), pp. 45, 46, 53.

wheel, and water turbines were used at Nash until 1879 – and a steady water supply was vital, and not always found near a canal.[51]

At the arrival of the canal the actual making of the paper in these mills, all water-powered and small-scale, was by hand: true industrialisation was yet to appear, and the industry was not economically dominant even in Hemel Hempstead, King's Langley, Abbots Langley and Rickmansworth. But it was the Hemel Hempstead mills, already well established by 1792, which seem to have used the canal quickly – and to grow. The Fourdrinier brothers already had Two Waters Mill then and Frogmore from 1798 and were investing heavily in technology - it seems improbable that so innovative a firm should ignore the canal passing within ¼ of a mile of their door. They may have had direct access from their mills to the canal, but if not convenient wharfage was available nearby (fig 3.3 below). The rateable values of the two mills, £114 and £120 from 1798 increasing to £120 and £200 in 1803, suggest sizeable businesses, as does the £47 valuation of Boxmoor wharf.[52] All were to grow considerably: the gauging registers show a range of long-distance canal carriers working past Hemel Hempstead, and it would be surprising had Fourdrinier not engaged their services passing both south to London and north towards Birmingham to bring raw materials (rags) in and paper out. When in 1803 the Fourdriniers' paper-making machinery was being delivered from Bryan Donkin's works on the south bank of the Thames at Bermondsey it could have come by waggon up the turnpike: but it is far more likely that these entrepreneurs would have used the canal for this, as for the boilers (installed in 1810) and fuel to heat the water for paper drying.[53] The Fourdriniers had probably been using the canal for about 10 years before Dickinson came to Apsley; their presence may well have influenced

[51] Hills, *Papermaking,* p. 161; Joan Evans, *The Endless Web* (London, 1954), p. 96.
[52] Hemel Hempstead Rate Assessments 1791–1804 HALS DP47/12/3.
[53] Finerty, Eric 'The History of Paper Mills in Hertfordshire' in *The Papermaker and British Paper Trade Journal* (April/May 1957) (transcript provided by The Paper Trail); Roger and Joan Hands and Eve Davis, *The Book of Boxmoor* (Hemel Hempstead, 1994), p.48.

Dickinson's decision on where to go: and the availability of the canal nearby will have been another factor.[54]

There were other mills, for example at Mill End, Rickmansworth which also used steam later; we know nothing of their operations, and it was Dickinson who developed fastest. His rapid expansion and mechanisation of a formidable industrial footprint, with Apsley, Nash and Batchworth taken over and Home Park and latterly Croxley built, could not have happened had the canal not been available, and to that extent Rickmansworth, like Abbots Langley, King's Langley and Hemel Hempstead, owed much to the GJC. In an example of how it could be used, Dickinson acquired Batchworth pulp mill in July 1819 (Evans sets this a year earlier) and changed its operating scale with new machines for pulp for use in the other mills. A canal arm was cut in the first few months of his occupancy and steam power introduced during the modernisation which followed.[55]

Silk and Cotton

The silk industry in Hertfordshire at the start of the period is outlined in Chapter 2.[56] The expansion in the Cheshire silk-throwing towns of the number and size of throwing mills was not repeated in Hertfordshire, where the mills remained few in number and generally, until 1824, small. A silk throwing mill had three requirements apart from its labour force: driving power, transport of raw material from the point of import, and transport of the product to market. Neither the raw material nor the product was especially bulky: for years carried by road, it could easily have continued so. But motive power was a different matter. The Hertfordshire throwers

[54] M. Gwennard Robinson and Valentine J. Wrigley, 'Hemel Hempstead in the Nineteenth Century', in Susan Yaxley (Ed), *History of Hemel Hempstead* (Hemel Hempstead, 1973), pp.103-106.
[55] Evans, *Endless Web*, pp.22; TNA RAIL830/35, GJC Committee Minutes, 10 June 1819.
[56] Sheila Jennings, *The Ravelled Skein*, University of Hertfordshire PhD Thesis 2002.

were in Watford, St Albans, Rickmansworth and later Tring.[57] The Rookery mill, four storeys high, was powered by the River Colne at the southern end of Watford about 500 yards downstream of the 1780 turnpike bridge.[58] Owned by the Paumier family until 1826, it was large enough to be clearly shown on the 1822 map, and before 1792 two more mills, both horse powered and small, had been established in Watford, probably also by Paumier, and probably another on the High Street.[59] Thomas Rock Shute took over the Rookery Mill in 1826 and sought to expand production, but finding that there was not enough labour in Watford he opened two other mills, in Rickmansworth on the site of an 1806 establishment, and in Chesham, a few miles west of Berkhamsted.[60] In 1835 he was complaining that he had 600 people at his mills and still needed pauper labour (which was not made available).[61] Both were powered by steam, which suggests that not only the fuel but also the steam plant and machinery came by canal. There is, however, no record of the supply of this machinery, and so any assumption must be cautious.

No record has been found, either, of how the silk was carried, although a 1792 transaction between the Watford throwster Watson and the Ruislip workhouse suggests that moving raw silk and thrown thread across that distance (about 8 miles) by road presented little difficulty.[62] The throwsters did not need to use the canal, although they could have done so: at Rickmansworth Frogmoor and Batchworth Bridge wharfs were within half a mile of the mill, although at Watford (Cashio Bridge) the journey to the Rookery was about 3 miles: to Chesham from Berkhamsted's Castle Wharf was about 5 miles. These are not prohibitive distances: the raw silk had

[57] Sheila Jennings, 'The Silk Industry', in David Short (Ed), *A Historical Atlas of Hertfordshire* (Hatfield, 2011), pp.96-97.
[58] Branch Johnson, *Industrial Archaeology*, pp. 62-64.
[59] Wendy Austin, *The Tring Silk Mill* (Tring, 2014), p. 4; *Bryant's Map of Hertfordshire 1822* (map 3) (Hertfordshire Records Society 2003); Jennings, *Ravelled Skein*, pp. 180, 181.
[60] Jennings, 'The Silk Industry', in Short (Ed), *Historical Atlas*, p.44.
[61] TNA MH12/4679, Correspondence between T R Shute and Watford Board of Guardians 1st and 3rd November 1835.
[62] HALS DE/B1157 B11, Draft agreement between the Master of the Ruislip Workhouse and Thomas Watson of Watford to wind silk in the workhouse, 1792.

already come from the Port of London by boat or cart, and the thread could have gone south to London or north towards Cheshire in the same way. The transport mode selected will have depended on the need and on the exact location of the customer, and there is no real evidence.

The influence of the GJC, then, did not result in the growth of silk throwing into a major industry in Watford or Rickmansworth. Another throwing mill was established at Tring, however, in 1824, and Wendy Austin tells how it was built and operated.[63] The transport modes used by the founder and from 1829 by his successor are not known: but the canal was nearby, and the steam engine provided from Manchester probably came to come to Tring Wharf at Gamnel on the Wendover Arm.[64] It would be surprising if the coal had not come by the same route, but again, there is no real evidence, although Branch Johnson suggests that thrown thread was sent to London and Manchester, with some to Coventry – all on connected canals – and later to the weaving mill at Aylesbury.[65]

The cotton industry was also confined to thread throwing at Batchworth, in a water powered mill operated by the brothers Strutt from 1786. There is some evidence of the Strutts using the canal despite their dispute with the GJCCo over the supply of water from the River Colne, although not with a wharf on the premises.[66] But the business was not made more sustainable by it: as described below, the Strutts sold out to the GJCCo in 1810, and it was then passed, shorn of its water rights, to the Fourdriniers and then to Dickinson as above. It cannot be said that the GJC brought prosperity to the small cotton industry in Hertfordshire.

[63] Austin, *Tring Silk Mill*, pp. 8-32.
[64] Austin, *Tring Silk Mill,* p.16.
[65] Branch Johnson, *Industrial Archaeology,* pp. 67, 68; Austin, *Tring Silk Mill,* p.37.
[66] TNA MPH 1/451, *Plan of an Estate The Property of Mr Joseph Strutt Situate in the Parish of Rickmansworth in the County of Hertford,* c.1807.

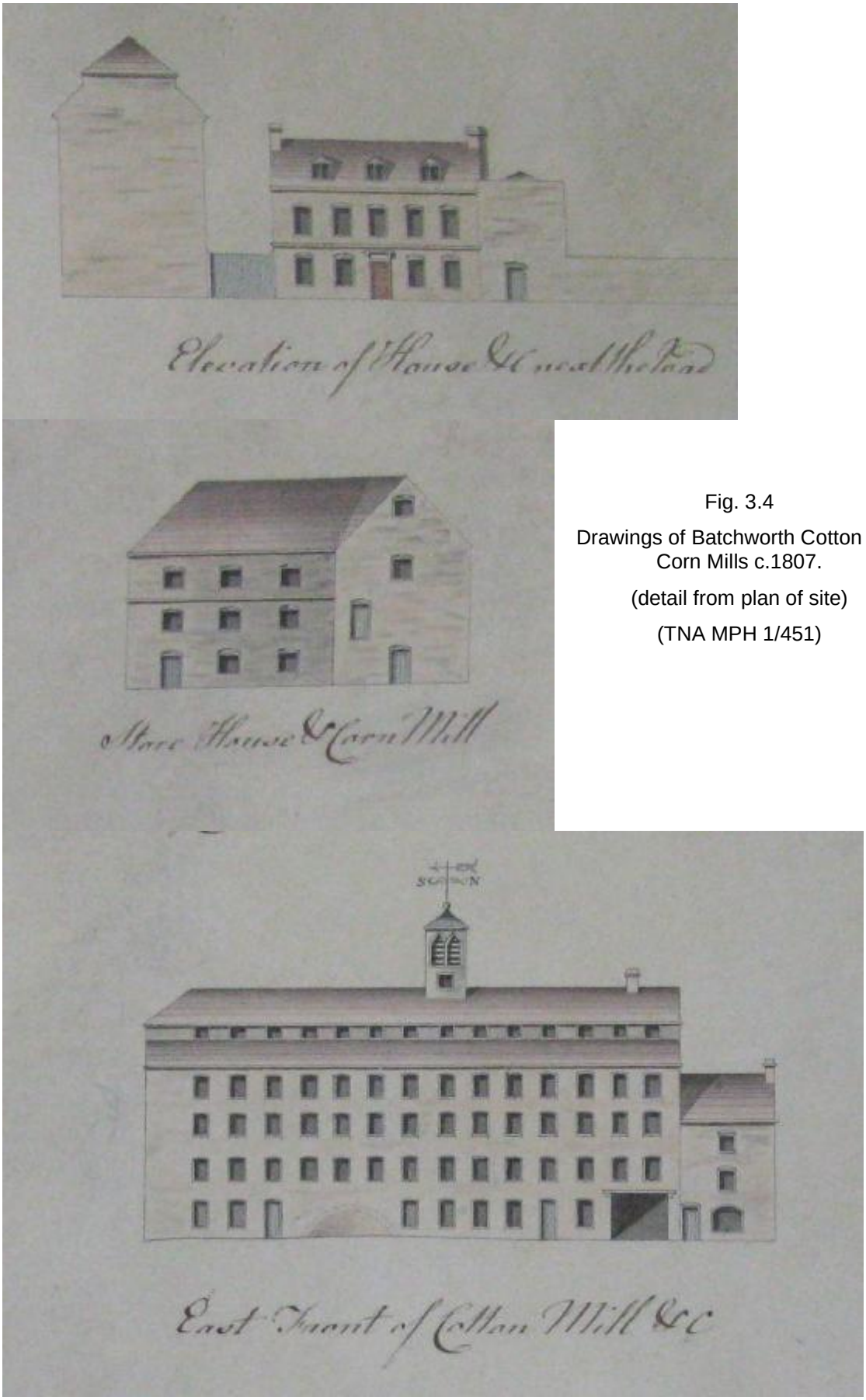


Fig. 3.4

Drawings of Batchworth Cotton and Corn Mills c.1807.

(detail from plan of site)

(TNA MPH 1/451)

Brewing

Every village had at least one alehouse brewing on the premises, but it was the larger 'common brewers' who brewed most of the beer sold.[67] Hertfordshire alehouses and breweries were as prosperous as any, but the scale of production is important. Peter Mathias estimates that a brewer then could make cost-effective use of steam machinery at about 20,000 barrels[68] a year: at smaller levels of output the mill horse provided enough power, and the market remained small and local - carrying beer, a low-value product bulky to transport, by brewer's dray more than about 5 miles was difficult and uneconomic. [69]

In western Hertfordshire brewing was of small scale. Allan Whitaker notes that even in 1867 the production of the largest brewery in the area was still only 9,000 barrels a year, well below the mechanisation threshold of 70 years before suggested by Mathias – steam power will have been introduced late.[70] There were nonetheless successful common breweries in Tring, Berkhamsted, Watford and Rickmansworth – another moved to King's Langley in 1826, while Hemel Hempstead seems to have had only small inns and beerhouses at this time.[71] But their supplies of malt came by cart, their product was delivered by horse-drawn dray, and their power for grinding malt and other parts of the process was provided by mill horse.[72] A great deal of hot water was needed, so a busy brewery required a steady supply of fuel, but as suggested in Chapter 2 the use of wood or furze was by this time problematic. Coal was becoming the only realistic option, and Mathias points out that

[67] Peter Mathias, *The Brewing Industry in England 1760-1830* (Cambridge, 1959); Allan Whitaker, *Brewing in Hertfordshire*, (Hatfield, 2006).
[68] 1 barrel = 36 gallons.
[69] Mathias, *Brewing Industry in England,* pp.14, 81.
[70] Whitaker, *Brewers in Hertfordshire,* p.217; Mathias, *Brewing Industry in England,* p.81.
[71] Whitaker, *Brewers in Hertfordshire*, pp.4-5, 74-78, 113-115, 162-166, 173-177, 202-216, 215-233.
[72] Whitaker, *Brewers in Hertfordshire*, p.15.

even in Tudor times the London common brewers were among the most important users of coal in the country.[73]

In Tring, Berkhamsted and King's Langley the breweries were less than a mile from the wharfs, and while Watford's two large breweries were over 2 miles from either Lady Capel's or Cashio Bridge wharfs the opportunity to use the canal clearly existed.[74] Coal was probably carried on the canal and then delivered by cart, while new barrels, the requirement for which saw many brewers buying their casks from specialist cooperages, may well have been carried from London.[75] The canal did not, however, have the transformative effect which might at first glance have been expected and was to be suggested later.[76]

Samuel Salter of Rickmansworth, however, used the canal in a much more significant way – but not for his brewery in the High Street. He paid for the 1805 canalisation of the River Chess from Batchworth to Town Wharf, but this was still about 400 yards from the brewery.[77] Whitaker suggests that the canal may have been used to transport beer to London or to bring in barley or malt, but in the absence of direct evidence this should be viewed with caution.[78] Just because a brewer could move beer by water does not mean that they did so: Terry Gourvish and Richard Wilson point out that 'Condition was one reason that the beer markets … remained essentially local…. To transport beer more than a few miles, even by waterway, added greatly to the distribution costs.'[79] They note a brewer based on the River Great Ouse but making little use of it for beer sales, despite dispatching between 8 and 14 barrels a week to London by road in the 1820s.[80] Even ten times this volume only generates one narrow boat load a week, unlikely to justify the cost of

[73] Mathias, *Brewing Industry in England,* p.6.
[74] Whitaker, *Brewers in Hertfordshire*, pp.74, 163-165, 202, 217.
[75] Mathias, *Brewing Industry in England,* pp.55/56.
[76] Williams, *History of Watford*, p.77.
[77] Faulkner, *Grand Junction Canal,* p.95.
[78] Whitaker, *Brewers in Hertfordshire,* p.173.
[79] T.V. Gourvish and R.G. Wilson, *The British Brewing Industry 1830-1980* (Cambridge, 1994), p.147.
[80] Gourvish and Wilson, *British Brewing Industry,* p.148.

the boat let alone of a dedicated cut. Salter may well have been selling beer towards and into London, but not enough to justify water transport, especially since he would have been relinquishing the use of his own drays for delivery. In any case the distance from brewery to wharf, about 400 yards, would still have required a cart to move a barrel of beer weighing about 400lb. It seems improbable that the cut would have been left so short if it had been planned to serve the brewery directly: it is more likely to have provided a public wharf near the middle of the town. Salter will have used it for fuel and for the return or supply of expensive barrels, but he was a local businessman taking an opportunity rather than serving any direct need of his own.

Boat building

There are only two examples of boat building on the canal in Hertfordshire (Appendix D). The first is shrouded in mystery: the gauging register for 1802 shows that in 1801 William Butler had the barge *Berkhamstead* built by Peacock and Willetts of that town, to be used to carry hay and coal between Berkhamsted and London.[81] But none of these people appears again, and the Overseers Accounts list neither Peacock nor Willetts (a William Butler features as a ratepayer, but without mention of his business).[82] The first reference to a solid boat building business is to John Hatton, also of Berkhamsted: he gauged as owner two narrow boats in April and May 1823, and then others at intervals up to 1841. He could have been building earlier: the record is incomplete, and in any case does not show the builder of boats gauged after about 1809. But he appears in the Berkhamsted Overseers Accounts in 1832 (the period 1823/4 to 1831 is also missing) as 'Mr J Hatton (boatwright, coal dealer) - Boat Building Yard £1.10.0'.[83] The 1832 Trade Directory lists him as a Boat Builder and Coal Dealer: it locates him at Castle Wharf while the 1839 tithe award shows him elsewhere (Chapter 4), but Hatton was certainly working over at least 20

[81] NWA BW99/6/5/1, GJC Gauging Register Vol 1.
[82] HALS DP19/12/1, Berkhamsted Overseers Accounts 1755-1804
[83] HALS DP19/11/3, Berkhamsted Rate Assessments 1831.

years, and both built and operated boats. There is no evidence of other boat builders in Hertfordshire at this time.

Boat ownership and Operation

Boat operations started promptly in Hertfordshire. As shown in Appendix E, Hertfordshire men (including Wendover, as the arm serving it passed through the county) were noted in the first gauging registers with barges and boats carrying hay and general goods, coal and timber between Paddington, Brentford, Watford and Berkhamsted; we have seen how Newman Hatley operated. Already by 1802 Ashness of Hemel Hempstead had sold a barge, Bentley of Cassiobury another for carrying coal and dung to Berkhamsted, and Perkins of Lady Capel's wharf yet another; while wharf operators like Howard of Boxmoor, Holladay of Watford and Landon of Cow Roast were all operating boats in trade related to their wharf, largely in coal. Meanwhile the papermaker Dickinson and his associates had begun to operate boats of their own from Nash Mills, and so had the Mines Royal Copper Company and the Troy miller Thomas Howard. Thomas Ebbern (or Ebborn or Ebburn), the son of a Warwickshire farmer, wharfinger and coal dealer, features in Chapter 4, but his presence suggests a conscious linkage via the canal between Midlands coal businesses and sales in Hertfordshire.[84] There was, then, no shortage of traders on the canal in Hertfordshire, and although we do not know the value of their trade many were able to continue for some years, although none was to become dominant in the field.

Wharfs

A wharf provides the interface between the traffic on a canal and its customers. The earliest public wharf operations can be seen in the Parish Overseers

[84] TNA HO107/439/5, 1841 Census (Watford Enumeration); HO107/1136/27 (Sow, Warks, Enumeration).

accounts, although farmers will already have been loading and unloading informally alongside their fields. At Tring, William Grover was tenant of Tring Wharf, on the Wendover arm, for some years following James Tate's 1800 occupancy until in early 1810 he was allowed to buy it for £400.[85] In Berkhamsted the canal appears from 1800 (a surveyor was paid to measure it for valuation) and the Company was certainly paying rates from 1803, but no mention of wharfs appears until 1806, when Daniel Norris was rated for one and the next year 'Mr Gilbert' also appears.[86] In 1809 William Tompkins had taken over Gilbert's wharf, and the pattern was set for the next twenty years: by 1831 William Tompkins and John Tompkins (coal dealer, wharfinger) were both rated for 'house and wharf' (almost certainly Castle Wharf), with other wharfs featuring briefly. In Hemel Hempstead the first mention of the GJCCo came in the summer of 1798, with land valued at £7 and Boxmoor Wharf (occupied by Wilkins and Ashness, who gauged a boat as owner in 1802) for £47 - William Howard has the next 'wharf' entry (£49) in 1800.[87] So the value of these wharfs was already considerable, although it appears that no rates were charged until the canal was actually working and the wharf ready, which we would have expected to be the previous year. The rate books show successive acquisitions by Howard and others until, by 1812/13, we have Johnson (£10), Pickford (£22), White (£40) and Howard (£125) all paying rates on wharfs of varying sizes. Howard's, especially, is a large undertaking, as can be seen in Fig 3.5 and from the 1815 advertisement placed by the Boxmoor Trustees before renewing Howard's lease.[88]

> '…a capital Wharf… in the iron, coal, timber, stone, soot, ashes and other trades… now in the occupation of Messrs Howard and Son….. furnished with a large Dock, branching out of the Grand Junction Canal, capable of holding 10 or 12 barges, and is adjoining to the road from Hemel Hempstead to

[85] TNA RAIL830/42, GJC Minutes, 9 January 1810.
[86] HALS DP19/11/2, Berkhamsted Overseers Accounts 1806–1823.
[87] HALS DP47/12/3, Hemel Hempstead Overseers Accounts 1791-1804.
[88] *The Times*, 17 June 1815.

London…a spacious warehouse …32 feet 8 inches by 52 feet 9 inches… a ground and upper floor…with a crane … for raising goods out of the barges; also a shed next to the water, 10 feet wide the whole length of the warehouse…. A strong crane, fit for loading large timber, deals &tc….'

The relationship between the canal and the Fourdriniers' Hemel Hempstead paper mills has been discussed above, and the availability of the wharfs will have been important to them as to the other customers.

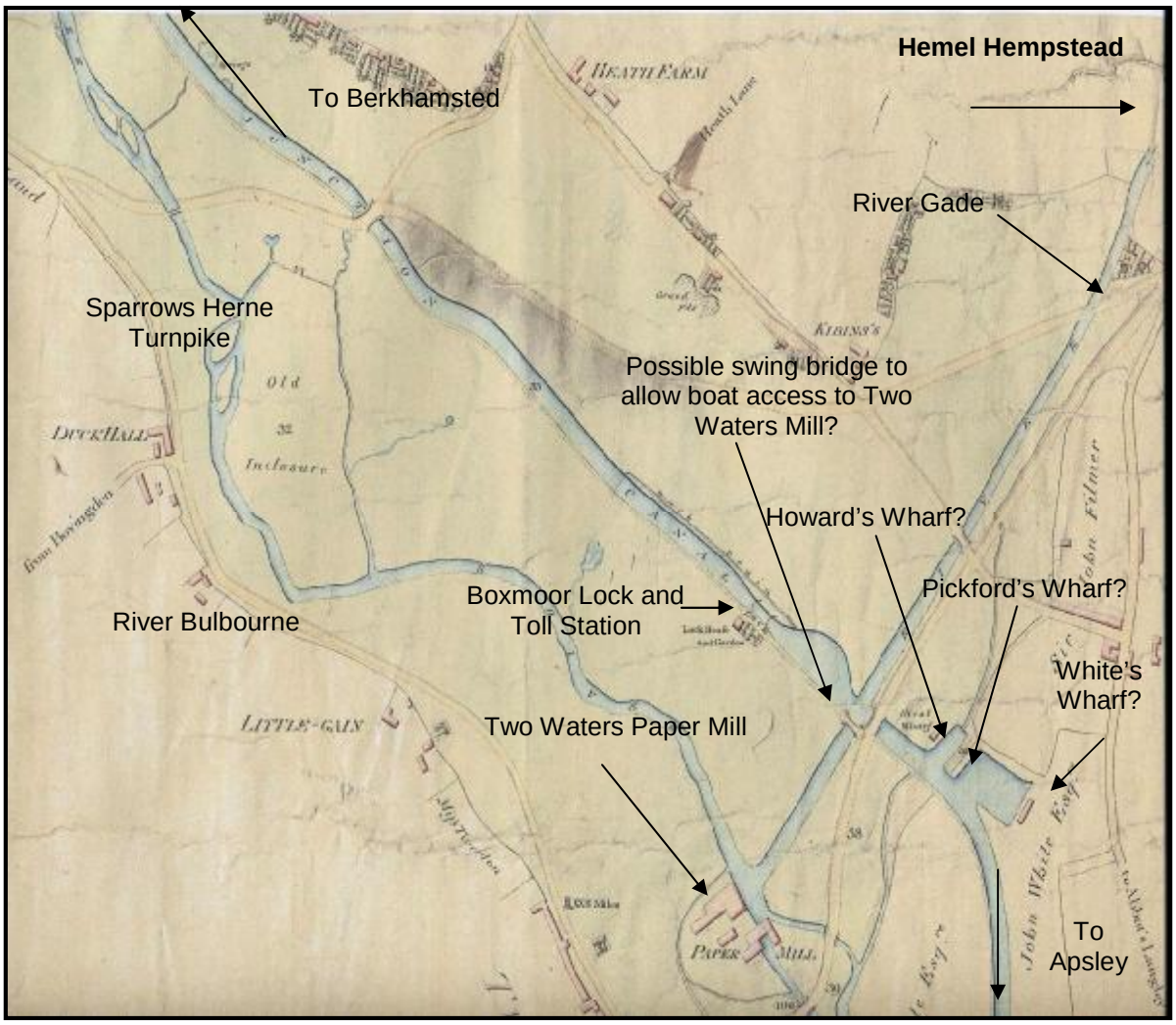


Fig. 3.5
The Grand Junction Canal crossing Boxmoor, Hemel Hempstead, in about 1810
(the exact designation of the wharfs is conjectural)

(Detail from R. Cooper, *A Plan shewing the Course of the Grand Junction Canal through Box Moor, in the Parish of Hemel Hempstead Hertfordshire*, undated).

(by permission of Canal Maps Archive, www.canalmaps.net)

In King's Langley no public wharf appears until December 1815. At Rickmansworth, however, there is much more, although the parish record is patchy: a map of 1805 notes 'Skidmore's and Salter's coal wharfs', so both Frogmore and Town wharfs were already working at this time.[89] Over the next 30 years, with Mill End paper and Rickmansworth silk mills (and possibly other mills along the River Chess) steam powered, there was coal as well as timber and other goods to be brought in through Frogmoor, Batchworth and Town wharfs. The Rickmansworth Vestry minutes for the Church Rate record Samuel Salter's rating as including 'Batchworth Water', although not expressly a wharf – and a new name, William Plaistowe, appears with a 'wharf' for a few years from 1813 (the 1811 Holden's Directory lists William Pimstome as coal merchant at Town Wharf), alongside that of Emmott Skidmore.[90] The GJCCo itself appears only under the Croxley hamlet, where we find John Holladay rated for a wharf, very likely to be one of those at Cashio Bridge: in August 1805 the Company minuted that '...the waste land by the Company Wharf at Cashiobury be purchased for the enlargement thereof, and that the said wharf… be offered to Mr Holliday…', and later the Earl of Essex made a proposal to the Company about 'his wharf at Cashiobury' which was accepted for 7 years at £50 a year.[91] These two wharfs, with the two (Lady Capel's and Grove wharfs) further north, served Watford, and it is clear that extensive wharfage serving both Watford and Rickmansworth was well established by 1805 and continued to be developed, as will be considered in Chapter 4.

[89] HALS 44209B, Map: '16 Square Miles round Chorleywood' (George Thompson 1805).
[90] HALS DP85/8/2, Rickmansworth Vestry Minutes 1796-1818; Holden's *Annual London and County Directory for the Year 1811* Vol III (Rickmansworth) (London, 1811, reprinted Norwich 1996).
[91] TNA RAIL830/42, GJC Minutes, 13 Aug 1805 and 14 March 1809.

Several other wharfs were established in addition to these main ones. A wharf at New Ground, on the summit, is evidenced by the delivery of road stone there in April 1813, although it is possible that this was the same as Cowroast wharf nearby - it is not clear when before 1840 that wharf (see Chapter 4) was established, and it seems unlikely to have been large.[92] A boat horse station was built in 1805 for the Pickford's company which leased it at Dudswell, Northchurch, just below the Cowroast summit lock and reached during the second days' travel from Paddington or Brentford.[93] That at Hunton Bridge, serving Abbots Langley, was established some time after 1805, when the Company ordered the purchase of a meadow for one.[94] In February 1810 the Earl of Bridgewater notified the Company of his intended private wharf at Berkhamsted.[95] But these less prominent facilities emphasise the main point: there was plenty of canal-based business to be done by men operating public wharfs, and by factory owners such as Dickinson. They were dealing in all sorts of goods as well as coal, and the economy of the area was changing slowly as a result, with for instance imported timber coming north from London.

The GJCCo as a neighbour

The Company made a direct contribution to the local economy, being, like all businesses, liable for rates in each parish through which it passed. The largest part was the Poor Rate, a sensitive matter: the tension between the relief of the poor and the size of the bill paid by each ratepayer was ever-present, and the arrival in the parish of a potential new and large contributor will have been generally welcome. But the basis on which the company was to be assessed seems to have been confused – was it the value of the trade (potentially huge), or the tolls levied in the parish, or the value of the land occupied, which was much less? Generally, the valuations in

[92] HALS TP4/30, Sparrows Herne Turnpike Accounts, April 1813.
[93] J.E. Hunt, 'A History of Dudswell Mill', in *Hertfordshire's Past* No 27 (Autumn 1989), pp.27-32.
[94] Clive Clark, *Abbots Langley Then,* (Cockfosters, 1997), p.83; TNA RAIL830/42, GJC Minutes, 13 Aug 1805 and 22 Oct 1805.
[95] TNA RAIL830/42, GJC Minutes, 13 Feb 1810.

Hertfordshire seem to have been on the basis of land area owned, and we find the Company listed from about the time it opened – itself odd, since they had owned the land for some years before that. Most parishes measured the canal and its property, set a rate and allowed life to go on. But some, notably Rickmansworth, King's Langley and Hemel Hempstead, tried in the years 1815-1817 to follow an earlier lead by Paddington and Isleworth and reduce the burden on the parish ratepayers by setting an enormous valuation and extracting large amounts of cash from what they saw as their rich incomer. The Company regularly appealed to the Magistrates and usually won, albeit after a tussle - in May 1816 the Clerk to the Company reported to his Committee that he had appealed against the assessments of King's Langley and Hemel Hempstead, but that the Sessions had confirmed the Rates chargeable on £500 a mile: he was told to appeal against the Poor Rates in 'all parishes in which it shall appear that the Company was unreasonably rated…'. This does not seem to have led to a good result for the parishes, and little more is heard of this line of challenge.[96]

There was considerable scope for the GJCCo's extensive operation to bring it into conflict with local people after the completion of the canal. For example, at Cashio Bridge the canal cut through Cashio Bridge Farm, owned by Caius College Cambridge. The fields to the north had always drained into the River Gade below, but the canal had been slightly embanked and that drainage way was cut off, so the fields became too wet to use. The problem was exacerbated by the raising of the levels of the rivers Chess, Gade and Colne, whose interaction is complicated here, by Salter's 'penning' of the flow to give a navigable depth in his cut. The Steward of the College inspected the whole arrangement and required various actions, not least

[96] TNA RAIL830/35, GJC Minutes, 2 May and 8 May 1816; HALS DP/19/11/2, Berkhamsted Parish Poor Rate assessments 1806-1823; HALS DP85/8/2, Rickmansworth Parish Vestry Minutes, January 1817; HALS DP64/12/6, King's Langley Parish Overseers Accounts 1815-1821; HALS QSMB Vol XIII, Hertford Easter Quarter Sessions 1818, pp.202–209; HALS DP47/12/13, Hemel Hempstead Parish Overseers Accounts 1811-1816.

by Salter but also by the Canal Company providing a culvert to the river under the canal.[97] In the same area, the canal complicated the 1805 dispute between the farmer Bovingdon and the millers Strutt at Batchworth: the one wanted water to irrigate his fields and the other needed uninterrupted water flow, and the previous rights of both were compromised by the GJCCo's need to maintain its levels.[98] At King's Langley in 1830 damage to a fishery resulted in a suit in which damages offered by the Company of £400, then £600 were overturned by the assessing Commissioners and £900 awarded.[99] And on Boxmoor, a claim for damages resulted from a brick maker, claiming to have permission from the Company, digging for clay on the moor and then trespassing on it to load bricks onto a boat, while an undated note from the Trustees sought remediation of land bought in 1809 for clay to repair the canal, it being now worked out, unsightly and dangerous.[100]

Water supply

The water supply, especially at Tring, had been of concern ever since Jessop's 1792 report. Several measures were taken between 1796 and 1838, including building and then increasing reservoirs at Marsworth (with a steam engine to pump the water up to the summit), regulating the traffic and restricting its capacity.[101] The adoption of Bulbourne Head had already moved the source of the River Thame, and the Company adopted the policy of acquiring the troublesome water rights owned by the existing corn mills by buying and either closing or re-letting

[97] Gonville and Caius College Archive BUR/XXIX (17), Report from William Custance, Steward of the Manor of Croxley, to the Bursar of the College, Aug 1812.
[98] Gonville and Caius College Archive BUR:XXIX(13), Mr Best's Opinion in the case of Strutt v Bovingdon, Jan 1805.
[99] HALS QS Plan 497/1, Record of meeting of Commissioners appointed to consider Damage to Fishery of John Parsley at King's Langley (1830); TNA RAIL830/44, GJC Minutes 13 Nov 1828.
[100] HALS D/ELs Q35(8), letter from Harry Grover to GJCCo 25 Aug 1820; D/ELs Q35(2), note from Trustees of Boxmoor Trust (undated).
[101] RAIL830/38, GJC Minutes 6 Sept 1796; RAIL830/35, GJC Minutes 8 Mar 1827; RAIL830/37, GJC Minutes 1 Jun 1793; Faulkner, *Grand Junction Canal,* pp. 132-143.

them under control.[102] Right at the start a mill at Marsworth was bought, the Engineer having advised that it was 'necessary', and £1,500 was allocated.[103] New Mill, Tring was rented in 1797, in April 1806 the mill at Wendover was purchased for £3,150 (and sold again for about £2,500 in 1816), and there were others outside the area of this study.[104]

Three such purchases are directly relevant, although not to the summit. From the earliest days supplies from the Bulbourne and the Gade had been contentious, especially at Two Waters, Frogmore and, lower down, at Batchworth – the even bigger case of Dickinson at Apsley and Nash will be addressed below. In March 1809 John Strutt had offered to sell Batchworth Mill, at this time both grinding corn and spinning cotton. The Company's Secretary realised that to obviate future disputes (a primary motive of the Company, who seem not to have trusted the Strutts) they had also to buy 15 acres of Lot Mead, and after negotiations over a year the deal was closed in the spring of 1810.[105] The mill was immediately let to the Fourdriniers, who used it to prepare pulp despite being already insolvent and about to declare bankruptcy, although they continued to trade. They asked in April 1816 for more time to pay the rent for Batchworth: the Company, noting that the paper trade was 'very dull' at that time, agreed to defer to 1st July.[106] In September 1816 the owner of Frogmore Mill offered to sell it, which the Committee agreed to progress, and by mid-1817 they had bought both Frogmore and Two waters mills: each of Two Waters, Frogmore and Batchworth Mills was valued for renting, with the instruction to the Select Committee that they were to let them to 'such persons as they shall think proper to rent for 7, 14 or 21 years'.[107] In August 1818 the Fourdriniers' request for an

[102] RAIL830/42, GJC Minutes 10 Sep 1805.
[103] RAIL830/37, GJC Minutes 1 Jun 1793.
[104] TNA RAIL830/42, GJC Minutes 8 April 1806; RAIL830/44, GJC Minutes 6 Mar 1829.
[105] Faulkner, *Grand Junction Canal,* p.119; RAIL830/42, GJC Minutes 13 March 1810.
[106] RAIL830/35, GJC Minutes 11 April 1816.
[107] RAIL830/35, GJC Minutes 19 September 1816, 10 July 1817; Austin Pilkington, 'Frogmore and the first Fourdrinier', in *A history of The British Paper Company, 1880-1890* (published

advance of money on their lease of Batchworth, on which they had already spent a great deal, was refused, and they were told that they could dispose of their lease as they wished: in October 1818 they owed rent of £262.8.6d, and in Feb 1919 they needed more alterations. This too was refused, and the arrears were to be collected: in June 1819 they agreed to transfer the lease to Dickinson, who had taken it by 8 July.[108]

But the most prominent dispute was with Dickinson over the supply to his mills at Apsley and Nash, well recounted by both Faulkner and Joan Evans. [109] The dispute had actually started at Apsley before Dickinson's time, and the back-pump at Nash had been installed in 1805 to address it; but it had gathered pace after Dickinson bought the mills in 1810 and 1811. In 1816 the GJCCo minuted their intention to defend the latest move by Dickinson, but eventually accepted that the canal was to be diverted to follow the line of the Gade past the mills. A new Act allowed the diversion to be completed in early 1819 (fig. 3.7), although only after Dickinson had agreed to accept 100 tons of coal and 1800 lockfuls of water before 1 Jan 1819 so that the Company could shut down the steam pump early.[110]

This all put Dickinson's mills directly on the line of the canal rather than being some way off it: this extra convenience greatly helped the expansion of the business in the years which followed, with Nash joining Apsley in using steam power by 1823. Dickinson bought what was probably his first boat in 1819, and based it at Nash.[111]

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privately by The British Paper Company Ltd, 1990), p.27; Hands, Hands and Davis, *Boxmoor*, p.49.

[108] TNA RAIL830/35, GJC Minutes 8 July 1819.

[109] Faulkner, *Grand Junction Canal,* pp.115-118. Joan Evans, *The Endless Web* (London, 1956), pp.23, 24.

[110] TNA RAIL830/35, GJC Minutes 8 Aug 1818.

[111] NWA BW99/6/5/14, GJC Gauging Register Vol 27.

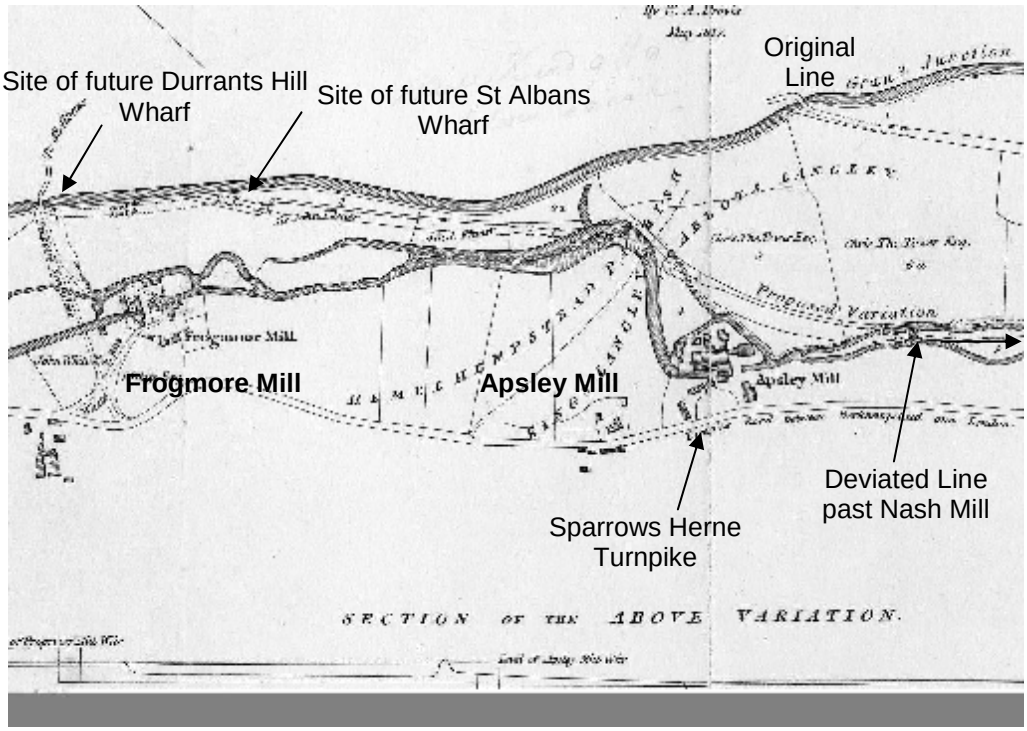

Fig 3.6
Part of the plan for the deviation of the canal past Apsley and Nash paper mills (W.A. Provis 1817).

(Dacorum Heritage Trust DAHCT51.011)

These examples of the concern, considered at General Committee level, about the interactions with mill operators and owners show the problems which could be caused by uncertainty of water supply. The Company was prepared from the start to spend a great deal of money to rid itself of troublesome disputes, and continued so for many years (the purchase and lease back of Toovey's mill at King's Langley was not to follow until 1847, despite the disputes with him mentioned above).[112] It did not always yield: in 1837 a claim was resisted that Boxmoor tenants had suffered loss by Two Waters Mill raising the level of the mill head.[113] But generally, the Company had to accept that as the main controller of water levels, if things went wrong then it had

[112] RAIL830/35, GJC Minutes 11 Dec 1817.
[113] HALS D/ELs Q35(6), Letter from R.C Sale (GJCCCo) to Smith & Grover, 30 April 1830.

to address them. The local impact of these disputes and their resolution was always in the background of operating the mills.

Conclusions and Summary

By introducing the first true ‘exogenous influence’ on west Hertfordshire the GJC directly affected the demand for labour and for products and so the real wage. The early establishment of wharfs serving each of the towns made available significant supplies of coal both to industry and to those inhabitants who could afford it, so raising the real wage for some although probably not the agricultural labourer who made up much of the population. It permitted the export of both industrial and (to some extent) agricultural products, and it fed the nascent demand for goods, mainly in the towns, providing some new employment and increasing the general level of prosperity along its line. Raw materials and equipment for industry, including iron for the iron founders as well as timber and other materials for building and road surfacing, could be brought in more easily. The canal also gave a number of landowners, mainly but not all wealthy, the opportunity to sell their land for up to £80 an acre, and it made a small but contentious contribution to the ratepayers. But it cannot be said to have attracted, in these first few years, new industry (the Tring silk mill being an exception) or many new businesses except those associated with wharfage and materials dealing. The development and growth of the towns was limited: population increase by natural growth and immigration was balanced by emigration, and the towns grew only slowly. The parishes gained from the canal only where there was a nucleus around which business could gather: those to the north were and remained wholly agrarian, and grew even more slowly than the towns. The next chapter will examine the state of the area in the few years to 1841, the close of the study.

Chapter 4

The Economic and Social Picture in 1841

By 1841 the Grand Junction Canal had provided enough industrial transport capacity to allow some west Hertfordshire industry (notably papermaking) to grow and had also generated new facilities through which local businesses had diversified. This chapter considers the further development of the towns and parishes through which the canal passed, and uses the 1841 Census and the tithe awards of about that time to draw conclusions on the effects of the canal after 45 years of operation.

Economic and Social Changes

Population Growth

The population of west Hertfordshire's towns, as almost everywhere, grew between 1801 and 1841 (Table 4.1) by both natural increase among the inhabitants and by migration from the countryside. The rate of growth, however, was countered by a steady stream of people moving away, especially to London, as it always had been.[1] The towns remained small, and the extent to which they matched the model of the Georgian market town as described by Joyce Ellis and by Barrie Trinder is summarised at Appendix A.[2] Ellis notes that the larger the town the greater its attraction: the Hertfordshire towns, where there were few industrial jobs, will have exerted very little draw compared to London nearby.[3] She goes on to show that 'high' urban growth nationally was between 3% and 5% while 'low' growth was between 0.5% and 1.2% - London, with very high mortality, grew at 1.8%.[4]

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[1] Nigel Goose, 'Population Movement', in David Short (Ed), *Historical Maps of Hertfordshire* (Hatfield, 2012) p.53.
[2] Joyce Ellis, *The Georgian Town* (Basingstoke, 2001), pp.26, 27, 40-43; Barrie Trinder, 'Market Town Industry', in *Industrial Archaeology Review* XXIV:2 (2002), pp.75-89.
[3] Ellis, *Georgian Town,* p.31.
[4] Ellis, *Georgian Town,* p.35.

	1801	1841	Cumulative Growth Rate 1801-1841 (per year)
Herts Population	97,577	157,207	1.21%
Tring	1621	4620	2.65%
Aldbury	457	790	1.38%
Puttenham	130	136	0.11%
Wigginton	330	635	1.65%
Northchurch	735	1216	1.27%
Berkhamsted	1690	2979	1.43%
H. Hempstead	2722	5901	1.95%
King's Langley	970	1629	1.30%
Abbots Langley	1205	2115	1.41%
Watford	3530	5989	1.33%
Rickmansworth	2975	5026	1.32%

Table 4.1
Populations and Growth rates of west Hertfordshire parishes
(listed north to south) 1801 - 1841

The small population of Hertfordshire declined as a proportion of that of England (Table 4.2), while the western parishes of Hertfordshire grew little more than others in the county (Table 4.3).

Census Year	**1801**	**1811**	**1821**	**1831**	**1841**
Population of England (1000s)	9,061	10,322	12,106	13,994	15,929
Population of Herts (1000s)	97	111	130	143	157
Herts Proportion	1.070%	1.075%	1.074%	1.022%	0.986%

Table 4.2
Population of Hertfordshire as percentage of population of
England and Wales1801 - 1841

Census Year	1801		1821		1841		Up or down in relation to Herts pop (note 1).
Herts Population	97,577		132,400		157,207		
Tring	1621	1.66%	3286	2.48%	4620	2.93%	**Up**
Aldbury	457	0.47%	676	0.51%	790	0.50%	**Level**
Puttenham	130	0.13%	112	0.08%	136	0.09%	**Down**
Wigginton	330	0.38%	477	0.36%	635	0.40%	**Level**
Northchurch	735	0.75%	1028	0.78%	1216	0.77%	**Level**
Berkhamsted	1690	1.73%	1507	1.14%	2979	1.89%	**Up (note 2)**
H. Hempstead	2722	2.79%	3962	2.99%	5901	3.75%	**Up**
King's Langley	970	0.99%	1242	0.94%	1629	1.04%	**Level**
Abbots Langley	1205	1.23%	1733	1.31%	2115	1.35%	**Up**
Watford	3530	3.62%	4713	3.56%	5989	3.81%	**Up**
Rickmansworth	2975	3.05%	3940	2.98%	5026	3.20%	**Up**

`

Table 4.3

Populations of west Hertfordshire parishes (listed north to south) 1801-1841, in proportion to that of Hertfordshire

Notes.1. "Up" suggests net immigration; "down" suggests net emigration; "level" suggests a balance. None of these rates is significant in either direction, however: the parishes generally grew at the same slow rate as the rest of the county, with the towns doing better but not much.

2. The pronounced dip in the population of Berkhamsted in the 1821 Census is very unusual, and seems to have been commented on not at all. If the 1821 figure is correct, however, it confirms Birtchnell's observation that the town was in poor shape early in the nineteenth century, despite the arrival of the canal.

Economic Change

Fig 4.1 introduces the canal as one of many exogenous factors into the earlier model in which the main variable determinant of the real wage had been the price of food, which in turn drove the demand for goods and so the demand for labour. The canal reduced the cost of fuel, provided a modest increase in employment opportunities and introduced a new route by which rising demand for goods could be met. The overall 'real wage' increased as a consequence; but only for those who had disposable income. Most remained isolated from the canal, subject to increasingly marked variations in the price of food, suffering fuel poverty and little able to take up the new jobs.

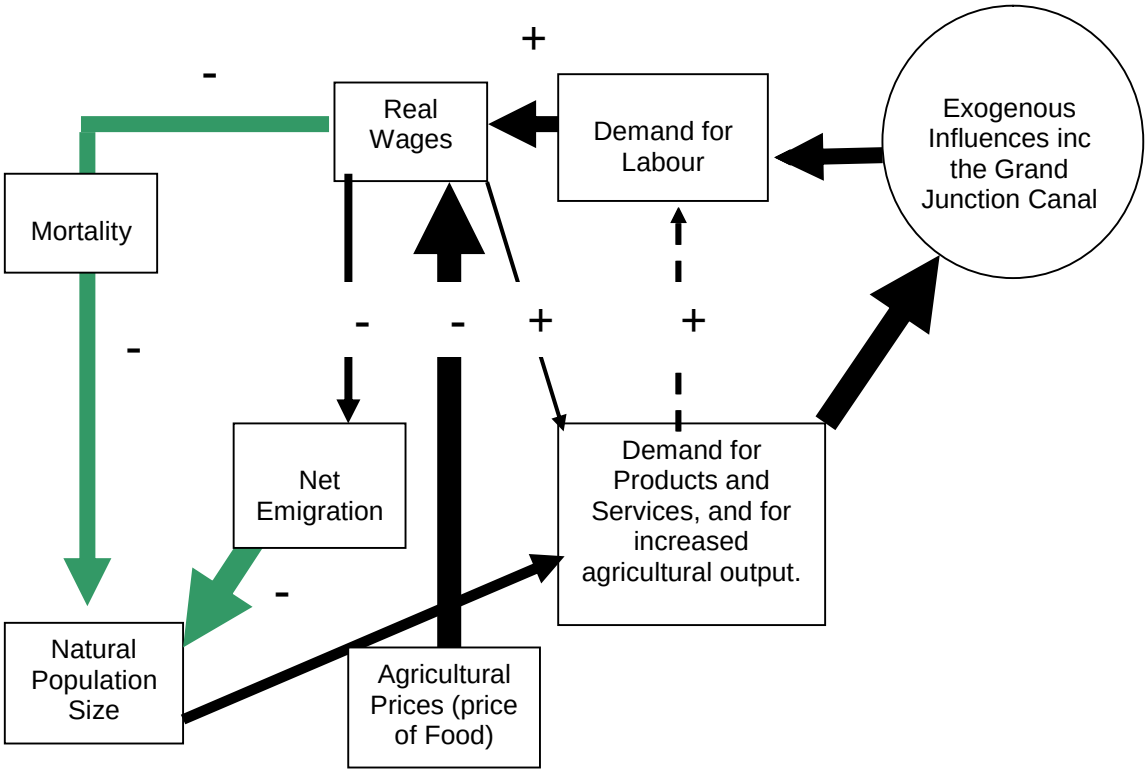

Fig 4.1

A simplified representation of Hertfordshire's economy about 1840, showing the impact of the Grand Junction Canal
(after Wrigley and Schofield, *Population History of England*, p.467)

The economic impact of the canal was therefore limited: the industrial development due to it did not generate enough employment to reach a change-inducing level. The growth in the 'consumer goods buying' element of the population was limited: few of the agrarian poor could afford to consume, and the remainder did not consume enough to generate real economic or population growth.

Agriculture remained at this time the dominant industry: wages were still low compared to London, although the farmers were becoming more prosperous largely

under the influence of the London market.[5] The work was generally done by labourers with a wide range of relatively low skills, usually living in rented cottages and at risk of real poverty: there was not enough work for everyone all the year round, and intense hardship was inevitable. There was little alternative employment, although the straw plaiters in a family were often instrumental in averting destitution and becoming an unsustainable burden on the Poor Rates.[6] Ward's observation remains valid: a growing population added to demand and generated innovation and output, the incomes of farmers rose while those of the labourer did not, but the purchase of manufactured goods by those who could buy increased considerably.[7] The following passages draw on the Trade Directories (Appendix B), the 1841 Census (Appendix C) and the tithe awards dating between 1839 and 1843 to examine how the parishes had changed under that influence. They are taken from north to south.

The Parishes in 1841

Tring presents a problem, insofar as over 550 lines of the Census listing are unreadable and there is no tithe map. The census nonetheless shows that the single most prominent occupation was straw plaiting, which included children, some aged down to 6; the numbers of Agricultural Labourers, labourers and male and female servants suggest that Tring remained a strongly agrarian parish, but still admissible as a market town (Appendix A).[8] There were two industries: canvas weaving and silk throwing, in a steam powered mill opened in 1824.[9] 128 people were identified as working in the 'silk factory' and 81 as weavers, although not all were linked to canvas - one was weaving wool. The settlement at Tring Wharf (fig 4.2), the closest of several near the town, included the wharfinger (with his son operating the wind mill

[5] Nigel Agar, 'The Hertfordshire Farmer in the Industrial Revolution', in *Hertfordshire in History* (Doris Jones-Baker (ed)) (Hertford, 1991), pp.247-256.
[6] Nigel Agar, *Behind the Plough* (Hatfield, 2005), pp.66,71, 130-134.
[7] J.R. Ward, *Finance of Canal Building in 18C England* (Oxford, 1974), p.167.
[8] TNA HO/107/442/5-7, 1841 Census - Tring enumeration.
[9] Wendy Austin, *Tring Silk Mill* (Tring, 2014), pp.6-10.

next door) and a group of seven labourers likely to be associated with either wharf or mill, and at least one boatman was resident at the wharf. It will have been through here that coal and other heavy or bulk goods for silk mill and town came, although light goods on fly boats probably came via Cow Roast (see below) or Marsworth wharfs.

The agriculture here, on the edge of Aylesbury Vale and the main drove route from south Wales to London, had some dairy farming, with several graziers and at least one 'dairywoman' listed. But arable predominated: straw plait remained very strong (although Cobbett reported the use of imported straw in the 1820s), and the hamlets round Tring, especially the village of Wilstone, remained almost entirely agrarian communities, with even those without stated occupations being closely associated with Agricultural Labourers and farming families.[10]

It is odd that Tring's cumulative annual growth from 1801 to 1821 was quite high at 3.60%, although the silk mill did not arrive until 1824: the growth from 1821 to 1841 was then only 1.72%. This suggests that, if the silk mill brought in people, the resulting growth was balanced by migration away. It is not, however, possible to attribute this effect to the canal.

[10] William Cobbett, *Rural Rides* (London, 1830 - republished 1912) Vol 2, p.207.

Fig 4.2
Tring Wharf in 1870, just to the north of Tring next to the flour mill.

(http://digimap.edina.ac.uk – © Landmark Information Group - includes Ordnance Survey data, Crown copyright)

Aldbury, Puttenham and **Wigginton** form a group of agricultural communities close to which the canal passed. **Aldbury** was not itself served directly by a wharf (Appendix E), being some way from the canal as it passed close to Pendley (figs 4.4, 4.5), but there had nonetheless been some effect, not only on the village shops whose range of wares improved but also for its builders - for example the 'Slated Row' of cottages (fig 4.3) built in the 1820s were roofed in slate brought in by canal perhaps to Tring Wharf.[11]

Fig. 4.3
Slated Row, Aldbury,
believed roofed in canal-
carried slate

That aside, Aldbury remained essentially unchanged, an agricultural village of 790 dominated by its three estates, with the range of occupations (Appendix B) largely unchanged except for the small railway staff at Tring Station.[12] **Puttenham** parish was, and remained, tiny and wholly agricultural.[13] A short length of the Aylesbury Arm of the canal, built slowly between 1811 and 1815, passed through the parish, but no

[11] Jean Davis, *Aldbury* (Aldbury, 1974), p.74.
[12] Wendy Austin, *The Railway Comes to Tring* (Tring, 2013), p.51; HO107/440/1, 1841 Census – Aldbury enumeration.
[13] HO107/442/2, 1841 Census - Puttenham Enumeration.

canal-related facility was generated by it: every occupation shown in the 1841 Census enumeration is related to agriculture, and the population had declined as a proportion of Hertfordshire's.[14] No change came as a result of the canal.

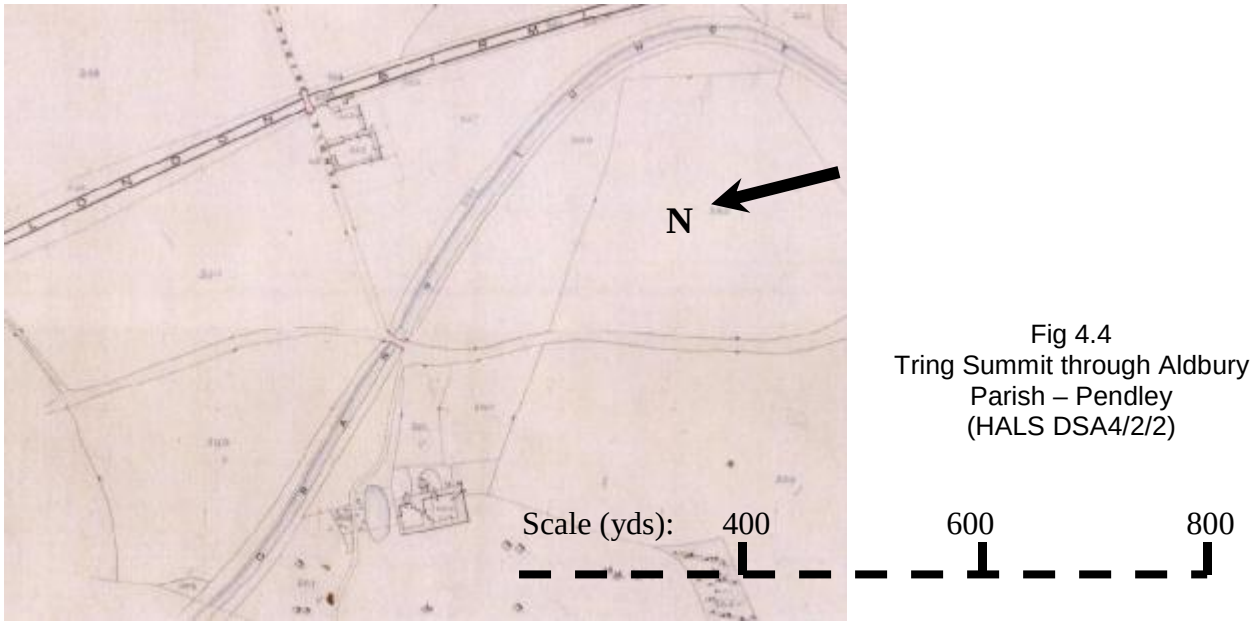

Fig 4.4
Tring Summit through Aldbury
Parish – Pendley
(HALS DSA4/2/2)

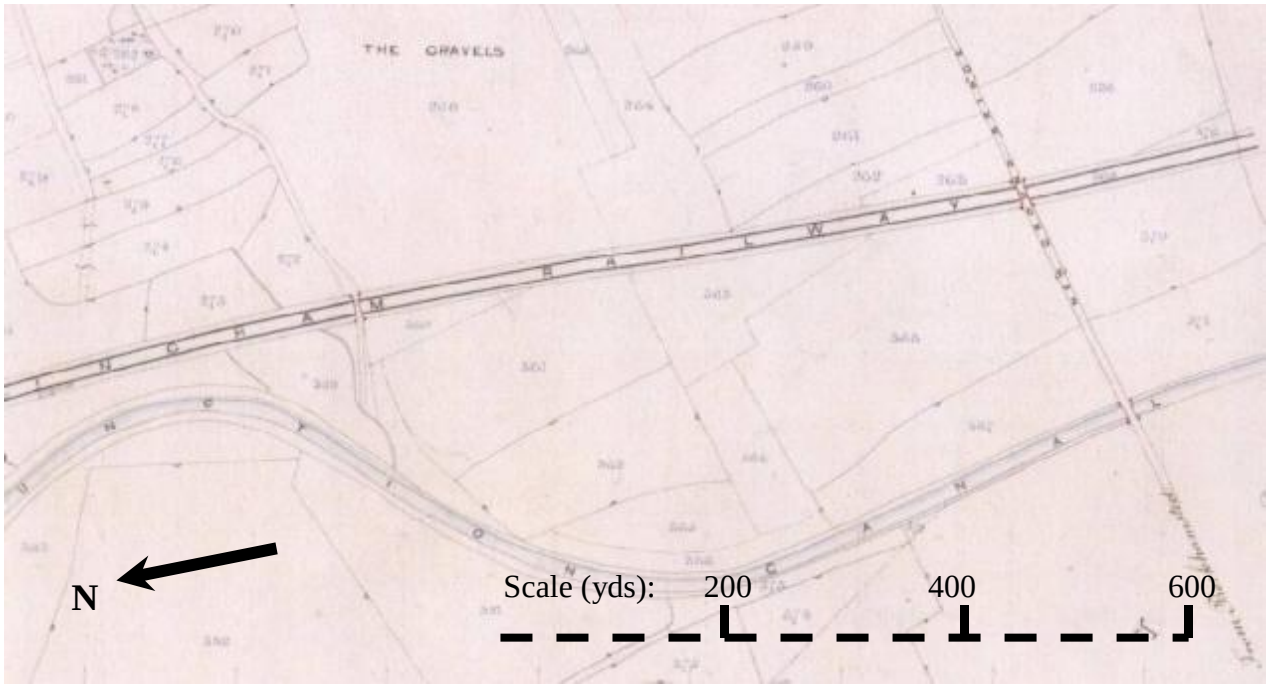

Fig 4.5
Tring Summit through Aldbury
Parish – New Ground
(HALS DSA4/2/2)

[14] TNA HO107/442/2, 1841 Census – Puttenham enumeration.

The 635 inhabitants of **Wigginton**, the last of the purely agricultural parishes, had a very strong predominance of agricultural workers.[15] The Post Office Trade Directory shows in 1848 two shopkeepers, three publicans or beer retailers and the parish clerk, and most of the men listed in the Census were either farmers or their agricultural labourers, and most of the women straw plaiters.[16] Although the wharf and inn next to the top lock at the end of the summit at Cowroast were in the parish (fig. 4.6) no other part of the canal was: the wharf in any case probably served Tring rather than Wigginton, which also seems to have been very little affected by the canal.

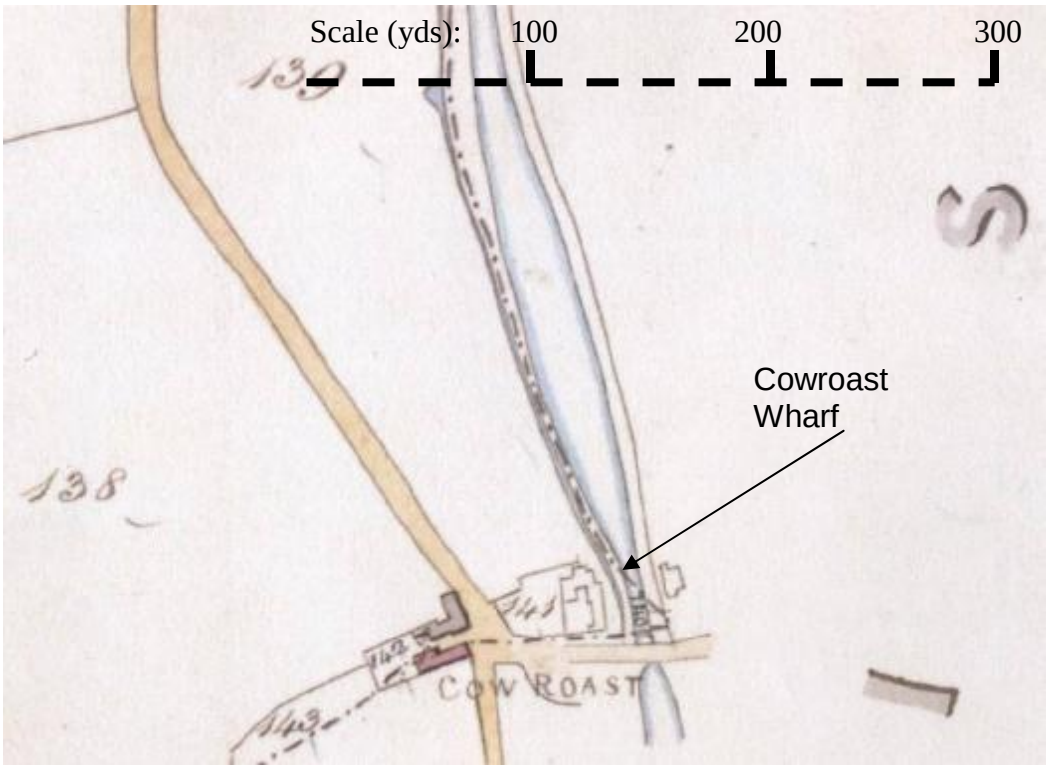

Fig 4.6
The canal in Wigginton parish – Cowroast
(HALS DSA4/73/2)

(Plot 141, the wharf, seems to appear in both Wigginton and Northchurch Parishes.)

[15] TNA HO107/442/9, 1841 Census - Wigginton Enumeration.
[16] Post Office Directory of Essex, Herts, Kent, Middlesex, Surrey and Sussex (London 1848).

The road connection to Tring was along the turnpike through New Ground toll bar, which should therefore have seen some increase in tolls after 1799 when the summit was opened: but this does not seem to have happened (Appendix G), implying that trade heading for Tring from Cowroast remained small.

Northchurch was a large but sparsely populated parish divided into two by Berkhamsted, with the canal running through the southern portion of both.[17] It had neither industry nor market: originally part of a larger Berkhamsted before being separated off, its village was bordered by the canal and lined the turnpike as an extension of Berkhamsted High Street. Most of its activity and occupations were agricultural: its tradesmen were routinely included in the Directories as if part of Berkhamsted, but were generally those supporting agriculture in the way familiar in such settlements.

From Cow Roast the canal passed the 1805 boat horse station at Dudswell (fig 4.7) and followed the river Bulbourne into **Berkhamsted** through entirely agricultural land (fig 4.8).[18] It had already drained the swampy bottom of the valley; the mill head of the Upper Mill came off the canal, although there was no comment on the effect on the flow until much later.[19] Berkhamsted, with adult population 1700, had by this time changed as much as any of the towns along the canal, and figs 4.8 and 4.9 show the several wharfs serving it.[20] Leaving aside the private Bridgewater wharf (plot 344), the main facility was the large Castle Wharf complex between Castle Street and Raven's Lane Bridges (plot 356).[21] John Tompkins the owner was listed in the 1832 Directory as 'wharfinger and coal dealer' and in the 1841 Census as a 'coal merchant'.

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[17] TNA HO107/440/5,1841 Census - Northchurch Enumeration.
[18] J.E. Hunt, 'A History of Dudswell Mill', in *Hertfordshire's Past* No 27 (Autumn 1989), pp.27/28.
[19] Ken Wallis, *The River Bulbourne*, in 'The Chronicle' (Berkhamsted Local History and Museum Society) Vol V (March 2008) pp. 29-35.
[20] TNA HO 107/440/3-4, 1841 Census - Berkhamsted Enumeration; HALS DSA4/19/2, Berkhamsted Tithe Map; Pigot's *Directory* (1839). pp.174-176.
[21] Faulkner, *Grand Junction Canal,* p.185; Birtchnell, *Berkhamsted*, p.82.

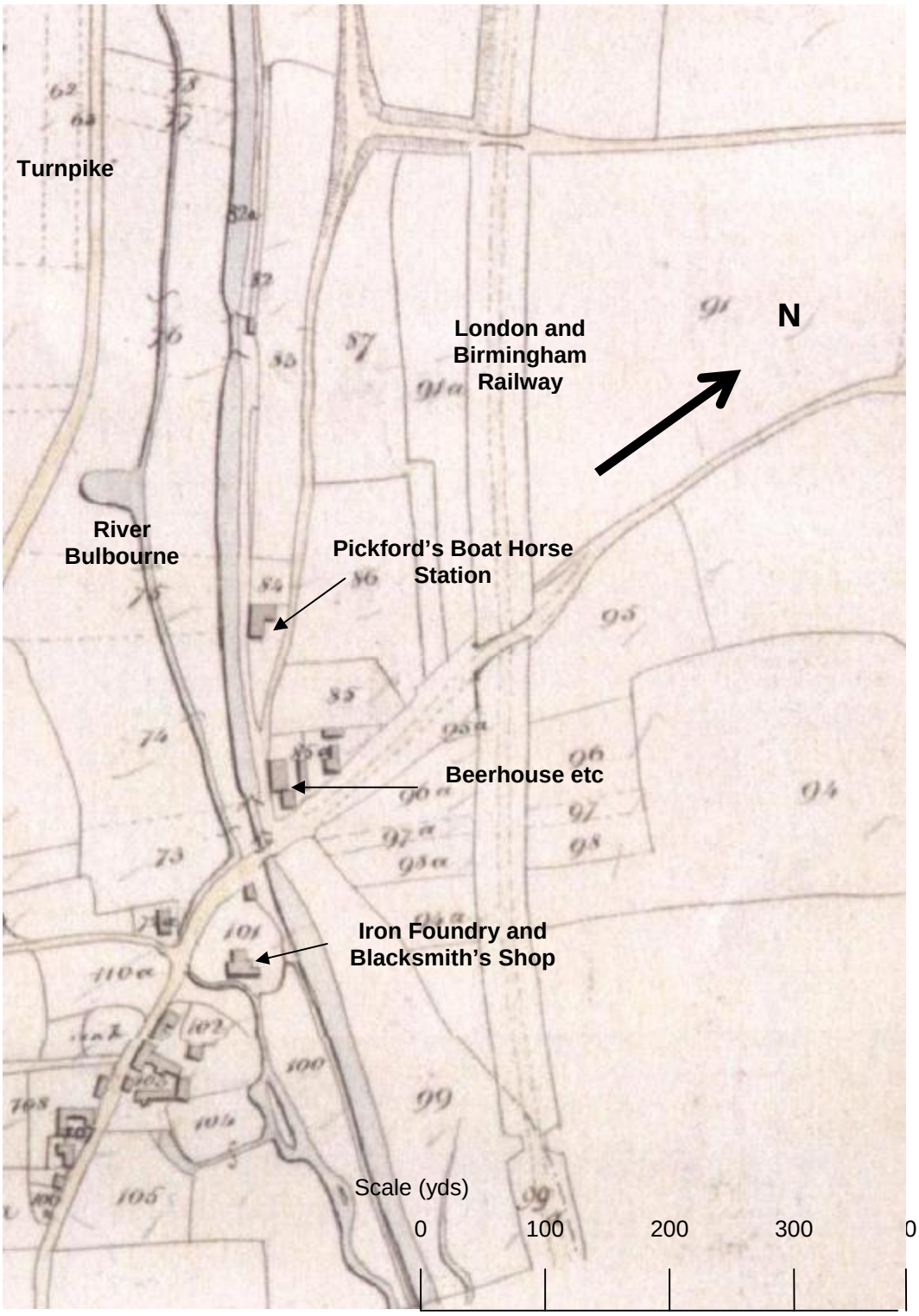

Fig 4.7
The canal in western
Northchurch parish – Dudswell
(HALS DSA4/73/2)

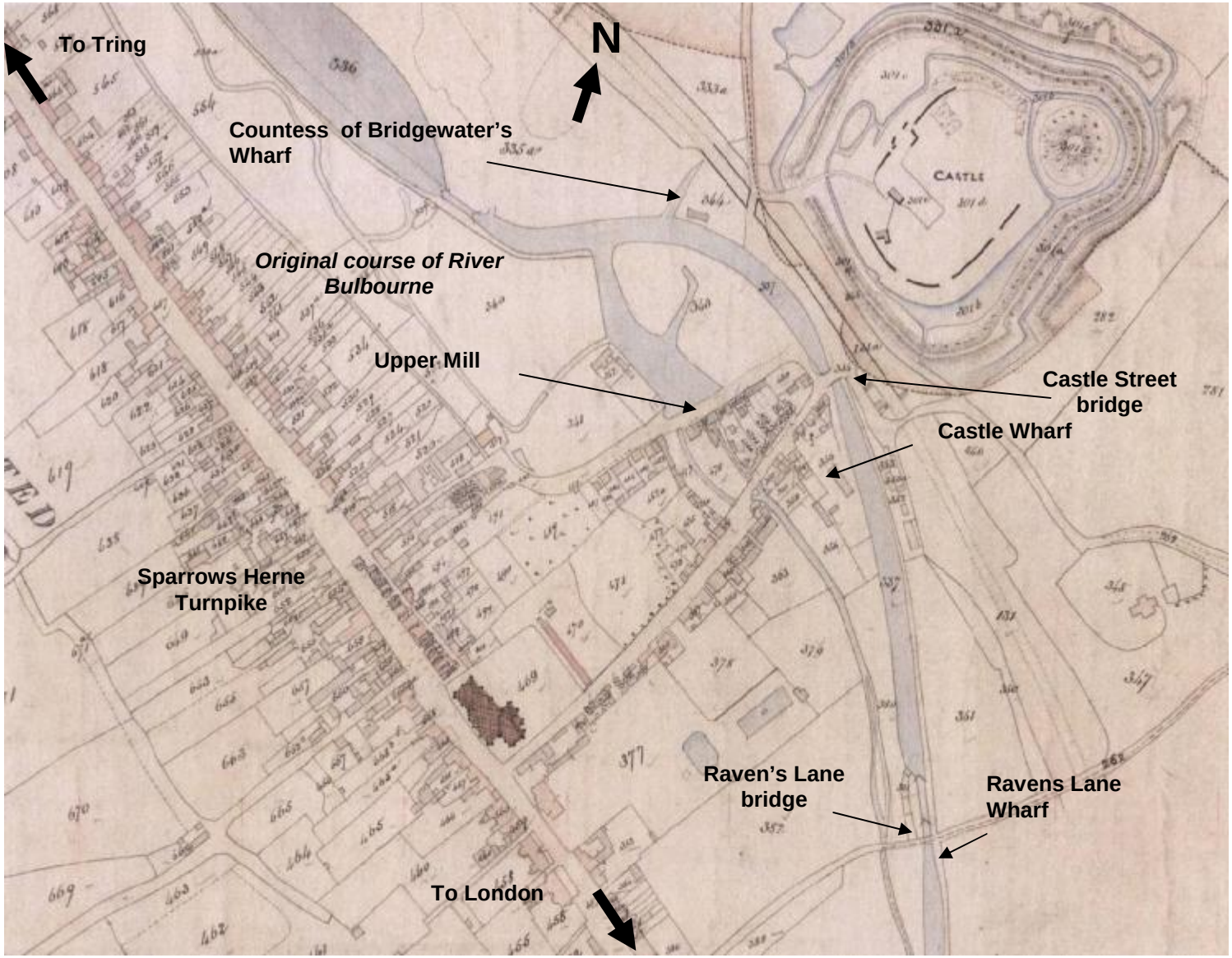

Fig 4.8

Berkhamsted –
The Moor to Lock 54,
Raven's Lane
(HALS DSA4/19/2)

Below the lock but on the towpath side and in Northchurch parish was the rather smaller Raven's Lane wharf (fig 4.10, Northchurch plot 733). The wharfs continued below Lock 55 towards Lower Mill (fig 4.9), with William Key and his son as timber merchants and other wharfs ('Coal dealer and Wharfinger') near them listed in the trade directory, although not in the tithe award. The boat builder John Hatton had, however, been well established since at least 1823 on plots 401, 403 and 404; he operated several boats himself (Appendix D), and like many boat builders of the time also dealt in coal and no doubt other canal-borne goods. It appears that he later moved up to Castle Wharf, but at this point his business seems to have occupied much of the space above the Lower Mill.

Berkhamsted had, then, by 1840 a significant set of wharfs and related businesses extending half a mile from the town to Lower Mill and including more than one timber merchant, a boat builder/coal merchant and at least one other coal merchant - important elements of the commerce of Berkhamsted. While prices and how much Berkhamsted produce actually went to London remain uncertain, the picture drawn by Birtchnell and Hastie, with grain and forage, flour and malt going to London by boats returning with agricultural manures, was in fact more complex and varied.[22] Nonetheless, Birtchnell draws attention to cramped and squalid conditions between the High Street and the canal: prosperity was limited to those in a position to take advantage of it rather than felt generally by the inhabitants.[23] Despite the large increase in the population between 1821 and 1841 this was still a small town: but it had changed under the influence of the canal.

[22] Hastie, *Berkhamsted*, pp. 28, 41, 47; Birtchnell, *Berkhamsted*, pp. 70, 85.
[23] Birtchnell, *Berkhamsted,* pp.15, 66.

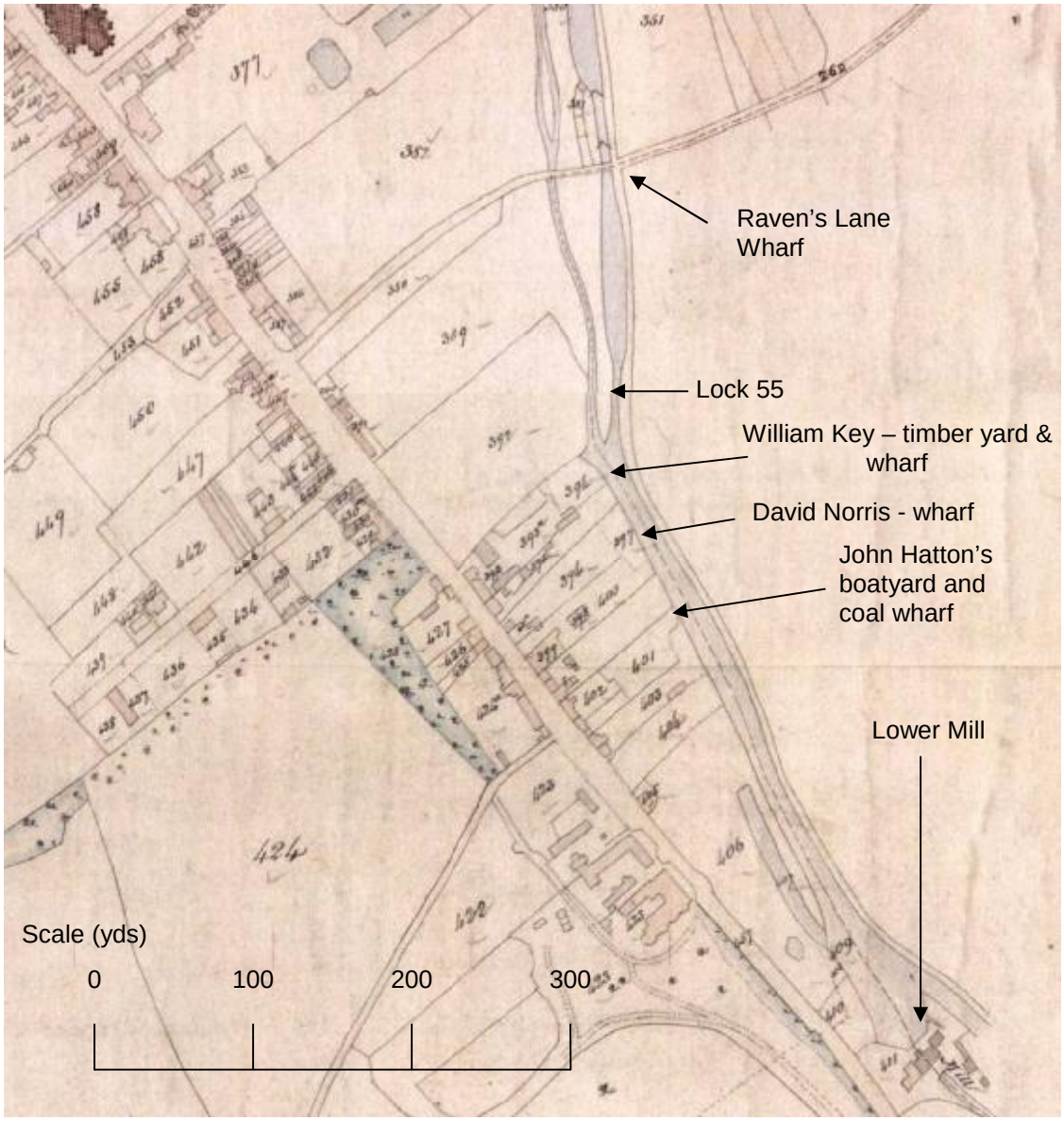

Fig. 4.9
Berkhamsted - Lock 54 to Lower Mill

Leaving Berkhamsted the canal returned to the eastern part of **Northchurch**. Immediately on the boundary (fig 4.10) Ravens Lane Wharf was really part of Berkhamsted. Northchurch itself, still agrarian, was little affected by the canal, which now approached Hemel Hempstead.

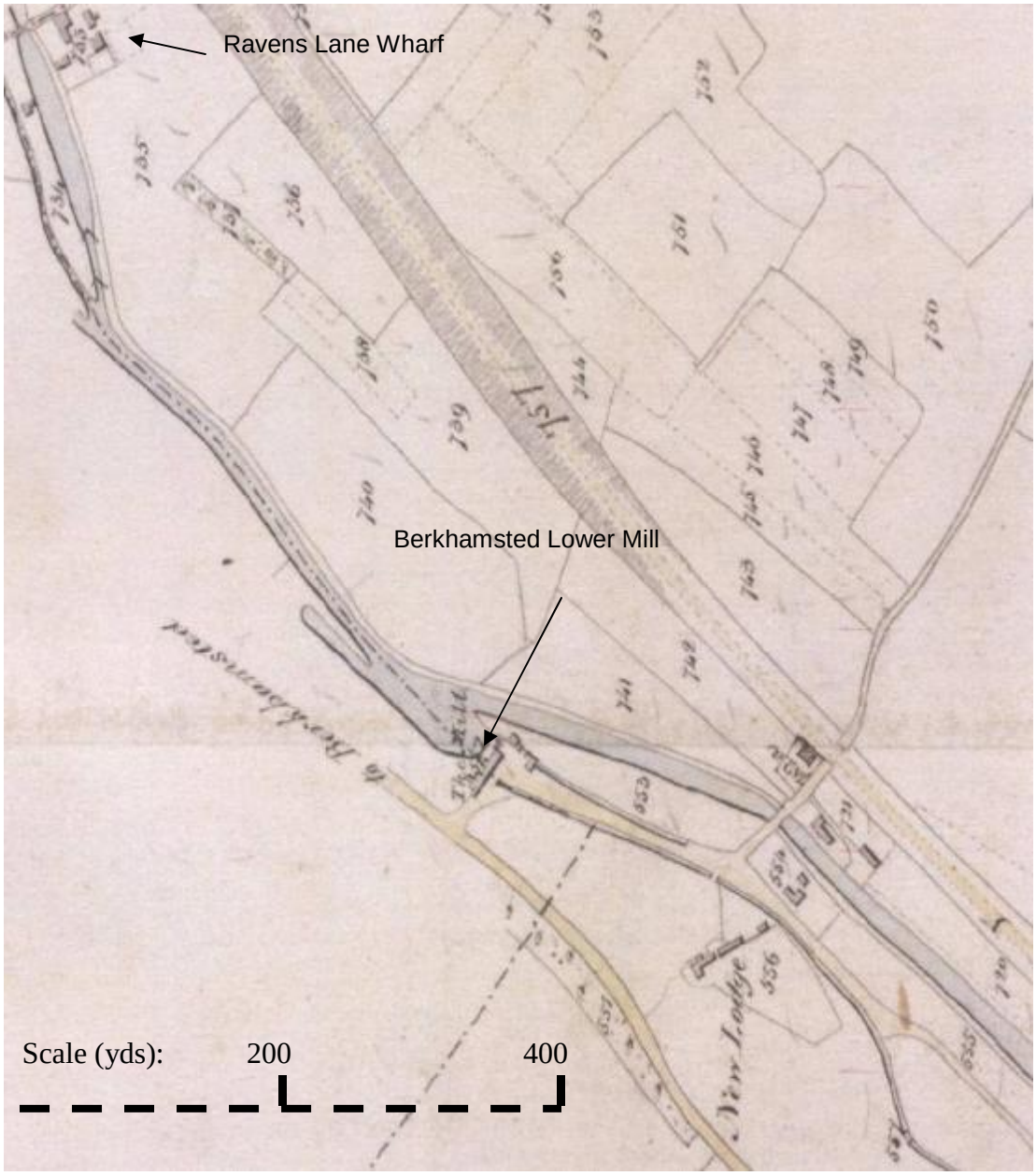

Fig 4.10

The canal in eastern Northchurch parish – Berkhamsted Lower Mill
(HALS DSA4/73/2)

The London and Birmingham Railway is seen on the north side.

Hemel Hempstead parish, although the town itself was some distance from the canal, had also benefitted considerably by 1841, when the census showed an adult population of just over 3000.[24] The populous areas away from the canal were the High Street, Marlowes, Crouchfield and Leverstock Green, but along it lay Winkwell, Boxmoor, Two Waters, Corner Hall and Frogmore End. Agriculture remained the key contributor to the economy: leaving aside the occupations 'not stated' (but typically female and associated with agricultural labour) and those of 'independent means', it engaged over a third of the adult parish, with a number of the tradespeople also working in support of the agrarian sector (Appendices B, C). The census distribution shows that the farms were widely spread.

Little of the tithe map is clear enough for reproduction, but its content can be analysed with earlier and later maps used to illustrate it (figs 4.11, 4.12). At Winkwell a small wharf and stables had been established (plot 53) around the beerhouse, and at Fishery, with a public house, was a coal merchant's wharf and several cottages. The main complex was at Two Waters, where the mill dominated the approach to the large Boxmoor wharf area, described in Chapter 3. The census and trade directories show that the balance of occupations and professions here, near the canal, was more industrial, with Corner Hall, Two Waters and Boxmoor different from the rest of the parish in their occupational make-up; in the town, with the main market in wheat but with significant straw plait dealing as well, it was more typical of the Georgian market town (Appendix A).[25] Across the rest of the parish the farm was still the main economic activity; the several 'middle class' and professional families employing both male and female servants did not change the character of the parish.[26]

[24] TNA HO107/441/5-8, 1841 Census – Hemel Hempstead Enumeration.
[25] Barrie Trinder, 'Market Town Industry - an Analytical Model', in *Industrial Archaeological Review XXIV:2* (2002), pp 75-89; Ellis, *The Georgian Town*, pp. 52-54.
[26] Pigot's Royal National and Commercial Directory and Topography for the Counties of Essex, Herts and Middlesex (London, 1839) pp.187-190; HO107/441/5-8,1841 Census - Hemel Hempstead Enumeration.

The large paper mills at Two Waters and Frogmore, now owned by the GJCCo and leased out, employed in 1841 21 identified 'paper makers', and other paper-related trades appear. Here, however, as in other paper-making parishes, an entire occupational group is missing from the census: the (largely female) essential rag-cutters and sorters. The reason is unclear: these women and children were simply 'not counted', perhaps being in casual or part-time employment.[27] This has a significant effect on the 'not stated' component of the census analysis (Appendix C) – even 40 years later the women on this task at Batchworth (admittedly a pulp mill) comprised fully ¾ of the workforce.[28] One may also surmise that some of the nearly 200 men identified as 'labourer' (as opposed to Agricultural Labourer) were working at the paper mills as well as in the tannery and on the wharfs and coal yards, but it is impossible to be sure.

The 1839 Directory (Appendix B) lists wharfingers at Fishery, Boxmoor (two), Apsley (fig 4.13), and Two Waters. The last is significant in seeming to confirm that Two Waters Mill was connected to the canal, a view supported by the later reference in the Grand Junction Chain Book of 1893 to a wooden swing bridge carrying the main line towpath across the River Gade to the mill, which would have been needed only to get boats to the mill.[29] Thomas Ebborn at Apsley links Hertfordshire with the coal merchants of Coventry through his father, a coal merchant near there.[30] Both were boat owners, and the son was not only here at Apsley but also at Lady Capel's wharf, Watford.[31] The Directory also provides a comprehensive list of the canal carrying services at this time: aside from Pickfords there were 13 other long-distance carriers using the wharfs as they passed to and from London, and while we do not know the frequency of services there was clearly significant business being done in

[27] Evans, *Endless Web,* p.31.
[28] Evans, *Endless Web*, p.251.
[29] NWA WM/72/58, GJC Chain Book, 1893.
[30] TNA HO107/1136/27, 1841 Census – Sow (Warks) Enumeration.
[31] NWA BW99/6/5/3, /17, /37, GJC Gauging Registers Vols 3, 30, 49.

‘building materials, salt, iron, manufactured goods’ and agricultural products as well as coal.[32]

Hemel Hempstead changed considerably in the forty years after the coming of the canal. It had been a strongly arable parish with an important grain market at its centre, two modest water-powered paper mills and two smaller nearby, and several flour mills. By the late 1830s it retained its arable farming; but the modest paper mills had become large, mechanised and important, and the canal was available to the town and its inhabitants though the large wharfs. The occupational balance had changed, and while Hemel Hempstead had not become an industrial town the canal had significantly enhanced its industry, including as it did an iron founder and machinery manufacturer (Cranstones) as well as a new gasworks - and of course the paper mills.

[32] Pigot’s *Directory* (1839), pp.187-190.

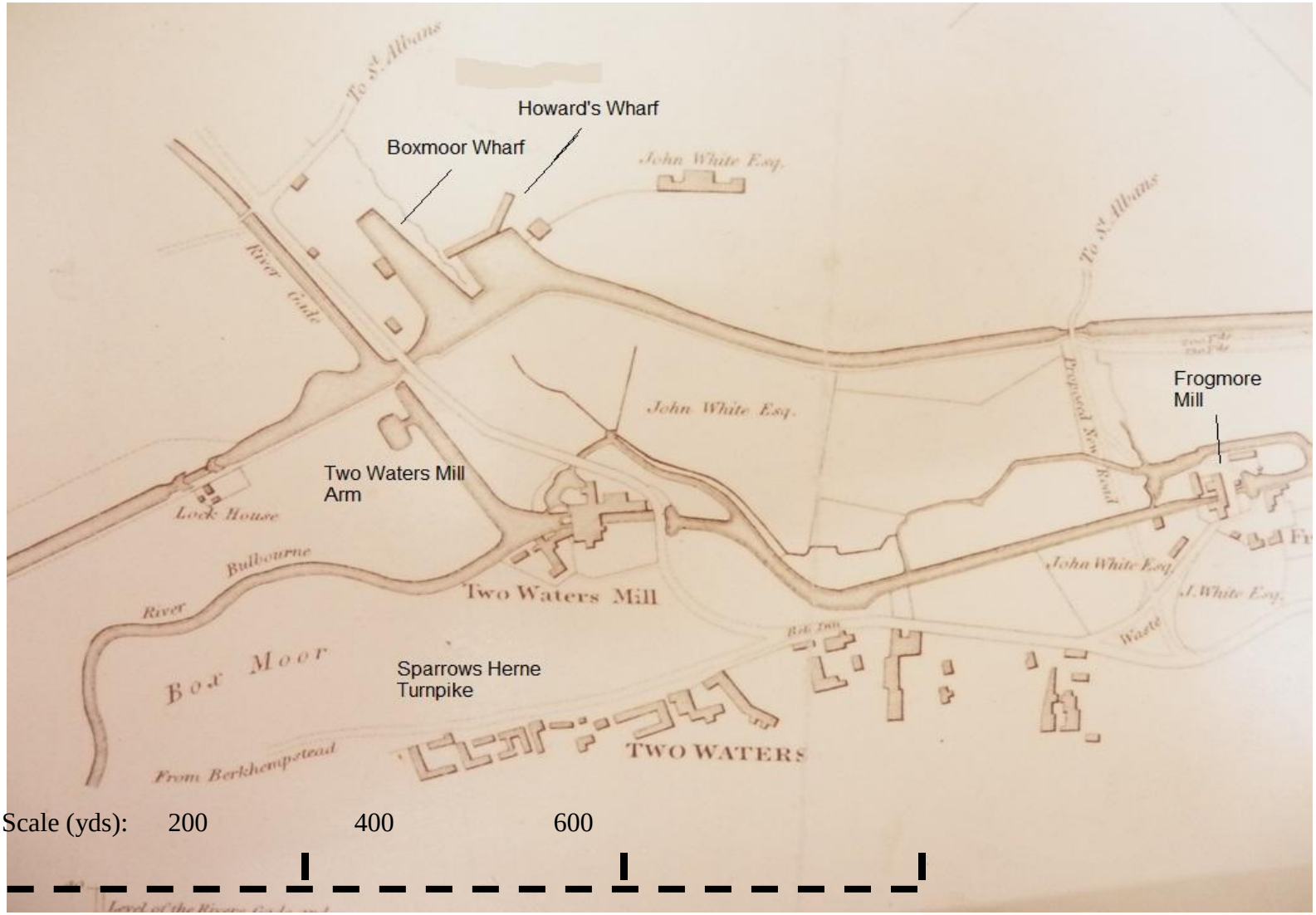

Fig 4.11
The Grand Junction Canal at Two Waters c.1818,
showing the wharf complex at Boxmoor
(Canal Maps Archive)

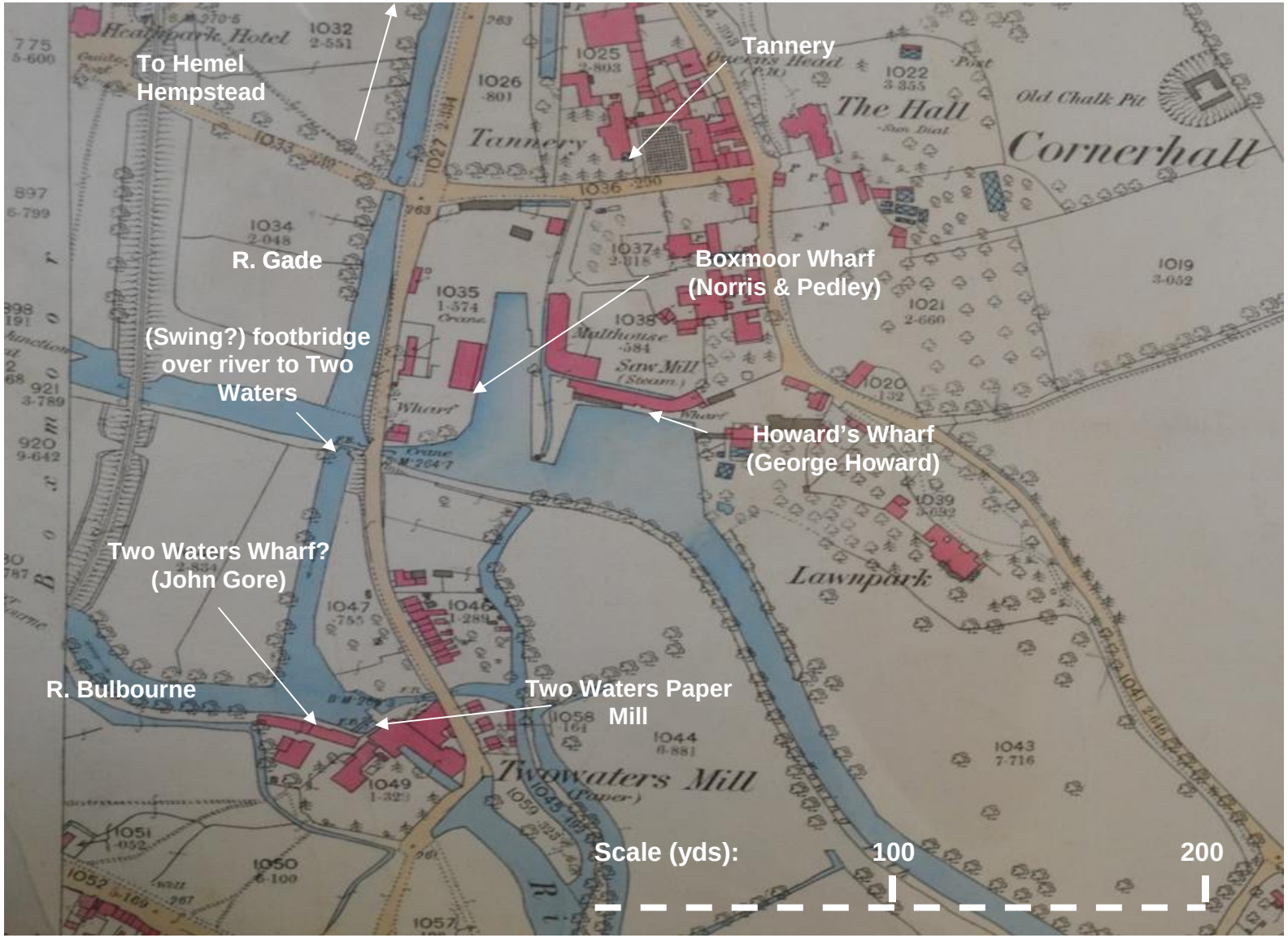

Fig 4.12
Hemel Hempstead (Two Waters and Corner Hall) -
Mill and wharfs (c.1870)
(Ordnance Survey)
(HALS)

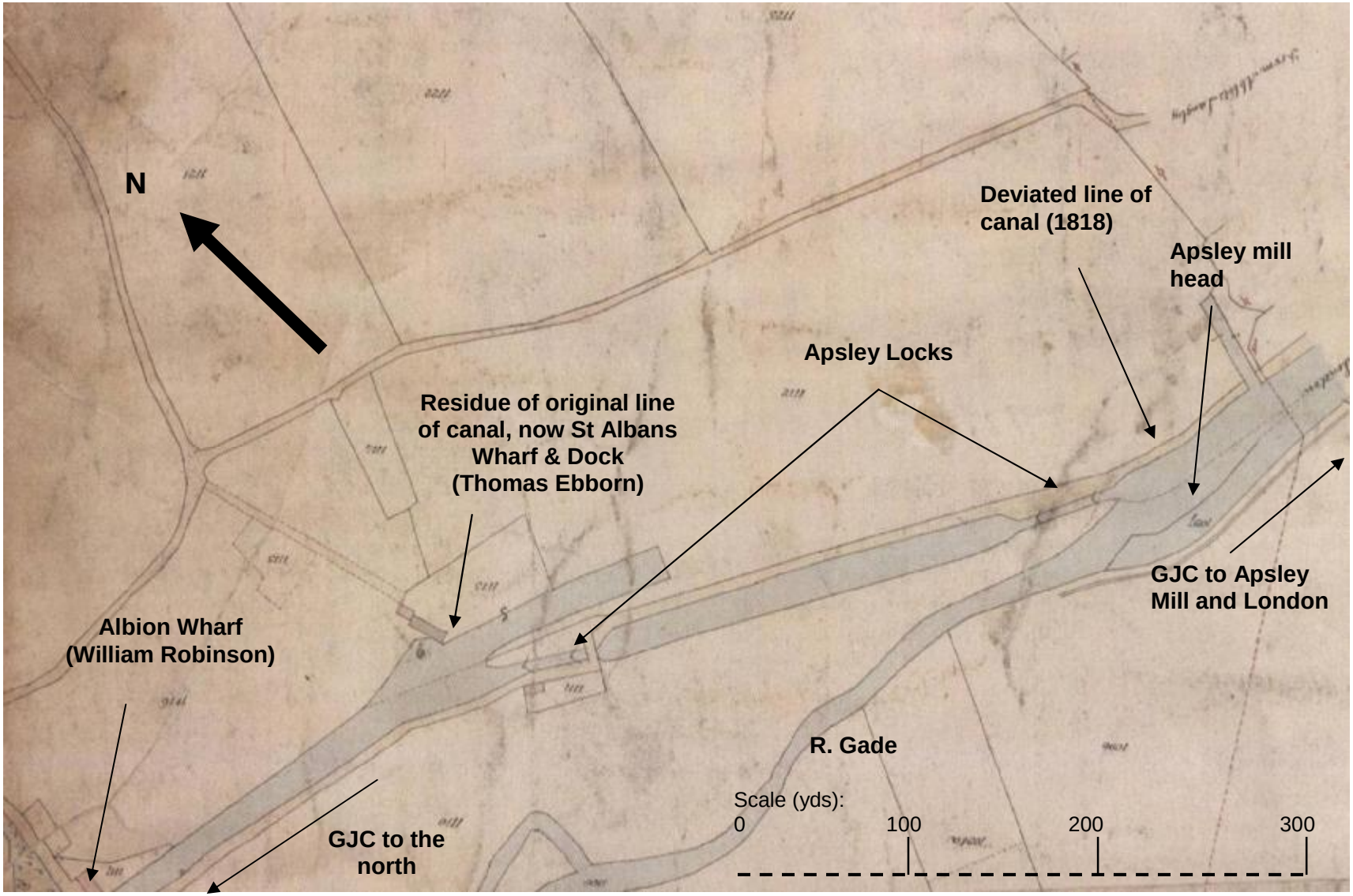

Fig 4.13
Hemel Hempstead (Frogmore End) -
Albion and St Albans Wharfs
(HALS DSA4/48/2)

From Frogmore End the canal enters **King's Langley**, approaching Dickinson's Apsley Mill (fig 4.14) as its first and dominant industrial feature, now growing quickly and steam powered.

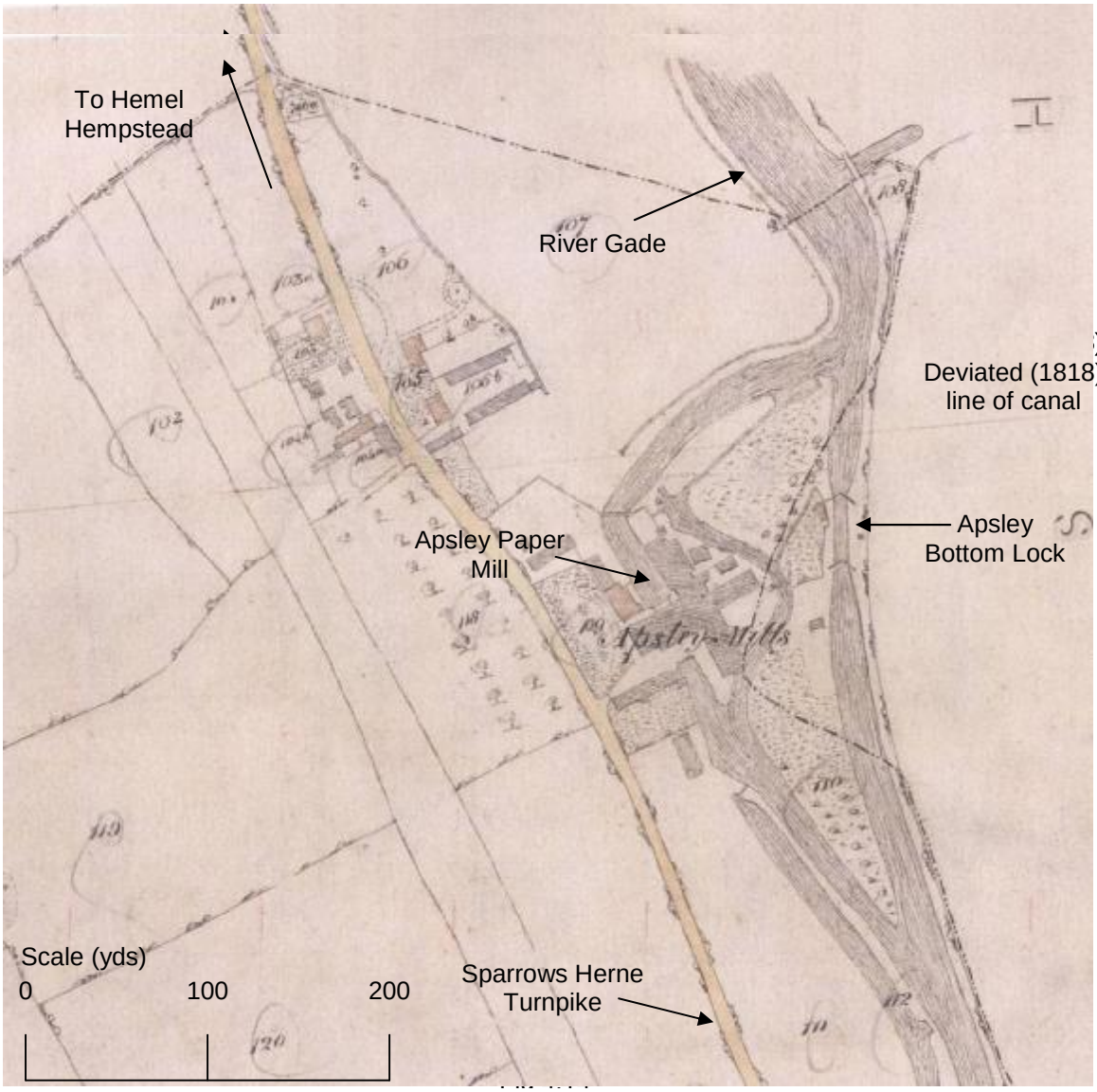

Fig 4.14
King's Langley
(Apsley Paper Mill)
(HALS DSA4/64/2)

The large village is on a ridge, with the canal and river below and the small wharf (tithe plot 577) below the lock (fig 4.15) - the Census describes the wharfinger as a coal merchant (three boatmen and the family of one are also recorded there, but

whether in a boat or not is not clear).[33] Thomas Toovey was also using the canal (Chapter 3), but how much for his flour mill and how much for other business is unknown. We have also seen that the brewery may have had coal delivered.

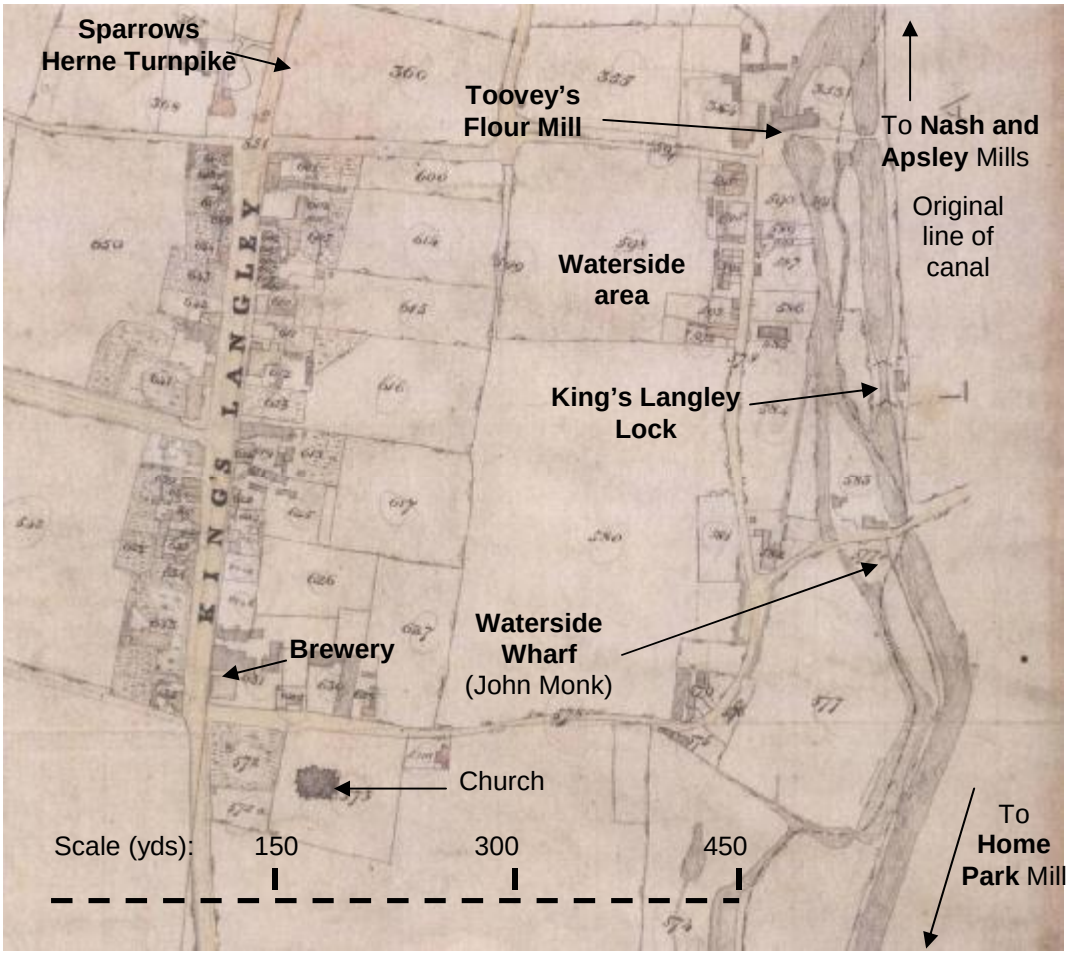

Fig 4.15
King's Langley
(Toovey's Flour Mill and
Waterside Wharf)
(HALS DSA4/64/2)

Generally, however, the canal seems likely to have provided goods to the inhabitants rather than an outward channel for their manufacturing. The Census shows only 15 people in the parish employed at the paper mill (and even some of them may have

[33] TNA HO107/441/12, 1841 Census – King's Langley Enumeration; Pigot's *Directory* (1839), pp.199-200.

been at Nash). As before, the occupational group 'rag sorters and cutters' is missing, and seems likely to have been concealed among the large number (450 - 50% of the whole) with occupation 'not stated'.[34] This aside, the agricultural character of the parish was not significantly altered by the canal, and the services available in the village do not suggest that it even approaches being a 'market town' (Appendix B). The Agricultural Labourer was, with his dependents, by far the largest occupational group: Munby notes that although the structure of farming in King's Langley had been changing for some time, with farms becoming larger but fewer, there was no decrease in the total number of farm workers; while, despite the availability of canal-carried goods, most such items were still made and sold locally.[35] Just because things were being brought in did not make them available to the bulk of the inhabitants.

The same may be said of **Abbots Langley,** standing at a greater distance from and above the canal, whose wharf was at Hunton Bridge near the flour mill.[36] Nash Mill (fig 4.16) just below Apsley was in Abbots Langley; rebuilt after fire in 1816, it had been converted to steam in 1823, and was also Dickinson's headquarters and the base for his boat operations as well as of his engineering development.[37] Home Park mill, opened in 1826, also stood on the border with King's Langley, along which the canal, following the river, was cut.

[34] Evans, *Endless Web*, p.31.
[35] Lionel Munby, *A History of King's Langley* (King's Langley, 1963), pp.103, 112, 116.
[36] HO107/438/1, 1841 Census - Abbotts Langley Enumeration; Pigot's *Directory* (1839). pp.199-200.
[37] Evans, *Endless Web*, p. 24.

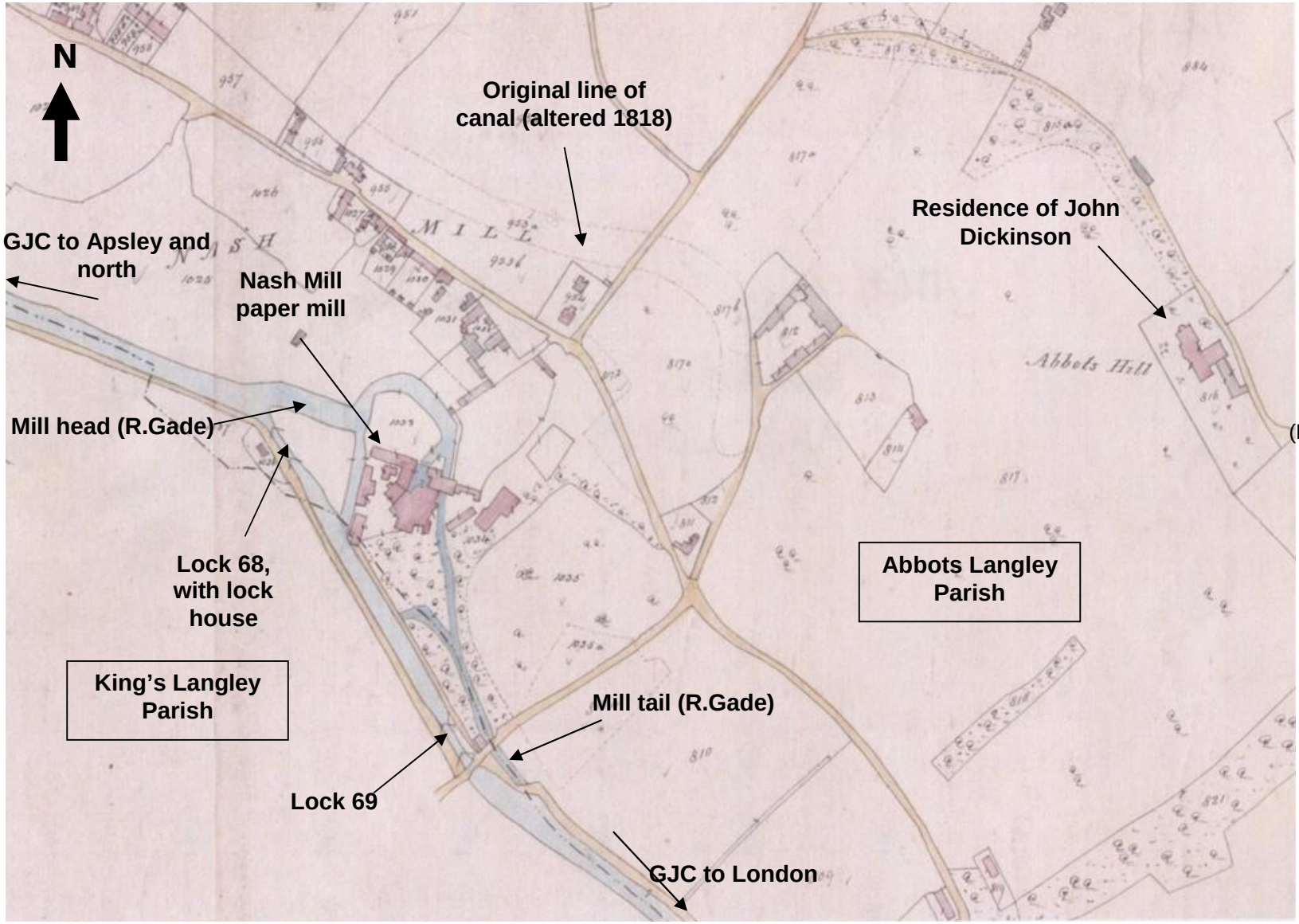

Fig 4.16
Abbots Langley – Nash Mill
(HALS DSA4/63/2)

Hunton Bridge wharf (fig 4.17) was important to the Abbots Langley economy, and was advertised for sale in September 1835 as 'admirable for conducting a business of consequence in the timber and coal trade'.[38] Once again, the village and the parish remained heavily agricultural – the agricultural labourer formed the largest single group, with 34 farmers employing 250 of them and a number of male and female servants – but the paper mills, Nash and Home Park, with 72 workers, were here better recorded, although only one was identified as 'rag sorter', and as mentioned above very few were women.[39] Again, it seems likely that this group is hidden among those 'not stated'. There was and remained a strong link between Dickinsons and the canal despite his use of the railway from 1838.[40]

[38] C W Clark , *Abbots Langley Then* (Cockfosters, 1997), p.213; *The Times,* 19 Sept 1835.
[39] Evans, *Endless Web,* p.69.
[40] John Dickinson's Evidence to the Parliamentary Commission on the Post Office, 2 March 1838, quoted by Evans, *Endless Web,* p.57.

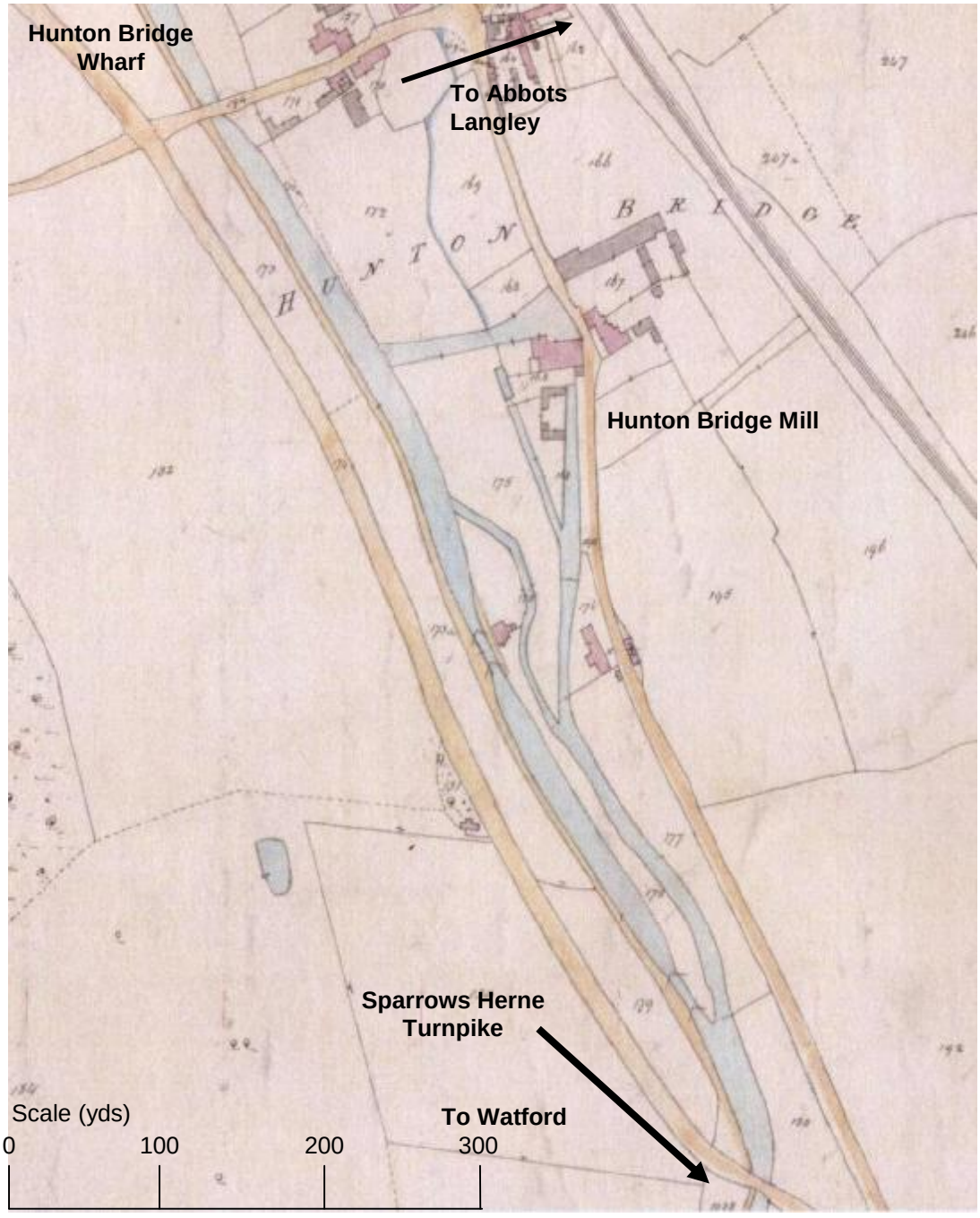

Fig 4.17
Abbots Langley (Hunton Bridge)
(HALS DSA4/63/2)

Watford was served by the canal from two groups of wharfs, one at Cashio Bridge along the Reading and Hatfield Turnpike, which crossed Watford Upper High Street (the Sparrows Herne Turnpike) about 2 miles along (Fig 4.19), and the other from Grove and Lady Capel's Wharfs somewhat further along the Sparrows Herne turnpike (fig 4.18). It included two breweries, the large Rookery silk mill and the paper mill at Hamper Mill, as well as a new gas works; but all these were at the south end of the High Street (fig. 4.20), which will have complicated their ability to use the canal.

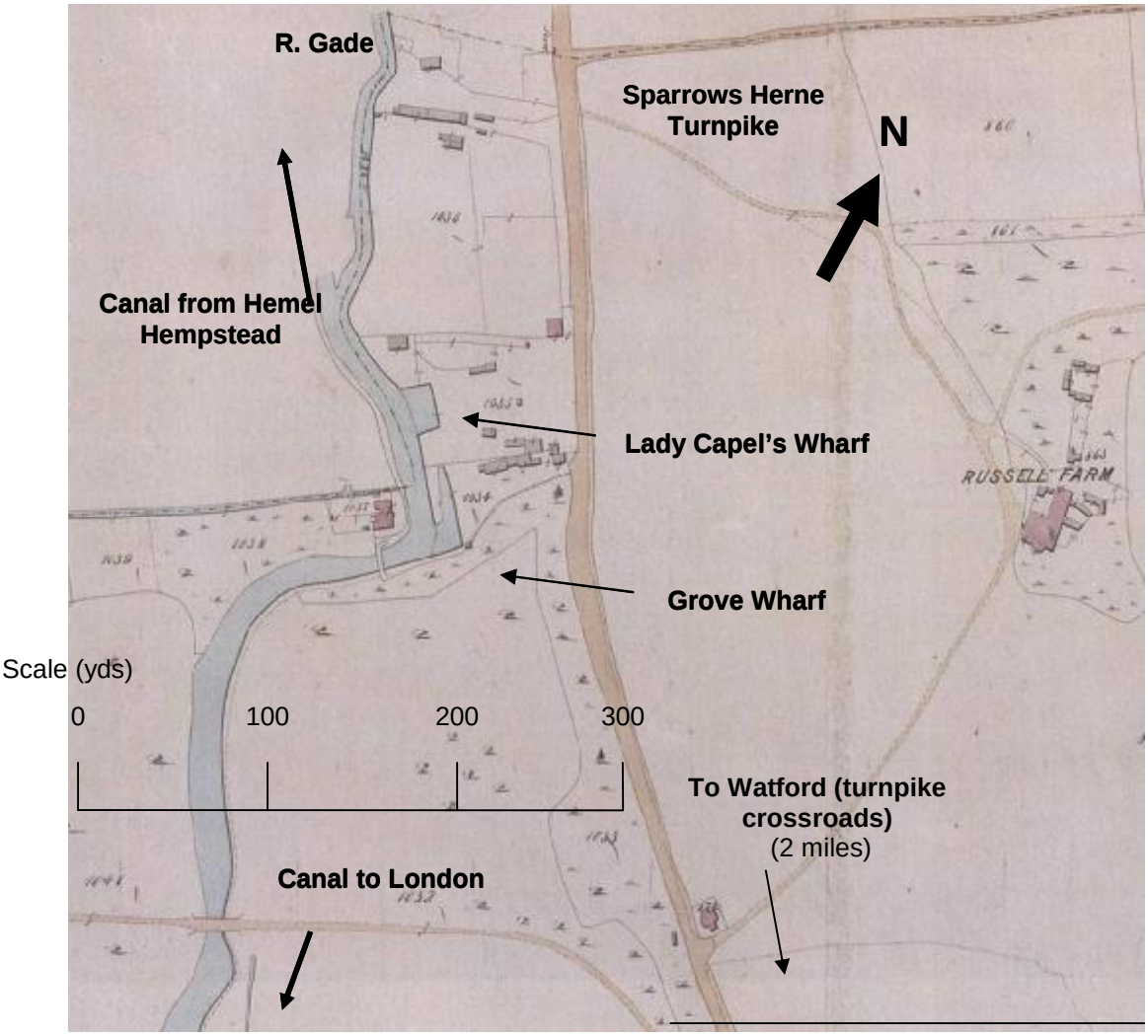

Fig 4.18
Lady Capel's and Grove Wharfs
(HALS DSA4/111/2)

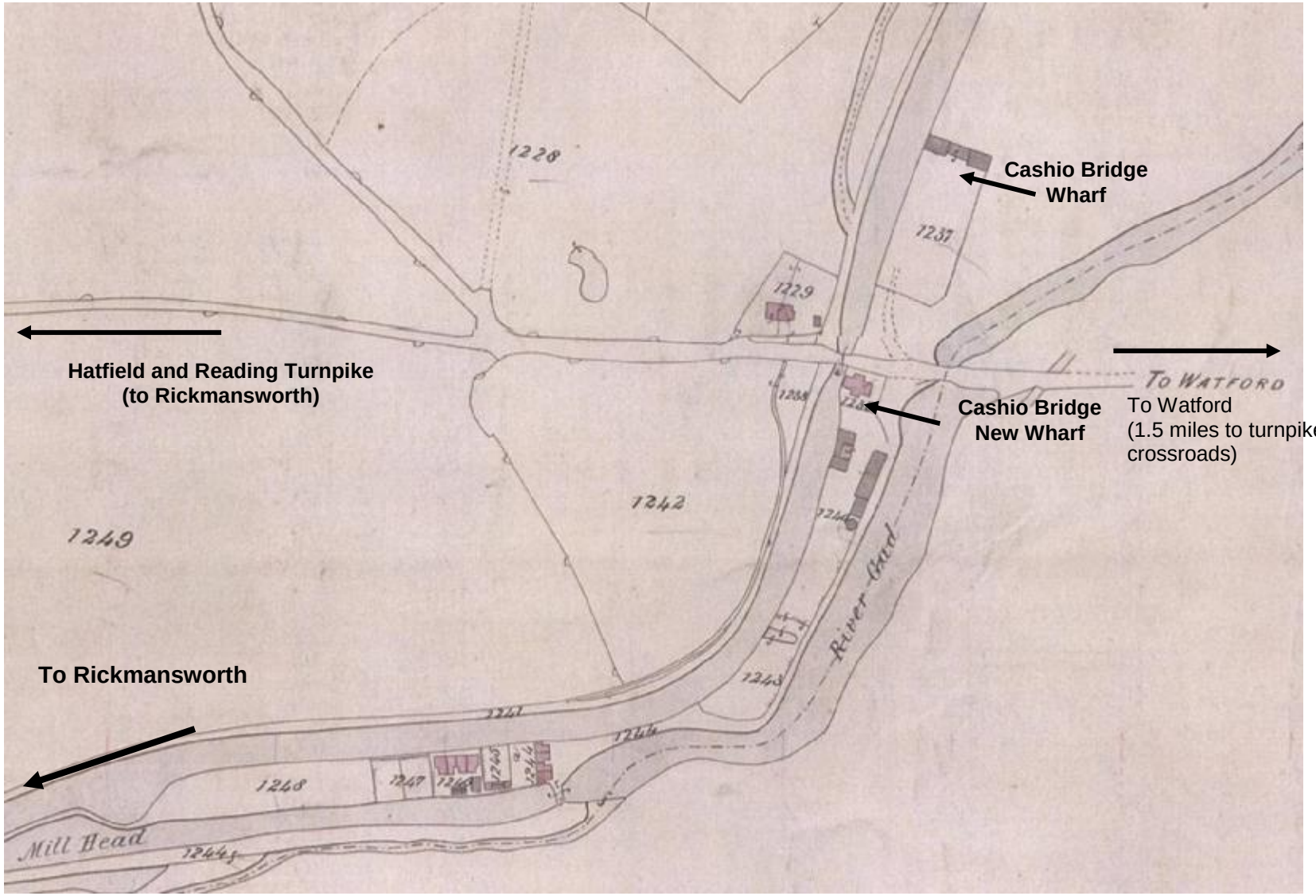

Fig 4.19
The wharfs at Cassio Bridge
(HALS DSA4/80/2)

Francis Conder presented Watford immediately before the railway as having a large corn mill (in the upper High Street), 'a few comfortable houses' at the top of the town, and 'rich millers and farmers, well to do shopkeepers and hard-working cottagers', although Forsyth notes that the poverty and squalor of most of the inhabitants were not remarked upon by him.[41] The 1841 Census confirms that the alleys and yards which were such a feature of Watford were home to many, and serious over-crowding seems inevitable.[42]

The Census and Directories together suggest that Watford provided more comprehensive services than the others in this study (Appendix A).[43] The Census lists no bankers (nor does the 1839 Trade Directory) and only two 'clerks', while the rope maker, iron founder, tallow chandler and tanner appear only in the Directory. There is, however, suggestion of a plate glass maker, at least two wine merchants, a jeweller and a tobacconist, showing that the enduring agrarian economy was well sprinkled with residents with disposable income. A 'working age' population of just over 3600 had 1450 with no occupation stated and 169 'independent'; of the remainder agriculture still employed the largest group (Appendix B), although the recording of only 9 women as 'straw plaiters' seems likely to be a considerable underestimate.

[41] Mary Forsyth, *Watford* (Stroud, 2015) p.67, quoting F.R. Conder, *The Men who built Railways* (reprinted Telford, 1983) pp. 5-9.
[42] Forsyth, *Watford*, p.69.
[43] 1841 Census – Watford enumeration TNA HO107/439/5-8; Pigot's *Directory* (1839), pp.217-220.

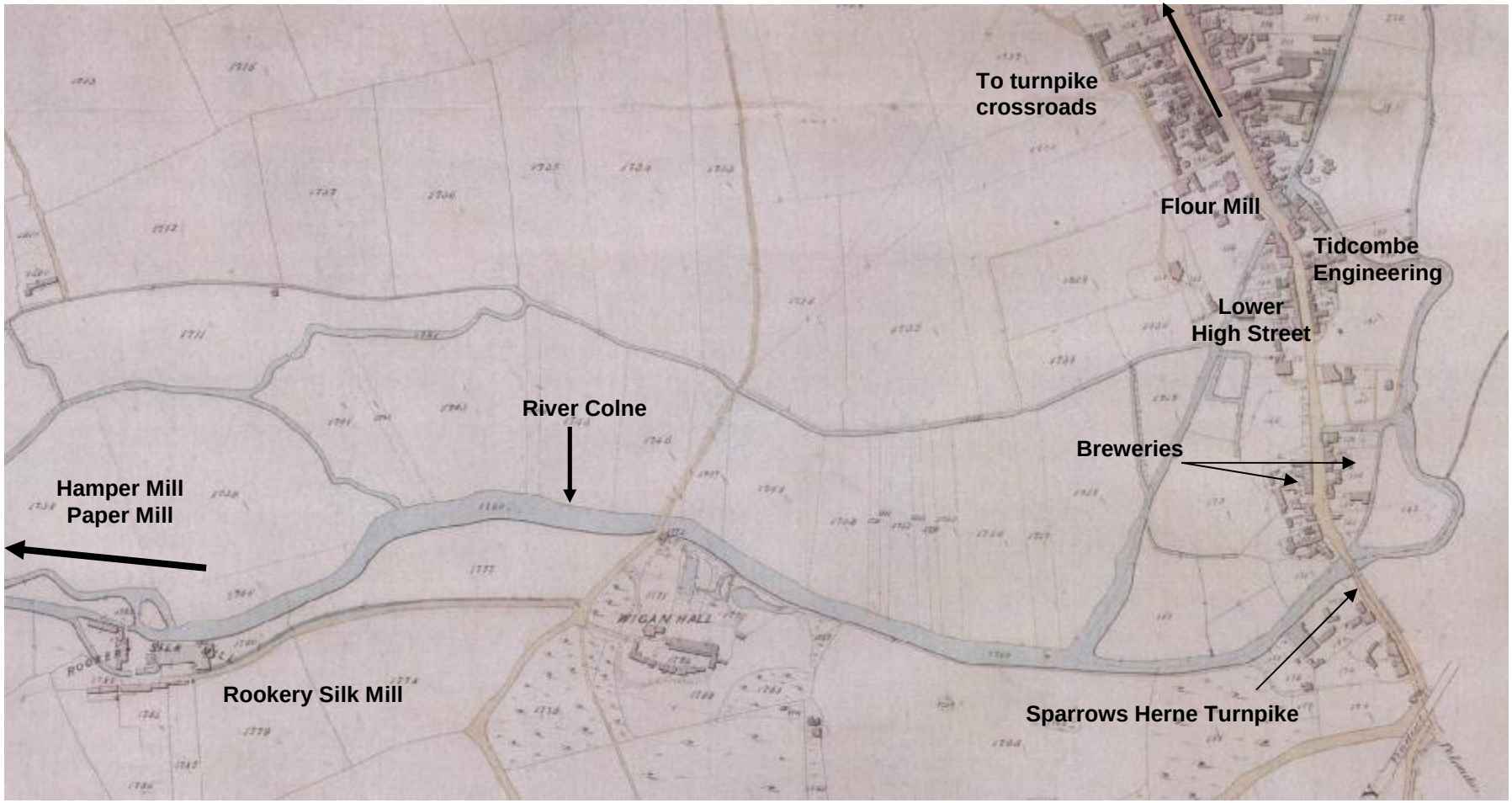

Fig 4.20

Watford Lower High Street in 1844, showing the River Colne and its turnpike crossing, the Rookery Silk Mill and the breweries. Hamper Mill is to the left past the Rookery.
(HALS DSA4/111/1)

Cashio Bridge Wharf (plot 1237) (Fig 4.19) owned by Gonville and Caius College was operated by Watford corn dealer John Cooper, who probably also occupied the Town Wharf in Rickmansworth (see below). At the 'New Wharf' nearby (plots 1239, 1240) owned by the GJCCo itself, Joseph Rogers was wharfinger and a coal and timber merchant (the Census shows him as the latter, with Warn father and son as the wharfingers).[44] Other coal dealers included (fig 4.18) Thomas Ebborn at Lady Capel's wharf (tithe plot 1035) and George Howard at Grove Wharf (plot 1034) – no other coal merchant was listed anywhere else in the town, and it seems likely that there was a considerable amount of coal being sold at these four wharfs.

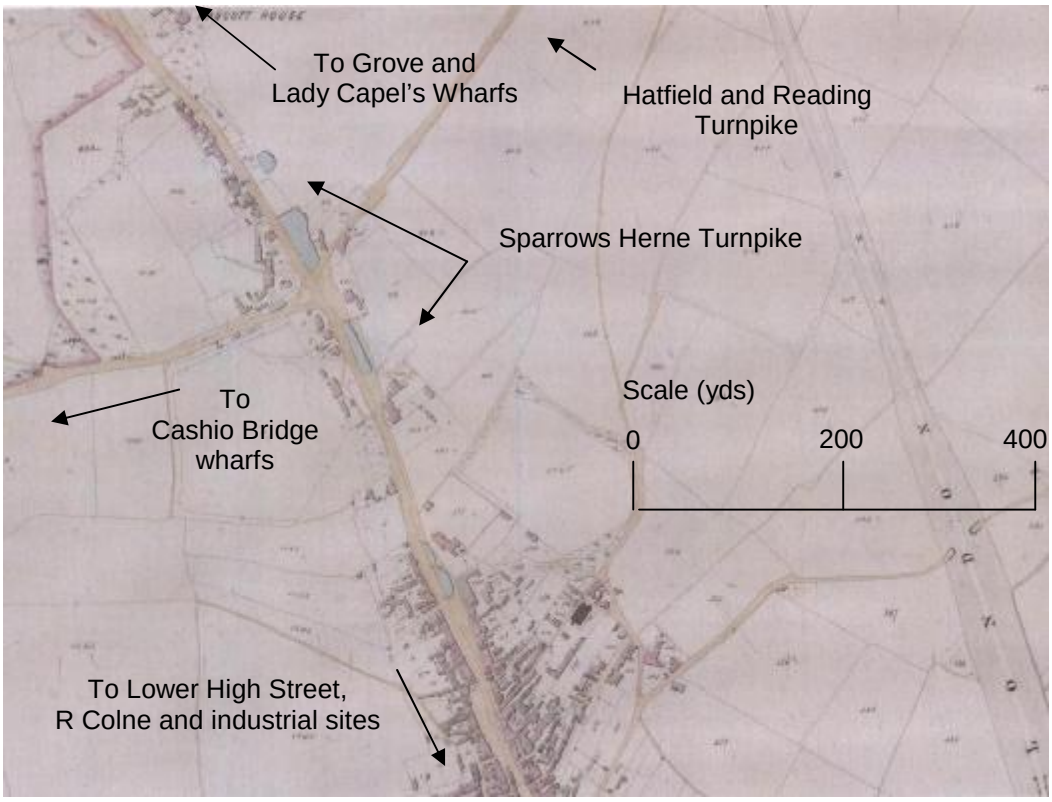

Fig 4.21
Watford - Upper High Street
and turnpike cross roads.
(HALS DSA4/111/1)

[44] HALS DSA4/80/2 (Watford Tithe Map); TNA HO107/439/8, 1841 Census – Watford Enumeration.

It is not clear from the records how many people were employed at the wharfs – none is identified in the Census. It seems highly likely that dealing with bulk cargoes like coal, timber, iron, salt and grain will have required a workforce of half a dozen or so in each place, but this is a very small number compared to the number of labourers (approaching 250) in the parish.

As we have seen, the main long-distance canal carriers operated past all these wharfs with considerable carrying capacity, and we have noted Ebborn's family links with Warwickshire (Appendix D). The Watford industries they served were locally significant. Silk throwing at Watford did not, in 1841, use the canal much, although Sheila Jennings is clear that 'the economic prosperity of Watford was almost entirely dependent upon silk manufacture'.[45] We saw in Chapter 3 how Shute had used steam-powered mills at Chesham and Rickmansworth. Whether the decline of silk throwing in Watford would have been slower with the canal more accessible is doubtful, but certainly the canal did not contribute to on-going success. Similarly, there is no evidence of Hampermill paper mill benefitting from the canal: the Census lists only 59 workers there, rather fewer than might have been expected, although the possibility of pauper labour remains. A Fourdrinier machine was built, however, for the mill in about 1830 by George Tidcombe (see below), and required a steam engine – and probably reduced the work force.[46] There is no evidence of how the rags and other materials were brought in, but it would be surprising if the coal (and at least some of the steam plant) did not come by canal to either Cashio Bridge or Rickmansworth and thence by cart. The mill remained in full production for some time after this, but no detail of its transport operations is known. The brewers, also in the lower High Street, will have used the canal in a similarly limited way: coal will probably have come by canal along with barrels, but malt and other materials came

[45] Sheila Jennings, 'The Silk Industry', in David Short (Ed), *A Historical Atlas of Hertfordshire* (Hatfield, 2011), p.44.
[46] Finerty, *Hertfordshire Paper Mills*, 'Hamper Mill'.

by other means and beer went out by road. The engineering business of George Tidcombe, making papermaking machinery in the lower High Street for both export and home markets from 1827, was just the sort of business to take advantage of the canal connection to Birmingham, and it is reasonable to suppose that his iron and some of his equipment came from that direction.[47] The gas works, too, on the river from 1834 will have taken coal by canal until it shifted to the railway a few years later.[48]

There was, then, clearly business to be done in serving Watford by the canal, although it passed two miles from the town and the main manufacturers will have been inconveniently remote from it. We have seen that the canal was not so dominant as to generate a large workforce, nor to require large warehouses (as opposed to timber sheds) at the wharfs, nor for any boat building or repair businesses to be set up. No worker or 'boatman' is shown in the Census as living near the wharfs. It cannot be said, therefore, that the canal-related activities generated any significant settlement or community: Watford had not, even by 1841, become a 'canal town'.

The development of **Rickmansworth**'s industry, including both paper making and silk throwing which continued through 1831, owed much to the canal.[49] It passed Cashio Bridge wharfs described above and approached Dickinson's Croxley mill, only 10 years old and still small (fig 4.22), but already using the canal for coal and for pulp from Batchworth. At Batchworth Dickinson had leased the long-standing and extensive pulp mill in 1819 (fig 4.23): although mainly powered by the River Colne it later also had steam plant, and the cut to the wharf made in 1819 is shown clearly. Other canal-related facilities included 'Matthew Pickford's Cottage and Stables'

[47] Forsyth, *Watford*, p.73; Finerty, *Hertfordshire Paper Mills*.
[48] Henry Williams, *History of Watford* (London, 1884) (Republished Watford, 1976), p.73.
[49] HO107/438/20-22, 1841 Census – Rickmansworth Enumeration; Pigot's *Directory* (1839), pp.203-204.

serving Pickford's fly boat horses, while the tithe plot next to it (1632) was owned by the GJCCo, as was the side-lock leading to the Chess and Salter's Cut.

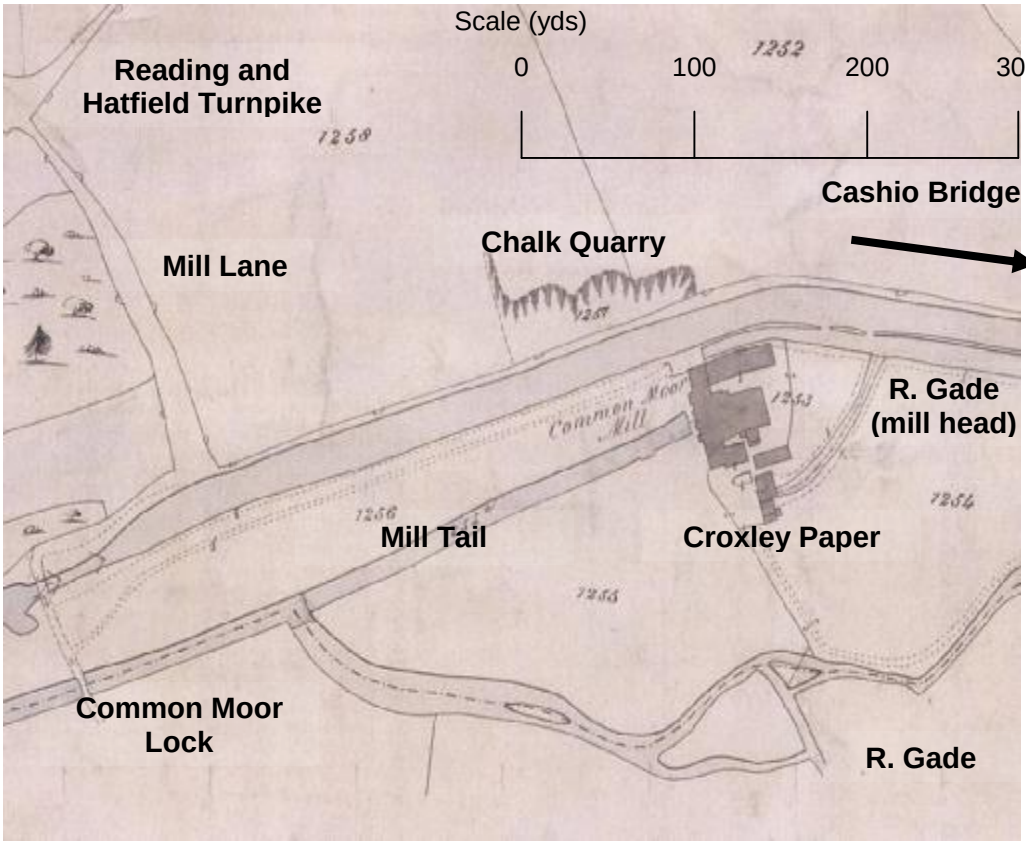

Fig 4.22
Croxley Paper Mill, showing the diversion of the river Gade to provide mill head and tail next to the canal.
(HALS DSA4/80/2)

Batchworth Bridge Wharf (plot 1620) was 50 yards on the west side of Batchworth Bridge carrying the Turnpike to London, and extensive wharfs, with yard and outbuildings, were provided a little further along the canal at Frogmoor by the coal merchant John Laxton, resident near the wharf of which he shared ownership. The Census shows that there was a 'wharfinger' and two labourers also living on the wharf. The channel leading to Town Wharf (fig 4.23), cut (or at least paid for) by Salter in 1805, invokes the role of the brewery. Nothing had changed in the use of Town Wharf (Chapter 3): it seems unlikely to have served the brewery directly, and, occupied by John Cooper of Watford, was fulfilling a more public role.

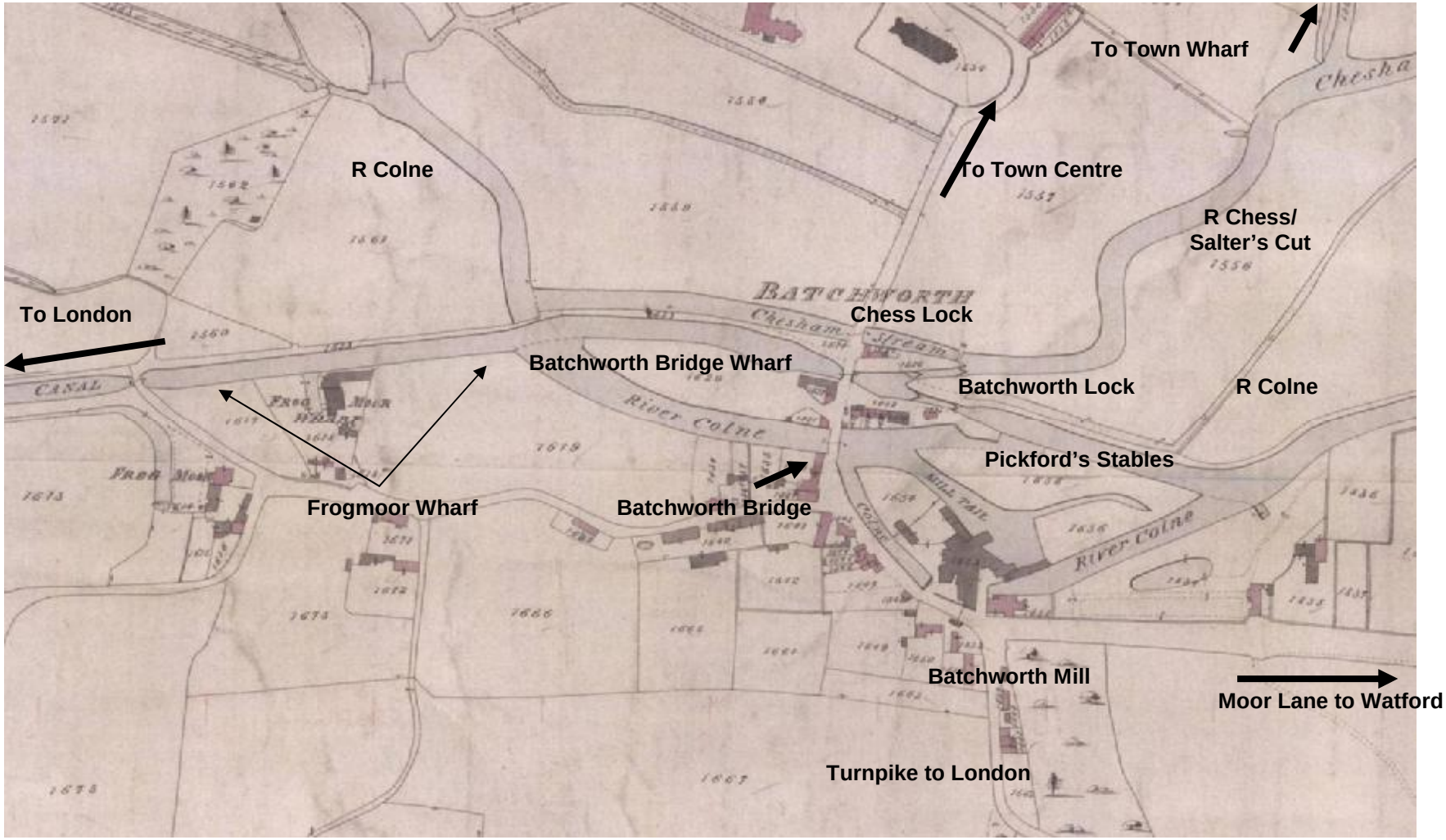

Fig. 4.23
Batchworth Mill and locks, and Frogmoor Wharfs
(HALS DSA4/80/2)

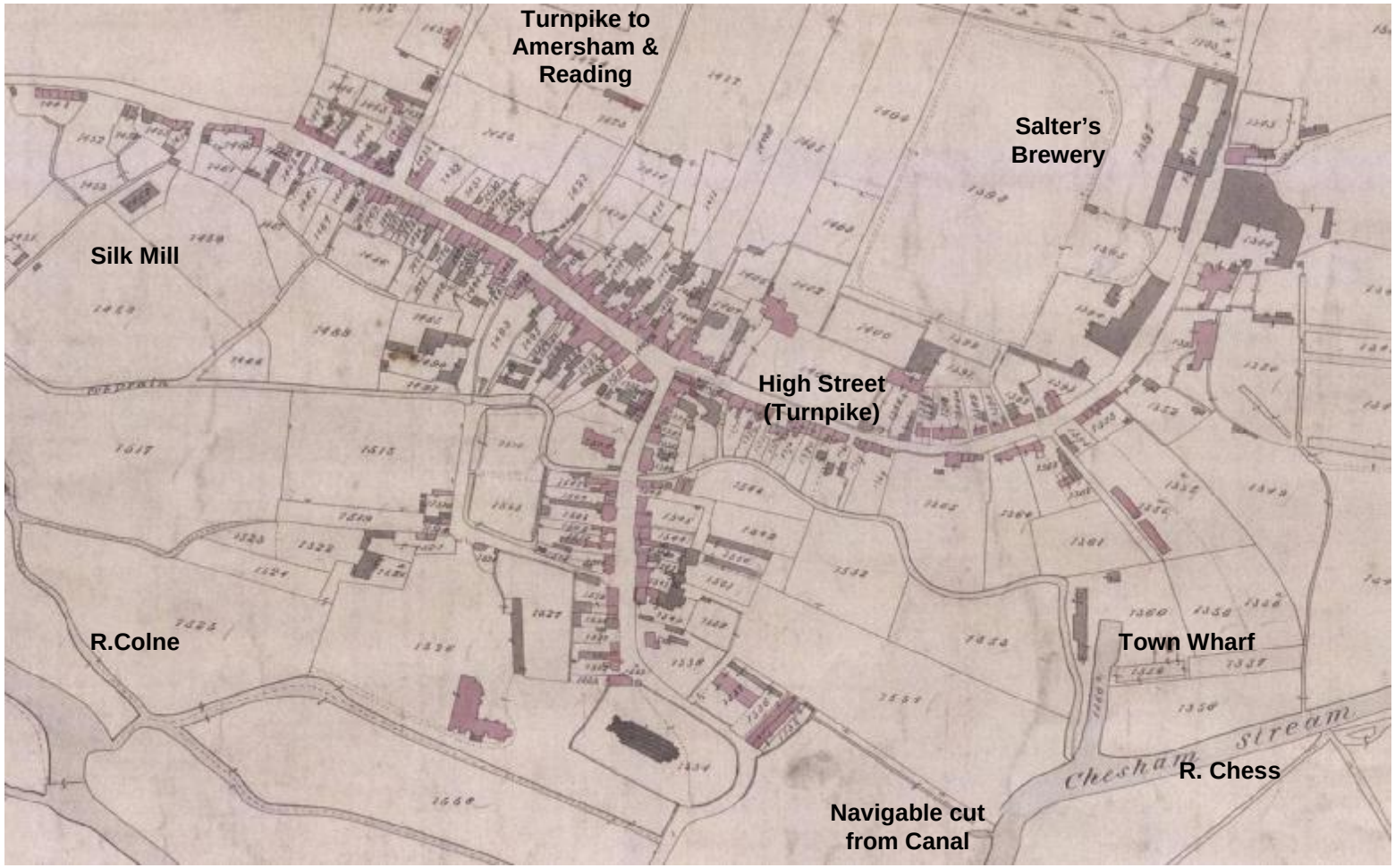

Fig 4.24
Rickmansworth Town centre, showing the Town Wharf,
silk mill and turnpike forming the High Street.
(HALS DSA4/80/2)

The other main industrial concern in Rickmansworth was the silk mill (plot 1457) set back on the south side of the western end of the High Street (fig 4.24). This steam powered 1806 mill had been rebuilt only in 1830.[50] The coal could have come from any of the three wharfs, and it seems likely that it was taken by its proprietor Shute not only because of the availability of labour as he stated in his evidence, but also to have canal transport for the fuel – as we have seen, whether the silk itself moved by canal is unclear. Another Rickmansworth business was the paper mill at Mill End, which, although some way from the wharfs at Batchworth and water-powered, also used coal for steam: in 1835 its sale was advertised as including '…powerful water paper-mills…. driving 6 engines and two paper machines, with drying cylinders… two steam boilers.. blanching and boiling houses.'[51] It was also offered as 'contiguous to Rickmansworth and within five miles of the Birmingham railroad', which was not to appear for another two years. The Census (Appendix C) shows that it probably employed around 40 people, a small but significant local business despite being (one supposes) increasingly overshadowed by the growing might of Dickinsons.

The canal continued across an intruding area of Middlesex before briefly returning to Rickmansworth to approach the mill of the Mines Royal Copper Company (fig 4.23). Although the mill itself was in Harefield (the canal and river form the county boundary) it owned land on the Rickmansworth side as well as at least 3 boats, and employed several people who lived there, so mention of it in a Hertfordshire context is appropriate, although by 1841 increasing use of iron in shipbuilding and the invention of an alternative alloy for sheeting had seen the mill decline. Below the copper mill the cut to Troy Mill, whose operators the Howards had

[50] Parliamentary Paper 1834 XX, *Supplementary as to the employment of Children in Factories* Part 11, 25 March 1834 - Answers of Manufacturers to Queries, Western District: Hertfordshire No. 114, Answers of T.R. Shute (quoted by Sheila Jennings, *The Ravelled Skein* (PhD Thesis, University of Hertfordshire, 2002)).
[51] County Press, 11 April 1835.

used the canal for flour and corn since 1802, was part of a complex set of watercourses together making up the River Colne in a wide and marshy valley.

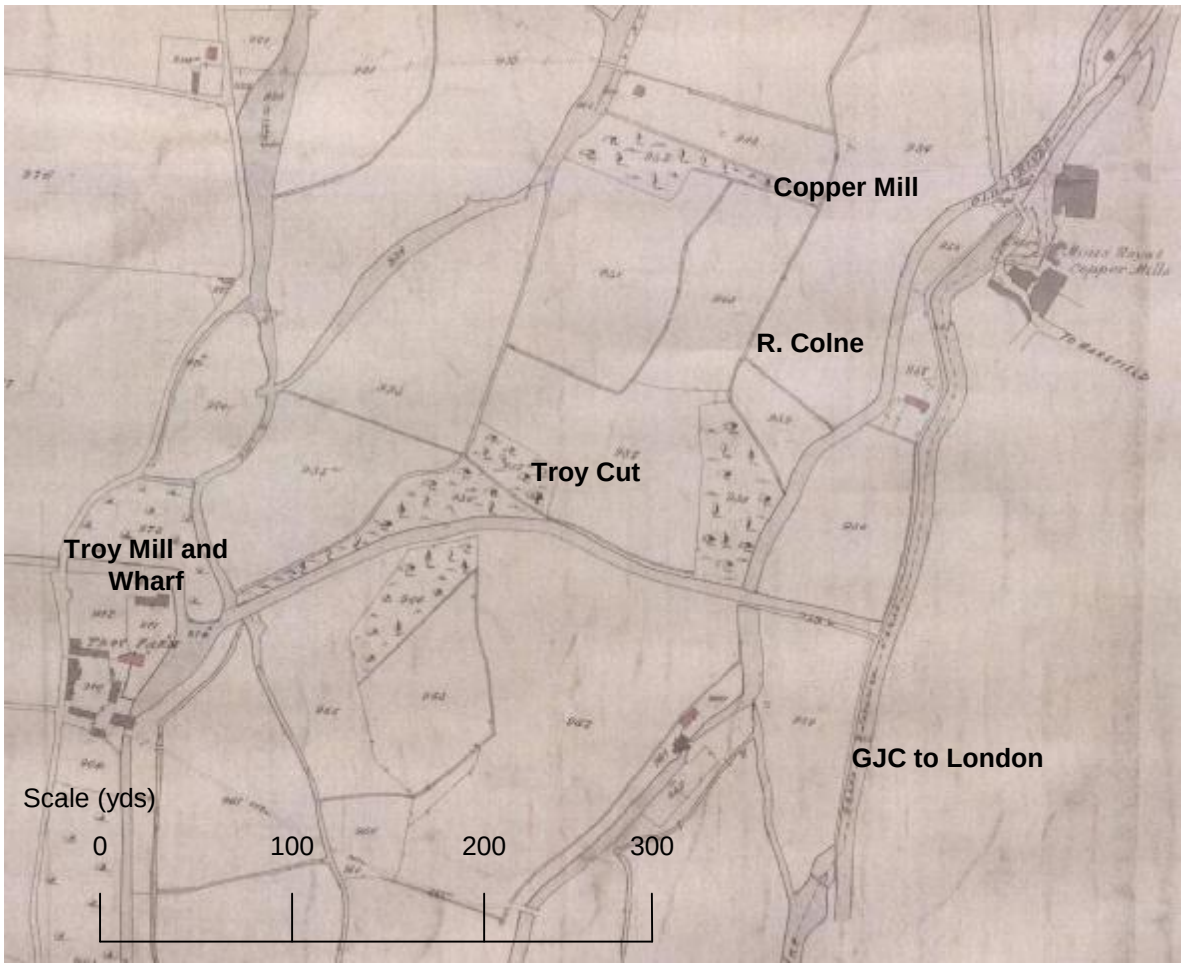

Fig 4.25
Rickmansworth – the Copper Mill and Troy Cut.
(HALS DSA4/80/2)

None of this, however, changed the fundamentally agricultural nature of Rickmansworth town and parish. The census (Appendix C) confirms that most of the inhabitants were still on the land: the paper mills and silk mill were important, but nowhere near dominant. Under these circumstances the availability of coal and 'consumer goods' at the wharfs and in the shops was of small concern to the agricultural workers, who were little able to take advantage of them. The canal had an effect in Rickmansworth, as elsewhere: but it was not felt by everyone.

Summary

By 1841 the canal had given rise to wharf and related facilities serving Tring, Berkhamsted, Hemel Hempstead, Watford and Rickmansworth. Berkhamsted had developed the only boat-building business, but all these towns had extensive wharfs to which coal, timber, building materials, industrial raw materials and manufactured goods were brought by the many carriers, some local, on their way to and from London. The paper maker Dickinson was using the canal in a particularly vigorous way, and his business prospered accordingly: other paper makers and manufacturers of silk thread, copper sheet and machinery did so to varying degrees – all had the opportunity, although how far they used it cannot now be demonstrated. But the population was not big enough to provide a significant market; the conclusion is that market-led canal-based business formed round an existing nucleus, but conditions in the outlying parishes show that where there was nothing to develop the canal passed by without effect.

Hertfordshire remained in 1841 a county whose main product was agricultural, chiefly wheat, and whose inhabitants were largely in agricultural occupations, where wages and standards of living remained low and bread the dietary staple for many.[52] Farmers were unable to use the canal to transform their business, and the canal benefitted those in industry or of the 'middling sort': those who could not afford to 'consume' benefitted very little, and that number included the majority of the inhabitants. They continued to leave Hertfordshire as they had done for many years, resulting in a relatively low rate of population growth despite the attractions generated by the canal among the many other factors driving movement in the population at this time.[53]

[52] Agar, *Behind the Plough,* pp.154,155.
[53] Agar, *Behind the Plough*, pp.14-16; Goose, 'Population Movement', in Short (Ed), *Historical Maps,* pp.53, 54.

Chapter 5

Conclusions

This study originated because of a gap in the historiography of both Hertfordshire and the waterways. Neither element referred in any detail to the other: but it seemed unlikely that the Grand Junction Canal, a major piece of transport infrastructure, should pass through the county with negligible economic or social impact, and the work has sought to identify those impacts in the west of this small and agrarian county. Earlier authors on Hertfordshire, with the exception of Alan Faulkner, either disregard the GJC or present it as bringing the industrial revolution to Hertfordshire, although not to much effect.[1] This view is not fully supported: the degree of industrialisation remained limited, with relatively few of the inhabitants employed in it and life of agricultural labour continuing unaffected for many; but there was an appreciable effect, mainly in the towns.

Hertfordshire Industry

The preceding chapters show that the canal promised only limited benefit to the inhabitants of Hertfordshire, being primarily intended to link London and the industrial midlands. Landowners on the line of the canal gained directly by selling land and some farmers used it for business, although serving agriculture was by nature a problem for canals.[2] But neither the small paper mills nor the breweries near the canal line were able to take the opportunity presented. Wharfs in the towns and large villages provided local businesses and retailers with a range of raw materials and goods and some with new ways of getting their product to market, but only one major industrial development, by the paper maker Dickinson, was made in the area in the first 40 years of the canal's operation.

[1] Tony Rook, *A History of Hertfordshire* (London, 1984), p.81; William Branch Johnson, *Industrial Archaeology of Hertfordshire* (Newton Abbot, 1970), p.140; Alan Faulkner, *The Grand Junction Canal in Hertfordshire* (Hatfield, 1993).
[2] E.A.Wrigley, *The Path to Sustainable Growth* (Cambridge, 2016), p.138; Charles Hadfield, *The Canals of South and Southeast England* (Newton Abbot, 1969), pp. 19-21.

Aside from Dickinson and to an extent the Mines Royal copper mill in the south of the county, industrial operations remained small with both raw materials (except malt and lime stone) and fuel having to be brought in and the market for most products lying elsewhere, notably in London. The Rickmansworth cotton spinners continued in business only until 1810; the silk throwing mills in Rickmansworth and Chesham probably used the canal for coal, but the Watford Rookery mill seems to have been wholly independent of the canal, while other smaller throwsters in Watford used mill-horses for power and did not continue in business long into the nineteenth century. It is tempting to infer that the Rickmansworth brewer Salter canalised the Chess to serve his brewery, but it is more likely to have been a general business investment: none of the other brewers used the canal to any extent. The Tring silk mill, opened in 1824 and steam powered almost from the start, was probably different in that its machinery, supplied from Manchester, and its fuel seem likely (but unverifiably) to have come through Tring wharf half a mile away. Even then there is no evidence as to how the raw silk arrived or the thrown thread taken away: a road service would have sufficed for its limited volume, although its destinations were usually on connecting canals. Major industrial development did not materialise.

Non-Industrial Effects

The canal nonetheless brought benefit to some in these early years. Public wharfs at or near Tring, Berkhamsted, Hemel Hempstead, King's Langley, Hunton Bridge, Watford and Rickmansworth supported coal and timber merchants as well as providing collection and distribution points for the use of the inhabitants and businesses of those towns and villages, and Berkhamsted, Hemel Hempstead, Watford and Rickmansworth in particular changed appreciably as a result. The small parishes without towns, however, generally received very little benefit. Puttenham, Aldbury, Wigginton and Northchurch were and remained small agricultural settlements: their farmers might have used the canal to some degree, but none

attracted new industrial activity. Places which already had a nucleus of industry or commerce around which canal-related activity could coalesce developed, but the others got very little except perhaps more variety in the village shop.

The canal affected Hertfordshire in two other ways. The first relates to the cutting of the line itself between 1794 and 1798. It may appear that Hertfordshire's rural economy was particularly vulnerable to losing its labouring workforce to the canal, but in fact that effect was limited. By 1793 much of the digging of the canals and the work of the trades supporting it were being done by experienced professionals, and there is little evidence that labourers left the Hertfordshire fields to join the 'navigators' in any strength. Nor is there much evidence that agricultural labourers' wages increased because of the presence of a body of men somewhat better paid (the differential seems to have been of the order of 6d per day, about 25%). No crisis of harvest or of spring sowing was attributed to the canal in any parish, nor was there much variation in the poor rate or in the support paid out from it, as might have been expected had 'spare labour' suddenly been mopped up if only for a few years. Hertfordshire farming was affected little by the cutting of the canal.

The second has to do with its relationships with local people and businesses. Its initial land purchases and approach to damage compensation seem to have been relatively uncontentious, although there were some exceptions and a 'special case' dealing with the Earls of Essex and of Clarendon. But water supply to mills along the Rivers Gade and Colne led to recurring disputes, notably with Dickinson and by no means all won: several mills, including large paper mills, had to be bought by the GJCCo to acquire their water rights, and the main line had to be moved to accommodate Dickinson's complaint. Field drainage was interrupted in places by the canal's embankment, while the water levels at the confluence at Two Waters were just one of several issues between the Boxmoor Trustees and the GJCCo. The

company was also seen, although unsuccessfully, by some parishes as a source of extra money to support the poor rates.

The Sparrows Herne Turnpike, which the canal paralleled for twenty miles, was affected by the arrival of the canal next to it. A small increase in toll revenue at the start may have resulted from the canal company using the road for its own traffic, and the rising costs may have reflected extra wear and tear on the road. After the canal opened, however, the toll revenue declined, mainly on the southern section around Watford. But the very great growth of long-distance canal traffic did not result in the collapse of traffic on the turnpike. It seems more likely that the freight traffic on the canal was almost all new and had never been on the turnpike, which had provided a much more local facility for the towns, especially Watford, and villages and continued to do so. The toll revenue nonetheless remained generally steady for many years, which represented a real-terms decline in the volume of trade.

The conclusion is, then, that the GJCCo brought benefits to some which were balanced by problems to others, and few of those benefitting were of the labouring class. But there is one exception to this general assessment. The provision of coal and reductions in its price were always offered as a benefit to places like Hertfordshire, whose sea-coal fuel will previously have come out from London by cart and will have been beyond the means of most of the labouring poor, even when supported by straw plaiting. The provision of coal at canal wharfs in large quantities made it more accessible and affordable to the inhabitants and tradesmen. The economic impact of this is impossible to quantify: but it seems unlikely that the poor had, before this, had any fuel other than furze or fallen timber, and the availability of coal will have begun to make a difference to some, especially in the towns.

The Economic Effect

The resulting economy of the county, which had until the mid-1790s been small and relatively self-contained and in which the low wages of the agricultural labourer had dominated, showed the effect of the canal as an 'exogenous influence'. Where the main variable determinant of the real wage had been the price of food, which in turn drove the demand for goods and so the demand for labour, there was now a reduction in the cost of fuel, a small increase in employment opportunities and a new route by which rising demand for goods could be met. The overall 'real wage' increased as a consequence: but only for those who had disposable income. The remainder were isolated from the exogenous influence of the canal and subject to increasingly marked swings in the price of food, to fuel poverty and inability to take up the few new jobs. For this reason the economic impact of the canal in Hertfordshire was limited: industrial development did not generate enough employment to reach a change-inducing level.

The wider Implications

The implication for studies of the Industrial Revolution is that industry of only local significance could be sustained by using the services of a canal – but it needed a core round which to form. Hertfordshire's experience suggests that small scale industry not immediately on the canal was able to develop by using local road transport for their essential fuel and materials, the cost of which was often reduced by partial canal transport: but the only ones to become large were located directly on the waterway. The presence of minerals was also crucial to real growth – where, as in Hertfordshire, there were none and agriculture was the main producer, the benefits were small and growth remained low. Agriculture needed 'dendritic' transport and was intrinsically unable to use a canal (tending to confirm that waterways predicated solely on it would struggle, as many did). The willingness of a canal side landowner

to provide a wharf was in any case a necessary precursor to development – the small local trader could not provide his own, nor could provision be made except near larger centres which provided the necessary volume of trade: small villages especially were unable to generate their own growth. The consequences were that in communities such as those of this study the industrial revolution had little impact – even the presence of a major waterway did not offer most of the inhabitants real advantage.

Summary

Hertfordshire, whose only real industry was agriculture, was never planned to benefit from the Grand Junction Canal as it passed to and from London whose market was already relatively accessible. But the canal did have some effect: it attracted and helped to prosper a paper maker of true industrial scale, it broadened the range of goods available to people with purchasing power and it improved the availability of raw materials for manufacturing. It also provided a reasonably assured supply of fuel. It generated little employment, however, and its benefits were mainly indirect - facilitating - rather than direct, although by providing inexpensive reliable long distance transport of goods and materials it prepared the way for the much greater impact of the railway.[3] The Grand Junction Canal did not by any means bring the Industrial Revolution to Hertfordshire; but it was also by no means just ‘passing through‘.

[3] F.R.J. Newman, *The Socio-Economic Impacts of the coming of the Railways to Hertfordshire, Bedfordshire and Buckinghamshire 1838-1900*. (University of Hertfordshire PhD Thesis, Aug 2015).

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HO107/440/5 (Northchurch Enumeration)

HO107/440/3-4 (Berkhamsted Enumeration)

HO107/441/5-8 (Hemel Hempstead Enumeration)

HO107/441/12 (King's Langley Enumeration)

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IR23/33/216-222 (Hemel Hempstead)

IR23/33/225-227 (King's Langley)

IR23/33/230-232 (Northchurch)

IR23/33/235 (Puttenham)

IR23/33/149-156 (Rickmansworth)

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Appendix A

Market Town comparison

This consideration of the towns of the study draws on the analyses of the trade directory for 1839 and of the 1841 Census presented in Appendices B and C.[1] It presents a set of characteristics based on those suggested by Barrie Trinder as indicating a true 'market town', influencing the area nearby and presenting a range of services including those of professions such as banking, the law, surveying and auctioneering.[2] Ellis quotes the leading 'trades' in towns as butchers, bakers, victuallers, tailors and shoe makers, and we can add the smiths.[3] But these were not major employers of labour. Trinder suggests that sufficient population size to encompass the various features was important, and here it seems that Tring, Berkhamsted, Hemel Hempstead, Watford and Rickmansworth should all fail immediately. But it is clear from trade directory and census that they did, in fact, provide a full range of services to their inhabitants.

There were some local manufactures. Trinder offers malt as an example, common in every town but only of economic significance when of a scale to be used by brewers elsewhere – as in east but not west Hertfordshire.[4] The manufacture of goods for more distant markets is important: the trade directories identify the principal manufactures of the main towns, and confirm (Appendix B) that in 1839 Tring had silk and canvas, Hemel Hempstead paper, Watford silk and paper, Rickmansworth paper and silk - Berkhamsted alone was not credited with any manufacturing industry, 'wooden ware' having by then declined.

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[1] Pigot's *Royal National and Commercial Directory and Topography of the Counties of Essex Herts and Middlesex* (London, 1839) pp. 174-176, 187-190, 199-200, 203-204, 213-215, 217-220, accessed through www.ancestry.co.uk consulted 9 April 2016; 1841 Census TNA HO107/442/5-7, HO107/442/9, HO107/440/1, HO107/442/2, HO107/440/5, HO107/440/3-4, HO107/441/5-8, HO107/441/12, HO107/438/1, HO107/439/5-8, HO107/438/20-22.
[2] Barrie Trinder, 'Market Town Industry - an Analytical Model', in *Industrial Archaeological Review* (XXIV:2, 2002), pp. 75-89.
[3] Joyce Ellis, *The Georgian Town* (Basingstoke, 2001), p.53.
[4] Peter Mathias, *Brewing in England* (Cambridge, 1959), p.14; Trinder, 'Market Town Industry', p.80.

Trinder notes that most towns had banks by 1830, even if only extensions of the financial activities of solicitors, as in Hemel Hempstead, and indeed Watford had two in the 1820s, although neither endured.[5] None of the west Hertfordshire towns had a 'resort' function, and none had proper assembly rooms until the 1850s. Trinder refers to the role of wharfs in extending the economic value of a canal to a town, but none of the towns of this study became a 'canal town' (one providing services to the canal and its traders) except arguably Berkhamsted. They did, however, have in common several features: one or more corn mills (in this area usually water-powered, but not necessarily), a market place, some sort of market hall, meeting rooms or exchange buildings, maltings, a National school later in the period. The distribution of retailers, dealers, tradesmen and manufacturers (for example engineers) was uneven: the richer the mix, it may be argued, the more prosperous the town, although once again the lack of hard evidence prompts caution. Some features are not universal here: a tannery, a ropewalk, a coachmaker, a common brewer, a gas works, the main-line railway all featured in some but not all of these small towns, while large-scale makers of clothing and of furniture were completely absent.

Trinder also observes that 'the presence in a town of an iron foundry' was 'a sign of its virility, and its absence that a community was not prospering'.[6] Tidcombe in Watford and Cranstone in Hemel Hempstead were clearly of this sort, although we note that this strongly agricultural county had no significant builder of agricultural machinery. The paper maker Dickinson was by any standards a manufacturer of national importance, and others made paper for distribution beyond the area, but there were no others before 1840.

The role of the canal is of course central to the discussion, and Trinder's model has been modified to take account of it, in particular the wharfs and the businesses and occupations related to them.

[5] Trinder, 'Market Town Industry', p.77; Mary Forsyth, *Watford* (Stroud, 2015), p.75.
[6] Trinder, 'Market Town Industry', p.81.

Feature (1790s)[7]	Tring[8]	Berkhamsted	Hemel Hempstead	Watford	Rickmansworth[9]
Complex central area with varied architecture housing retailers, craft manufacture, professionals	Partial	Partial	Yes	Yes	Partial
Specialist occupations serving local needs: Flour milling, tannery, malting, rope making	Yes	Yes	Yes	Yes	Yes
Specialist occupation: straw plait	Yes	Yes	Yes	Yes	Yes
Specialist manufactures for national (distant) markets	Small (Canvas)	No	Yes (Paper)	Yes (silk thread)	Yes (Paper, silk thread, cotton thread)
Production of local building materials	Flint	Timber	Bricks	Bricks	Limited – lime, bricks
Wealthy Residents and landowners	Yes	Yes	Yes	Yes	Yes
Transport providing freight links to national centres	Turnpike, waggon services	Turnpike, waggon services	Turnpike, waggon services	Turnpike, waggon services	Turnpike, waggon services
Active market serving needs of the area	Partial	Declining	Yes	Yes	Declining
Market Town in terms of those of the time?	Limited	Limited	Yes	Yes	Limited

Table A-1
Attributes of west Hertfordshire towns in the 1790s

[7] *Universal British Directory of Trades, Commerce and Manufacture* (London, 1792-1798), vol II, pp.278-282 (Berkhamsted), Vol IV pp. 688-704 (Watford), pp.254-256 (Hemel Hempstead).
[8] Tring has a description but no listing.
[9] Rickmansworth is not mentioned in the Directory. Information is taken from Holden's *Annual London and County Directory for the year 1811* (London, 1811 – reprinted Norwich, 1996), Vol III.

Feature (1841)	Tring	Berkhamsted	Hemel Hempstead	Watford	Rickmansworth
Innovation and organisation in Transport (1) turnpike (with road transport facilities) (2) canal wharf in town centre (3) nationally advertised canal destination (4) cargo-carrying railway	(1) Yes (2) Close (3) No (4) Not yet	(1) Yes (2) Yes (3) No (4) Not yet	(1) Yes (2) Close (3) No (4) Not yet	(1) Yes (two) (2) Close (3) No (4) Not yet	(1) Yes (two) (2) Yes (3) No (4) No
Commercial Breweries	Yes	Small	Small	Yes (x 2)	Yes
Commercial Maltings for distant brewers	No	No	No	No	No
Engineering works (eg from iron works)	No	No	Small	Yes	No
Boat building or repair yard	No	Yes	No	No	No
Canal Warehousing	Small	Small	Yes	Small	Small
Water-borne building materials (stone, slate, timber)	Yes	Yes	Yes	Yes	Yes
Regulated market activity - market charter etc	Small	In decline	Yes – mainly wheat	Yes	In decline
Developed facilities – (1) market hall (2) assembly rooms (3) boarding schools (4) legal and financial services	(1) No (2) No (3) No (4) Partial	(1) Declining (2) No (3) Yes (4) Yes	(1) Yes (2) Yes (3) No (4) Yes	(1) Yes (2) Yes (3) Yes (1841) (4) Yes	(1) Decrepit (2) No (3) No (4) Limited
Printing services	Yes	Yes	Yes	Yes	Yes
Mix of shops, workshops and dwellings	Yes	Yes	Yes	Yes	Yes
Manufacturing Industry	Silk	No	Paper	Silk, paper, engineering	Paper

Feature (1841)	**Tring**	**Berkhamsted**	**Hemel Hempstead**	**Watford**	**Rickmansworth**
Specialist manufactures for national (distant) markets	Small (Canvas)	No	Yes (Paper)	Yes (silk thread)	Yes (Paper, silk thread)
Market Town in terms of those of the time?	Limited	Limited	Yes	Yes	Limited

Table A-2
Attributes of west Hertfordshire towns in 1841

Appendix B

Analysis of Trades etc of west Hertfordshire Towns 1839

Based on Pigot's 1839 Directory, this is not a definitive listing of the trades extant in any town or village, since the trader had to pay to be included.[1] But it does show the significant commercial activities, and in many cases confirms data in the canal-related property listing derived from the 1841 Census (Appendix C) and the tithe maps and apportionments (Appendix E). It does not seek to convey accurately the number involved, nor show the standard trades (butchers, bakers, shoemakers) which existed in every parish unless there is some special reason for doing so. It informs the 'Market Town' analysis in Appendix A.

It can be seen that all these towns provided the main services. The larger towns, especially Watford and Hemel Hempstead, had a reasonably full range of services and trades - although Watford is not credited with a bank, Mary Forsyth is clear that there was one.[2] Rickmansworth's 1839 entry states flatly that 'the business transacted at [the market] is by no means important', but the range of other services is reasonably wide, as are those of Berkhamsted, the smallest of the towns. Even the linked Abbots Langley and King's Langley, whose combined 1841 population was at 3,700 larger than that of Berkhamsted (3,000), did not generate nearly as much service industry.

All the entries in Pigot's 1839 Directory list the available waggon services, but only that for Hemel Hempstead details the canal carriage services, although the presence of the canal is noted in all while some of the entries refer to the available train services. Nonetheless, the general influence of the canal in the towns can be seen in the traders related to the canal and the other activities in which they engaged.

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[1] Pigot's *Royal National and Commercial Directory and Topography of the Counties of Essex Herts and Middlesex* (London, 1839) pp. 174-176, 187-190, 199-200, 203-204, 213-215, 217-220, accessed through www.ancestry.co.uk consulted 9 April 2016.
[2] Mary Forsyth, *Watford* (Stroud, 2015), p. 75.

Berkhamsted and Northchurch (Pigot's, 1839)[3] Formerly lace making and the manufacture of wooden ware was carried on extensively here, but have become nearly, if not entirely, extinct. Brewing, malting and the making of straw plait are the present existing branches.	
Trade or Occupation	**Number (Name and Location where relevant)**
Attorney	2
Bankers	Aylesbury Branch Bank
Bell hanger and whitesmith	1
Blacksmith	2
Boat Builder	1 - John Hatton (Castle Wharf)
Bookseller	1
Brewer and Maltster	3 - Foster, Mills and Tomlin
Butcher	9 (inc John Tompkins, Coal Merchant, + 3 others of name)
Carpenter	8
Carrier and agent for Pickford & Co	1
Coach builder	1 - John Pethybridge (High Street)
Coal Dealer	Chas Collins (wharf – not specified, actually Raven's Lane); John Tompkins (Castle Street Wharf) John Hatton Richard Harris (High Street)
Cooper	1
Farmers	5
Grocer & Sundries	23
Ironmonger	2
Linen and Woollen Draper	6
Maltster	3 - Foster, Mills and Tomlin
Millers	2 - Norris & Littleboy (Lower Mill), George Cook (Upper Mill)
Nursery and seedsman	1 - Henry Lane & Son (High Street)
Rope Maker	1
Shopkeeper	1 listed
Tea Dealers	1
Timber and Slate merchant	1 - William Key & Son (High Street)
Turner and Shovel Maker	4
Wheelwright	2

Table B-1
Berkhamsted Occupations

[3] Pigot's *Directory,* pp. 174-176.

Watford (Pigot's, 1839)[4]

A market town inc hamlets of Cashio, Levesdon and Oxhey. L&B railway noted, with station a mile away. GJC passes a mile to west - "the transmission of its products and the introduction of those of other places is effected, and a water communication maintained with the metropolis and the northern counties". Consists of one main street, nearly a mile and a half in length, well lighted with gas works established in 1834. Manufactures: silk, straw plait and paper; the malting business is extensive; and there are some corn mills of great power and one for the manufacture of oil cake.

Pop 1831 5293, of which the hamlets had 2960.

Aldenham and Bushey are included in the Directory but not here, except for comment.

Trade or Occupation	Number (Name and Location where relevant)
Attorneys	5
Auctioneers and Appraisers	1 (4 in Bushey!)
Bakers and Flour Dealers	11
Blacksmiths	8
Booksellers and Stationers	2
Braziers and Tinmen	4 (one also a bell hanger)
Brewers	3 - Dyson, Fearnley Whittingstall, Toppin (also silk throwster)
Bricklayers	5
Brickmaker	1
Butchers	15
Cabinet Makers	5
Carpenters	5, two of whom are also builders.
Chymists and Druggists	2 - one is also a "British wine dealer" and the other an "oilman".
Clothes Dealers	2
Coach Makers	2
Coal Merchants	4 - Cooper (Cashio Bridge, New Wharf), Ebbern (Lady Capel's Wharf), Howard (Grove Wharf), Rogers (Cashio Bridge Wharf and Watford).
Confectioners	3
Coopers and Vat Makers	3
Corn and Seed Merchants	2
Corn Chandlers and Mealmen	6
Earthenware Dealers	2
Engineers	1 - Tidcombe & Strudwick
Fire etc offices	8
Fishmonger	2
Furniture Brokers	2 (4 in Bushey)
Gas Works	1

[4] Pigot's *Directory,* pp.217-220.

Glass Rivetter	1
Grocers, Tea Dealers, Cheesemongers, Shop-keepers	19
Gunsmith	1
Haberdasher	1
Hair Dressers	4 (one also a bird stuffer)
Hop Merchants	2
Inns, Posting	4 (Railway Hotel, Essex Arms, George, Rose & Crown)
Iron Mongers	4
Leather Cutters	2, inc the tanner Thomas Wild (of Mill End, Rickmansworth)
Linen and Woollen Drapers	4
Maltsters	3 -Thomas Clutterbuck, George Draycott, Samuel Salter
Millwright	1
Millers	3 - Samuel Alum (Bushey Mill), James & Frederick Leach (Grove Mill), William Smith (flour and oil cake),
Milliners and Dressmakers	5, all women
Nurseryman	1
Paper Maker	1 - James Smith (Hamper Mills)
Pawnbroker	1
Plumbers, painters and glaziers	3
Printer	1
Ropemaker	1 (at Bushey)
Saddlers and Harness makers	4
Silk Throwsters	2 – Thomas Rock Shute, Thomas Toppin (also brewer)
Stone Mason	1
Straw hat Makers	4, all women
Surgeon	6
Surveyors and Estate Agents	2 - (there were 3 in Bushey).
Tailors and Drapers	7
Tallow Chandler	1
Taverns	19, inc Railway Arms. Leathersellers Arms houses the Excise Office.
Timber Merchants	Bellis, Eames, Rogers (Cashio Wharf)
Toy Dealers	2
Turners	2
Watch and Clock Makers	3
Wharfingers	3 - Cooper (Cashio Bridge New Wharf), Howard (Grove Wharf), Rogers (Cashio Bridge Wharf and Watford).
Wheelwrights	3
Wine and Spirit Merchants	3

Table B-2
Watford Occupations

Tring (Pigot's, 1839)[5] Canvas, Straw Plait, Silk and parchment are the main manufactures… silk… employs more than three hundred hands.	
Trade or Occupation	**Number (Name and Location where relevant)**
Land Agent	2
Attorney	2
Auctioneer and Appraiser	5
Bookseller and stationer	2 (inc 1 printer)
Brewer	6
Cabinet Maker	3
Canvas manufacturer	4
Coal Dealers	Thomas Clark (Wilstone), William Grover (Gamnel Wharf), James Hanshaw (Dunsley), Thomas Landon (Cow Roast)
Coopers	2
Engineer	1
Fire Office agent	8
Hatter	3
Hay Dealer	1
Hop Merchant	2
Inns	5 (3 posting houses)
Iron Monger	4 (one also a watchmaker)
Maltster	2
Miller	2 (inc William Grover, Gamnel Wharf)
Rope Maker	3
Silk Throwster	1 (Evans)
Straw Hat maker	7
Straw Plait Dealer	9
Surgeon	3
Surveyor	2
Turner	3
Wharfinger	2 (Landon at Cow Roast, Grover at Gamnel)
Wheelwright	4
Wine Merchant	1

Table B-3
Tring Occupations

[5] Pigot's *Directory*, pp.213-215.

Hemel Hempstead (Pigot's, 1839)[6]

Includes Boxmoor, Bovingdon and Flaunden chapelries, and also Great and Little Gaddesden.

Town described as one street nearly a mile in length, within about a mile of GJC and a mile and a half from L&BR. Leading manufacture is paper, while 'straw plait employs a number of women and children'. Several corn mills in the vicinity. Market 'a superior one for corn', large cattle show or market Holy Thursday. Entire parish population, inc Bovingdon and Flaunden, was 6037 in 1831 Census.
Boxmoor about 1½ miles west of Hemel Hempstead, and along with Two Waters is a suburb of the town.

Trade or Occupation	Name and Location
Agricultural Machine Maker	James Smith
Attorneys	Frederick Day, Smith and Grover
Auctioneers	Thomas Foster, John Griffin, Henry Humphrey, Alfred Watson.
Bakers and Flour Dealers	13
Bankers	Grover and Smith (draw on Dorrien, Magens & Co London)
Booksellers and Stationers	2
Boot and Shoe Makers	13
Braziers and tin-plate	2
Brewers	Mary Hall, John Wm Liddon (Bury Mill End), Isaac Winter (Two Waters),
Brick Makers	3
Brick layers	8
Butchers	17, including 4 at Two Waters
Canal Carriers	Goods are forwarded by wharfingers: George Howard, John Austin, Norris & Pedley from Boxmoor 'independent wharves'; Thomas Ebborn from St Albans Wharf, and John Gore from Two Waters. Carriers: Pickford & Co to **London, Birmingham and Dudley etc** daily: also Kenworthy & Co, Whitehouse & Sons, Robins Mills & Co, Crowley, HicKing's Langleying & Co, Worster & Stubbs; Deacon & Harrison; Shipton & Pratt; Thomas & William Tildesley & Sturland; Bache; Horseley Iron Works Co; Landon & Sons. Also Pickford & Co and Ann Landon & Sons to Aylesbury; to Coventry, Pickfords and Thomas Bache; To Leicester, Market Harborough, Northampton etc: Pickfords, Deacon & Harrison, and Worster & Stubbs; to Manchester, the Potteries and all intermediate places: Pickfords, Crowley Hitchin & Co, Kenworthy and Co; Robinson & Co; and G R Bird & Son.

[6] Pigot's *Directory,* pp.187-190

Carpenters	10
Carriers (by road)	To London: Batchelor and Hughes from White Hart (Mon and Thurs afternoon), and Claridge and Young pass through Tuesday and Friday evening. To Leighton Buzzard: Claridge and Young pass through Sunday and Thursday Morning.
Chemists	3
Clog and Patten Maker	1
Clothes Dealers	4
Coachbuilder	1
Coal Merchants and Dealers	John Austin (Fishery Wharf, Boxmoor), Thos Ebborn (St Albans Wharf (also salt)), George Howard (Boxmoor) (also stone); James Liddall, Henry Pedley, James Price
Confectioner	1
Coopers	William Greenhill and Sons, High Street; Wm Starman; James Wingrave
Corn Dealers	12, inc James Austin at Fishery Inn, Boxmoor and 3 in Two Waters.
Curriers	4, all in High Street
Fire Offices	5 branches, inc Joseph Cranston with 2.
Fruiterer	1
Furniture Broker	3
Gas Works superintendent	1 (Cranstone)
Grocers, hop and seed broker, provisions	20, inc George Marshall at Corner Hall and James Austin at Fishery Inn and several at Two Waters.
Hair Dresser	2
Inns	Bell (Two Waters), Bell (High Street), Fishery Inn, Kings Arms (Wm Deacon - also commercial, excise office and parcel agent for L&BR), Rose and Crown, Sun, Swan and White Hart.
Iron Monger	3, inc Cranstone - all in High Street
Linen Drapers etc	9
Maltsters	2, both at Bury Mill End
Millers	4 (Noak Mill, Bourne End, Piccotts End, Bury Mill End)
Milliners	7
Nursery and Seedsmen	4
Omnibus & Horse and Carriages for Hire	William Deacon (King's Arms), Mary Jones (The Bell)
Paper Manufacturers	Dickinson (Nash Mill and London & Manchester), William Hunter (Frogmore Mill), John Stevens (Two Waters Mill)
Paper Maker's Wire Weaver	Augustus Marshall (Nash Mill)
Plumbers, Painter, Glazier	3
Printer (Letterpress)	1
Rope Maker	2
Saddler	4
School	Not mentioned
Smiths and Farriers	8, inc Joseph Glenister at Corner Hall and James Priest at Two Waters
Straw Hat Makers	4, all women

Straw Plait dealer	5
Surgeon	5, inc house surgeon to W Herts Infirmary
Surveyor	John Griffin
Tailors (some also drapers)	9
Taverns and Public Houses	14, inc Three Tuns at Nash Mills and Queens Head at Corner Hall.
Timber Merchants	John Griffin (also surveyor), William Howard (Corner Hall) (also lath, slate and salt)
Toy Dealers	2
Veterinary surgeons	2
Watch and Clock makers	3
Wharfingers	John Austin (Boxmoor), Thomas Ebborn, St Albans Wharf, John Gore (Two Waters), George Howard (stone merchant) (Boxmoor), Norris and Pedley (Boxmoor)
Wheelwright	6
Wine & Spirit Merchants	George Howard (and agent for Guinness's Dublin Porter and Edinburgh Ale), George Thorpe (British Wine and Brandy)

Table B – 4
Hemel Hempstead Occupations

Rickmansworth (Pigot's, 1839)[7]

Assessed to property tax 1815 at £16737. Pop (1801) 2975, (1831) 4574. Waters of the three streams [Chess, Gade, Colne] work "several flour and paper mills", also "a silk mill worked by steam". Amount weekly for labour in paper and silk mills estimated at £700. Extensive brewery and coal wharfs on the canal, which give the town importance. Market long since discontinued.

Trade or Occupation	Number (Name and Location where relevant)
Attorney	Fellows
Auctioneer	1 (Sedgwick)
Bakers and Flour Dealers	9, inc 2 at Batchworth
Basket maker	1
Black- and Whitesmiths	2 (inc one Bellhanger)
Bookseller and stationers	2
Boot and shoemaker	11
Brazier, Cooper	1 (Joseph Horne)
Brewer	1 (Salter, Woodman & Co)
Chair maker	1
Chemists	2
Coach maker	1
Coal Merchants	3, inc John Cooper (Town Wharf), John Laxton (Batchworth Wharf).

[7] Pigot's *Directory,* p.203, 204.

Confectioner and glassmaker	1
Hair Dresser	1
Fishmonger	1
Fire Office	1
Furniture broker	1
Grocers and dealers in sundries	14, inc Henry Swannell - corn, hop and malt merchant and tallow chandler.
Gunsmith	1
Inns	3 - Bell (commercial and booking office), George and Swan (also posting and Excise Office)
Ironmongers	2, inc James Beeson
Lime Burners	3 - John & James Abbee (also brick and tile makers) (Chorleywood); John Cooper (also brick maker) (Cashio Bridge); Richard Kirby (Woodcock Hill)
Linen Drapers	4
Milliners and Dressmakers	5
Nursery and Seedsmen	3
Paper makers	4 - Dickinson (Batchworth – *Croxley not mentioned*), Chas & James Magness (Mill End), Lewis Munn (Solesbridge), Thomas Weedon (Scots Bridge and Loudwater).
Plumbers, Glaziers etc	3
Ropemaker	1 (also saddler)
Saddlers	2 (1 also ropemaker)
Schools	4, including the National School.
Surgeons	2
Tailors	7
Tanner	1 (Thomas Wild, Mill End)
Tarpaulin and sackmaker	1
Taverns and PH	19, inc at Sarratt, Mill End and Chorleywood
Veterinary Surgeons	3
Watchmaker and Gunsmith	1
Wheelwrights	2

Table B-5
Rickmansworth Occupations

King's Langley and Abbots Langley (Pigot's, 1839)[8]

GJC mentioned as passing through, with conveyance by water offered by the wharfingers John Monk (Waterside Wharf, King's Langley) and Obediah Oldfield (Hunton Bridge Wharf, Abbots Langley).

The train references are to Hemel Hempstead (Boxmoor) - no suggestion of trains stopping at King's Langley. Mail coaches "Royal Mail" to London every morning at 0445, back 2245; and "Despatch" between London and Aylesbury daily through King's Langley.

Trade or Occupation	Number (Name and Location where relevant)
Bakers and Flour Dealers	3 (King's Langley), 3 (Abbots Langley)
Black- and White- smiths	1 (King's Langley) (Monk, Waterside Wharf), 2 Abbots Langley.
Boot and shoemaker	6 (King's Langley), 4 (Abbots Langley).
Brewer	1 (John Groome)
Bricklayers	3 Abbots Langley, 3 (King's Langley)
Butchers	3 (King's Langley), 2 (Abbots Langley) + Hunton Bridge (Obediah Oldfield).
Carpenters	2 (King's Langley), 1 (Abbots Langley).
Coal Merchants & Wharfinger	John Monk, Waterside wharf (King's Langley) (also dealer in corn salt, hay, straw etc); Obediah Oldfield (Hunton Bridge Wharf, Abbots Langley),
Corn dealer and mealman	1 (King's Langley)
Fishmonger	1 (King's Langley)
Grocers	11 (King's Langley) inc John Monk (Waterside), 8 (Abbots Langley).
Iron Founders	1 (King's Langley)
Linen Drapers	None listed
Maltster	1 (Abbots Langley)
Paper makers	1 - Dickinson (Nash Mills) [no mention of Apsley, but Nash was the office].
Post Office	1 - John Roberts (King's Langley)
Plumbers, Glaziers etc	2 (King's Langley), 1 (Abbots Langley).
Saddlers	1 (King's Langley),
Schools	Not listed
Straw Plait dealer,	1 (King's Langley),
Tailors	3 (King's Langley, 3 (Abbots Langley)
Taverns and PH	Several, inc the Boat (John Monk, Waterside), Kings Head (Obediah Oldfield, Hunton Bridge), Red Lion (James Harley, Waterside – also a gardener),
Wheelwrights	2 (King's Langley), 2 (Abbots Langley)

Table B-6
King's Langley and Abbots Langley Occupations

[8] Pigot's *Directory*, pp. 199,200.

Appendix C

Occupational Abstract from 1841 Census – principal West Hertfordshire Parishes affected by the Canal.

No attempt has been made to sort or group the occupations, and the data, presented raw, are used to inform the text.

Occupation (Note 1)	Tring	Berkhamsted	Hemel Hempstead	Watford	Rickmans-worth	King's Langley	Abbots Langley	Total
"Illegible" (note 1)	562					8	1	571
"Merchant"	1	1		2			1	5
"Navigation"		1			2			3
Ag Lab	249	116	485	392	582	155	250	2229
"Appraiser"/Supervisor			2	5				7
Apprentice	4		20					24
Architect		1						1
Army/Navy	4	1	2	5	5		2	16
Artist			1	2				3
Attorney at Law/Solicitor	4	1	9	4	6			24
Auctioneer	1		1	1				3
Baker	22	8	20	16	21	9	3	99
Banking	3		1		1			5
Basket Maker	2	1	2	1	5		1	12
Boat Builder		3		1				4
Bone Dealer	1	5						6
Bonnet Maker	6		2	4	1	2	1	16
Bookbinder	1							1
Bookseller	1	1		1		1		4
Boxmaker					1			1
Brazier	3	3	2	6	3	1		18
Brewer	5	16	6	4	13	2	2	48
Bricklayer	27		16	16	33	5	9	106
Brickmaker	3	5	25	1	6	3	2	45

Occupation	Tring	Berkhamsted	Hemel Hempstead	Watford	Rickmans-worth	King's Langley	Abbots Langley	Total
Bridewell		2						2
Brushmaker		3	1		2			6
Builder	1	3	2	3	10	1	4	24
Butcher	14	14	14	22	14	3	3	84
Butler	6		1	1				8
Cabinet Maker/Chairmaker/Joiner	3		4	4	6	1		18
Canal Boatman	6	3	9			5	2	25
Canal Engineer/Surveyor					1			1
Canal Labourer (note 2)	2	2			3			7
Canal Lockkeeper	3	3	2	2	2		5	17
Carpenter	21	36	44	46	42	24	14	227
Carrier/Carter	5	8	1	8	4	2		28
Charcoal Burner		2						2
Charwoman	6	9	3	5	2			25
Chemist/Druggist	3	1	3	2	2			11
Chimney Sweep			8	1	1			10
Civil Engineer		2					1	3
Clergyman	2	3	5	3	3	1	1	18
Clerk		3	4	2	4	2	3	18
Coachmaker	1	1	0	10	2			14
Coachman	1	1	1					3
Coal Merchant/Factor		3	8	3	3	1		18
Cooper		3	3	2	2			10
Cook			1					1
Confectioner/Pastrycook	2		7	2				11
Copper Worker					1			1
Corn Merchant			7	5				12
Dairywoman/Milkman	1	2	1	1				5
Dissenting Minister	4	8	4	3	2			21

Occupation	Tring	Berkhamsted	Hemel Hempstead	Watford	Rickmans-worth	King's Langley	Abbots Langley	Total
Draper	6	18	12	16	6	1		59
Dressmaker	14	18	20	13	17	2	7	91
Drover	2							2
Dyer	1			2				3
Engine Driver	3							3
Engineer	1	1	6	5		1	9	23
Excise Officer			3	3	3	5		14
Farmer/Bailiff	31	18	60	31	59	14	34	247
Fellmonger	1			5				6
Female Servant	95	123	184	295	170	46	78	991
Fishmonger	1		3	1				5
Fruiterer				1		1		2
Furniture Broker		1	1		0			2
Gamekeeper			2	5	2		1	10
Gardener	10	21	18	36	33		9	127
Gas provision		1	1		3			5
Gentry		9	3					12
Ginger beer maker		1	1					2
Glazier	1	1	0					2
Glover			1	1				2
Grazier	4							4
Greengrocer				2	2			4
Grinder		1						1
Grocer/Tea Dealer	14	14	12	17	19	5	4	85
Groom/Ostler	1	1	5	8	7		1	23
Hairdresser		6	1	9	3			19
Hatter			4	1		2		7
Hawker	1	1		9				11
Hay Dealer/Carter			2			4	2	8

Occupation	Tring	Berkhamsted	Hemel Hempstead	Watford	Rickmans-worth	King's Langley	Abbots Langley	Total
Housekeeper	4		3	1			1	9
Huntsman	1				2			3
Independent (note 3)	34	106	115	169	142	39	53	658
Insp of Taxes	1	1	0					2
Iron Founder		2	2	1				5
Ironmonger	2	1	1	4	3	1		12
Labourer/Porter (note 2)	182	142	191	243	29	19	21	827
Lace Maker	20	6	6		8		1	41
Land Surveyor	4	2	7	2	3	1		19
Lath maker		2	1	1			1	5
Male Servant	45	39	86	137	91	42	54	494
Maltster	4		1	3	1		3	12
Market Gardener								0
Mason		3	1	3	1			8
Mealman		1			1		1	3
Mechanic		1						1
Milliner	6	1	16	4	5			32
Miller	3	4	5	9	5	5	9	40
Millwright	1	3	5	9	4	2	6	30
Miner	6			1				7
Needlework	1	5	7	5	10			28
Not stated (note 4)	795	522	1021	1453	1222	457	505	5975
Nurse	8	2	7	4	18	2		41
Nurseryman		1	1	1	4		1	8
Painter	5	9	9	13	8		3	47
Papermaker			21	59	130	15	71	296
Parchment Maker	3							3
Peddlar			1					1
Perfumier		1			1			2

Occupation	Tring	Berkhamsted	Hemel Hempstead	Watford	Rickmans-worth	King's Langley	Abbots Langley	Total
Pig Dealer, cattle dealer, sheep dealer	3			1	1	1		6
Plasterer		3	1	4	2			10
Plumber	5	4	7	2	8	5	1	32
Police	4	3	4		1	1	3	16
Poor House?		7						7
Post Boy/man, postmistress/master	2	1	2	8	2			15
Printer	4		2	2				8
Publican/Innkeeper/Victualler	14	13	31	38	31	8	14	149
Rag Sorter/cutter/picker			2	4	60		1	67
Rake Maker					2			2
Railway Inspector		1		2				3
Railway Labourer				12				12
Railway Police		2		5				7
Rope Maker		1	1					2
Saddler/harness maker	9	6	4	10	6	1	6	42
Sawyer	8	9	9	8	13	4	7	58
School/Teacher/Governess	9	17	24	23	15	7	8	103
Sexton		1						1
Shepherd		2	1	2				5
Shoemaker	31	32	55	86	29	15	19	267
Shopkeeper/Higler/Dealer	5	9	12	10	11		4	51
Shovelmaker			3					3
Silk Mill	128			105	18	1		252
Smith	5	15	24	29	27	2	18	120
Stationer		1	1	3	2	1		8
Stone Layer		1			1			2
Straw Factor/Dealer	14	2	9	1		2		28
Straw Plait/work	333	146	131	9	80	2	3	704

Occupation	Tring	Berkhamsted	Hemel Hempstead	Watford	Rickmans-worth	King's Langley	Abbots Langley	Total
Superintendant of works	1							1
Surgeon	3	3	6	7	5	4		28
Tailor	14	20	2	29	21	11	9	106
Tallow Chandler		1	19					20
Tanner					4			4
Tax Collector			1					1
Tile Cutter			1					1
Timber Carter		2						2
Timber Dealer/merchant		2	1	1				4
Tinker			1					1
Traveller			3					3
Turner		9	1	7				17
Type Cutter/Founder/Engraver			45			3	3	51
Umbrella maker			1					1
Union Workhouse		3		5				8
Upholsterer		1	1	1				3
Veterinary Surgeon					2			2
Washing	5	3	10	8	21	2	7	56
Watch/clockmaker	2	3	3	3	1			12
Weaving	81	1	2	1				85
Wharfinger	1		2		4			7
Wheelwright	6	6	7	12	7	2	4	44
Whitesmith	1	5		5	4			15
Wire Weaver			2				3	5
“Woodsman”	3							3
Writer			1					1
Total Adult Population of Parish	2982	1699	3003	3610	3169	962	1290	
Full Census population								
							Total adult population of non-agricultural parishes	**16715**

Notes:

1. The towns have been arranged from north to south, with the larger villages King's Langley and Abbots Langley shown next to them for comparison. The occupations have been transcribed as shown by the enumerator - no attempt has been made to interpret them, or (for this purpose) to group them, since the purpose is to show what occupations existed in each parish rather than to carry out a statistical analysis. The returns for Tring, affecting mainly the town, have been found have several pages illegible in the on-line presentation by the National Archive through www.findmypast.co.uk: no attempt has been made to correct for this, and the data are shown as "missing" with no conclusion to be drawn from them.

   This abstract has included those who might have been expected to be "in the workforce": where children (those under 12) are shown to have occupations they have been included as if "adult", but where not they have been simply omitted. It is nonetheless accepted that most children in this area at this time will have had to be productively employed, probably working with their parents, but this has not been assumed.

2. The number of labourers identified as associated with the canal is very small; in some parishes there are none at all. It is likely that at least some of those listed seemly as 'labourer' were in fact working on the canal, but it is not possible to identify them.

3. The immediate family of those shown as "of independent means" have usually been counted also as "independent" where no occupation is shown.

4. The number "not stated" forms a large proportion of the population in each parish. They are overwhelmingly women, and are very likely to have been in occupations next to their spouse – so where the "male head of the household" is a farmer the rest of the family will have been working on the farm, and where an Ag Lab they will have been in some sort of farm-related work, possibly part-time or seasonal. This is not necessarily so, however: some women not apparently employed will probably have been "straw plaiting", and many will have been fully occupied as "house wives" and parents. No assumption has therefore been made, and the number "not stated" included without further comment, except for the Chapter 4 analysis of the possibility that many of the women without stated occupation were in fact working in the paper mills as "rag cutters and sorters", a group otherwise absent from the Census.

Appendix D - Boat and Barge ownership, operation and building in Hertfordshire 1802-1841

This data is drawn from the extant Gauging Registers of the Grand Junction Canal Company Vols 1-64 (1802-1841.[1]

Not all of the sequence is available, and many have no Hertfordshire relevance. Those which have not been used are indicated.

Vol (Year)	Gaug-ing No	Name or Fleet No (where stated)	Owner/ Operator	Place of Ownership	Builder and year (where known)	Notes
Vol 1 (1802)	8	No 1	William Wilkins	Wendover	Mr Hughes, Braunston (1801)	Narrow boat – general cargo between Paddington, Stoke [Bruerne] and Wendover
Vol 1 (1802)	11	No 2	William Wilkins	Wendover	Mr Hughes, Braunston (1801)	Narrow boat – general cargo between Paddington, Stoke [Bruerne] and Wendover
Vol 1 (1802)	30	Tyrringham (No 2)	John Holladay	Watford	Joseph Piper, Hammersmith (1799)	Barge – hay.
Vol 1 (1802)	31	No 1	Sir Christopher Baynes Bt	Harefield	Thomas Cotton, Banbury (1799) (for GJCCo)	Narrow boat – lime between Harefield and Paddington
Vol 1 (1802)	40	William Praed (No 7)	James Tate	Tring	Joseph Piper, Hammersmith (1801)	Barge - hay to London
Vol 1 (1802)	48	Watford (No 1)	John Holladay	Watford (later of Berkhamsted? – see tithe award)	Joseph Piper, Hammersmith (1801)	Barge - coal and timber between Watford, Brentford and Paddington.
Vol 1 (1802)	51	Berkham-stead Castle	William Butler	Berkhamsted	Peacock and Willetts, Berkhamsted (1801)	Barge - hay and coal between Berkhamsted and London
Vol 1 (1802)	68	Trio (No 2)	Sir Christopher Baynes Bt	Harefield	Joseph Piper, Hammersmith (1802)	Barge – lime from Harefield to Brentford and Paddington.

[1] NWA BW99/6/5/1-6, 8-34, 122 (Gauging Registers)

Year (Vol)	Gaug-ing No	Name or Fleet No (where stated)	Owner/ Operator	Place of Ownership	Builder and year (where known)	Notes
Vol 1 (1802)	73	No 2	John Saunders	Brentford	Mr Ayres, Reading (1801)	Barge – coal from Thames to Berkhamsted and Paddington
Vol 1 (1802)	77	No 3	Sir Christopher Baynes Bt	Harefield	Joseph Piper, Hammersmith (1801)	Barge – lime and bricks from Harefield to Paddington
Vol 1 (1802)	80	Providence (No 3)	William Wilkins	Wendover	Mr Ayres, Reading (1802)	Barge – hay from Wendover to Thames
Vol 1 (1802)	91	Fair Trader	Newman Hatley	King's Langley	Joseph Piper, Hammersmith (1801)	Sailing barge - corn & flour King's Langley to Thames.
Vol 1 (1802)	92	Thomas (No 1)	Thomas Coleman	Gray's Inn, London	Mr Warner, Pangbourne (1791)	Barge, coal and dung between Thames and Berkhamsted. Built for West of Windsor, sold to Bentley of Cassiobury and then to Coleman
Vol 1 (1802)	97	Trojan	Thomas Howard	Troy, Rickmansworth	Joseph Sawyer, Hammersmith (1796)	Wide beam, 45ft long. Rigged for sailing, in foul condition despite being used for corn and flour.
Vol 1 (1802)	98	Earl Temple	James Tate	Tring	Joseph Piper, Hammersmith (1796)	Barge - hay from Tring to R Thames
Vol 2 (1802)	115	No 4	Sir Christopher Baynes Bt	Harefield	NK	Barge – bricks and lime from Harefield to Fenny Stratford and London.
Vol 2 (1802)	119	No 8	John Hodder	Harefield	NK	Barge – trade nk.
Vol 2 (1802)	123	Watford (no 2)	John Holladay	Watford	nk	Barge – coal trade
Vol 2 (1802)	129	No 1	William Howard	Boxmoor	Mr Warner, Pangbourne (1799)	Barge – trade nk.
Vol 2 (1802)	133	No 2	Howard & Sedgwick	Troy, Rickmansworth	Mr Warner, Pangbourne (1802)	Sailing barge – half-decked, presumed for corn & flour.

Year (Vol)	Gaug-ing No	Name or Fleet No (where stated)	Owner/ Operator	Place of Ownership	Builder and year (where known)	Notes
Vol 2 (1802)	141	No 2	William Howard	Boxmoor	Hobbs (1796)	Barge – coal & timber to and from the Thames.
Vol 2 (1802)	146	No 1	Emmott Skidmore	Rickmansworth	Mr Warner, Pangbourne (1795)	Barge - general carrier
Vol 2 (1802)	153	Delrow	William Stapleton	White Friars	nk	Barge, in dairy trade. Bought from Mr Perkins of Lady Capel's Wharf.
Vol 2 (1803)	157	George	Thomas Homer	Paddington	nk	Barge – bought from Mr Ashness of Hemel Hempstead in 1801.
Vol 3 (1804/5)	218	No 1	Thomas Ebburn	Sow, Warks (on Oxford Canal near Coventry)[2]	Shaw, Birmingham (1799)	Narrow boat, to and from Paddington on coal trade. Thomas Ebburn Jr was to become an important figure in Hertfordshire waterways history, and his progress is included.
Vol 3 (1804/5)	279	No 1	Edward Ellis	Hertford	Best, Hertford (1800)	Barge, timber trade on R Lea to and from Thames
Vols 4,5,6						Not available. Vol 4 exists, but the pages are not legible.
1807 (Vol 7)						No entries relating to Hertfordshire
Vol 8						Not available
Vol 9 (1808)	813	No 1	John How	Berkhamsted	Nk	Barge – trade nk.

[2] http://www.oldtowns.co.uk/Warwickshire/sow.htm, accessed 18 Jan 2016.

Vol (Year)	Gaug-ing No	Name or Fleet No (where stated)	Owner/ Operator	Place of Ownership	Builder and year (where known)	Notes
Vol 9 (1808)	852	No 3	Howard & Son	Berkhamsted	Nk	Narrow boat, coal trade
Vol 10 (1809)	948	No 1	William Fantham	Wendover	Nk	Narrow boat, general carrying
Vol 10 (1809)	963	No 3	William Haycock	Wendover	Bird, Birmingham	Narrow boat, general carrier. NB: Haycock must have had at least 2 boats listed in vols 4, 5, 6 or 8.
Vol 11 (1810)	1035	No 4	William Howard	Boxmoor	Nk	Narrow boat, in coal trade.
Vol 12 (1810)	1175	No 1	Thomas Landon	Cow Roast (Northchurch)	Nk	Narrow boat, general carrier.
Vol 12 (1810)	1110	No 4	William Haycock	Wendover	Nk	Narrow boat, in coal trade.
1811 (vol 13)						No entries relating to Hertfordshire
1811 (Vol 14)	1324	No 1	John Brown	Berkhamsted	Nk	Narrow boat, general carrier
Vols 15 - 17						Not available
1814/15 (Vol 18)						No entries relating to Hertfordshire
Vols 19, 20						Not available

Year (Vol)	Gaug-ing No	Name or Fleet No (where stated)	Owner/ Operator	Place of Ownership	Builder and year (where known)	Notes
Feb 1817 (Vol 21)	2005	No 1	John Beales	Watford	nk	Narrow boat, trade not stated.
Sep 1817 (Vol 21)	2071	Charlotte (No 1)	Mines Royal Copper Co	Harefield	nk	Barge, copper to London
Vols 22-24						Not available
Vols 25, 26						No entries relating to Hertfordshire
Sep 1823 (Vol 30)	2951	nk	Thomas Ebburn (senior)	Sow (Warks)	nk	Narrow boat, trade not stated (but likely to be coal to London) (note 1)
Jan 1824 (Vol 30)	2969	nk	Thomas Ebburn (senior)	Sow (Warks)	Nk	Narrow boat, trade not stated (but likely to be coal to London) (note 1)
Vol 31						Not available
Vol 32 (1823)	3113	nk	John Hatton	Berkhamsted	Nk (see note)	Narrow boats – trade not stated. John Hatton was a boat builder and coal dealer in the 1839 Trade Directory – reasonable to assume that he built as well as operated his own boats.
Vol 32 (1823)	3118	nk	John Hatton	Berkhamsted	Nk (see note)	
Vol 32 (1823)	3119	nk	John Collins	Berkhamsted	Nk	Narrow boat, trade not stated.
Vol 32 (1823)	3132	nk	Longman & Co	Nash Mill	nk	Narrow boat. Longman, the publisher, was the partner of John Dickinson, and this boat will have been part of that business.

Year (Vol)	Gaug-ing No	Name or Fleet No (where stated)	Owner/ Operator	Place of Ownership	Builder and year (where known)	Notes
Vol 32 (1823)	3188	nk	William Landon	Aylesbury	nk	Narrow boat – trade not stated. Likely to be a family connection with Thomas Landon of Cow Roast and Ann Landon of Aylesbury, who later appears as a canal carrier in her own name.
Vol 34 (1825)	3345		John Johnson	Lady Capel's Wharf	nk	Narrow boat
Vols 35, 37						Not available
Vol 36						Damaged, not readable
Oct 1828 (Vol 38)	3747	nk	John Bunn	Berkhamsted	nk	Narrow boat. John Bunn described as "carrier" in 1841 Census, poss. link to James Bunn, blacksmith in 1839 Trade Directory or James Bunn lockkeeper.
Sep 1829 (Vol 38)	3784	nk	John Dickinson	Nash Mill	Nk	Narrow boat, trade not stated but likely to have been taking paper to London and rags back.
Vol 39						No entries relevant to Hertfordshire – mainly Wolverhampton and London carriers.
Mar 1829 (Vol 40)	3985		Thomas Ebbern (senior)	Sow, Warks?	nk	Narrow boat, trade not stated but likely to have been coal. (Note 1)
Vol 41						No entries relevant to Hertfordshire, some pages illegible.
Vol 42						Not available
Vol 43 (1831)	4226	Charlotte	Mines Royal Copper Co	Harefield	nk	Barge – trade not stated, but clearly related to the copper business.

Year (Vol)	Gaug-ing No	Name or Fleet No (where stated)	Owner/ Operator	Place of Ownership	Builder and year (where known)	Notes
Vol 43 (1832)	4254	nk	John Hatton	Berkhamsted	Nk, but likely to have been himself.	Not stated, likely to have been coal.
Vol 43 (1832)	4261	nk	John Hatton	Berkhamsted	Nk, but likely to have been himself.	Not stated, likely to have been coal.
Vols 44, 45						Not available
Vol 46						No entries relevant to Hertfordshire
Vol 47						Not available
Vol 48						Nothing relevant to Hertfordshire
Vol 49 (1832)	4864	nk	Thomas Ebbern & Lane	Sowe (sic)	nk	Narrow boat – trade not stated, but likely to have been coal. (note 1)
Vol 49 (1832)	4868, 4869, 4870	nk	Thomas Ebbern (junior)	Durrants Hill Wharf, Hemel Hempstead	nk	Narrow boats, trade not stated. In the 1843 Tithe Award Thomas Ebbern (note 1) is the owner of this wharf (plot 1117) – see Ch 4.
Vol 49 (1832)	4873	nk	Ann Landon & Sons	Aylesbury	nk	Narrow boat
Vol 49 (1832)	4875	nk	Thomas Ebbern (junior)	St Albans Wharf, Hemel Hempstead	nk	Narrow boat, trade not stated. This wharf was at Apsley, not part of the Boxmoor wharf complex. (note 1)
Vol 49 (1836) (sic)	4886	nk	Thomas Landon	Aylesbury	nk	Narrow boat, trade not stated. Likely to have been related to Ann Landon.

Year (Vol)	Gaug-ing No	Name or Fleet No (where stated)	Owner/ Operator	Place of Ownership	Builder and year (where known)	Notes
Vols 50, 51 (1835-38)						No entries relevant to Hertfordshire. It is noticeable that most new gaugings are in the Midlands, notably in Birmingham.
Vols 52-55						Not available
Vols 56,57						No entries relevant to Hertfordshire
Vols 58-63						Not available
1841 (Vol 64)	6315	nk	John Hatton	Berkhamsted	Nk, but likely to have been himself.	Not stated, likely to have been coal.
1841 (Vol 64)	6325		James Hobb	Marsworth	nk	Not stated.
1841 (Vol 64)	6336	nk	John Hatton	Berkhamsted	Nk, but likely to have been himself.	Not stated, likely to have been coal.

Notes:

1. Thomas Ebburn of Sowe, Coventry (1773-1842), was shown having gauged a boat carrying coal to London in 1804 (Vol 2), and Thomas Ebbern of Sowe of two more in 1823/4, another in 1829 and another (with Lane) in 1832 – there may have been more in the missing registers.

   In 1832 Thomas Ebbern of Durrrants Hill Wharf (which the Tithe Award show that he owned, but which was operated by William Robinson) gauged 3 boats, and another at St Albans Wharf (which he both owned and operated).

   The 1841 Census shows one Thomas Ebbern at Sowe as a farmer aged 66, and Thomas Ebburn at Watford (Lady Capel's Wharf) a coal merchant aged 40, (he also owned a building plot at Two Waters).

   Despite the varied spellings it seems likely that they were father and son, both active in the coal trade in the early 1840s with the son building a prosperous business (complete with landownership) split between Watford and Hemel Hempstead.

Appendix E –
Principal Canal-related Property

From Tithe Maps 1838-1844 - Hertfordshire Parishes (north to south).[1]

Landowner	Date Plot No	Occupier	Usage
Puttenham			No facilities provided
Tring			There is no tithe award for Tring.
Aldbury	**1840**	DSA4/2/2	No facilities provided
Wigginton	**1842**	DSA4/73/2	
GJCCo	140	Self	Lock House
Countess of Bridgewater	141	Thomas Landon	House, wharf
Elizabeth Loxley	142	Thomas Landon	Cow Roast inn
Northchurch (western)	**1840**	DSA4/73/2	
Society of Friends	102	James Dell	Garden
James Dell	101	Self	Iron Foundry, Blacksmith's shop
James Dell	103	Self	House, barn & yards
Pickford & Co	84	Self	Cottage, stables, Meadow
James Dell	85a	Thomas Green, John Pocock, William Turton	Beerhouse
James Dell	85	Self	
Countess of Bridgewater	49	Thomas Landon	Cowroast Wharf & Yard
Countess of Bridgewater	52	Thomas Landon	Cowroast Inn
GJCCo	82		
GJCCo	82a		The Canal
GJCCo	9		Cowroast Lock/Toll house
Berkhamsted	**1839**	DSA4/19/2	
Duchy of Cornwall	344	Countess of Bridgewater	Wharf and Yard
Duchy of Cornwall	342	George Cook	House
John Tompkins	356	Self	(Castle) Wharf and Yard
Execrs Charles Gordon	380, 389	Charles Collens	Meadows
John Dunn	394	William Key	Part of Wharf
David Norris	396, 397	Sarah Claridge	Part of Wharf
Charles Collins	400	Joseph Goodman and others	Cottages
Berkhamsted School	401	John Hatton	Garden
Berkhamsted School	403	John Hatton	House, Yards and Wharf
James Hailey	404	John Hatton	Garden

[1] HALS DSA4/73/2 (Wigginton), DSA4/2/2 (Aldbury), DSA4/73/2 (Northchurch), DSA4/19/2 (Berkhamsted), DSA4/48/2 (Hemel Hempstead), DSA4/64/2 (King's Langley), DSA4/63/2 (Abbots Langley), DSA4/111/2 (Watford), DSA4/80/2 (Rickmansworth)

Landowner	Date Plot No	Occupier	Usage
Berkhamsted (Contd)	**1839**	DSA4/19/2	
Berkhamsted School	395	William Key, Hannah Picton	House, cottage, timber yard & buildings
Countess of Bridgewater	409, 411	Daniel Norris, Sarah Littleboy	Part of Mill Head, part of Mill, House
Hon William Booth Gray	406, 407	Self	River Meadow, river in same
GJCCo	337		The Canal
GJCCo	381	Charles Howard	Ravens Lane Lock House
GJCCo	339	Thomas Archer	Lock House, lock 53
GJCCo	118	John Allum	Lock 49 (Northchurch) Lock house
GJCCo	129	Henry Wimbush	Lock 50 (Bushes) Lock House
GJCCo	149	Francis How	Lock 51 Lock House
Northchurch (eastern)	**1840**		
David Batchelor	733	Charles Collens	(Ravens Lane) Wharf, house & Yard
Countess of Bridgewater	552	Daniel Norris	Part of (Lower) Mill
Countess of Bridgewater	504	Sarah Littleboy	House (Bourne End), Mill, etc
James Field	559	Joseph Tents, James Weedon	Smithy?
GJCCo	734	Self	Strip next to Lock 55
GJCCo	558	Self	Lock 55 (Top Side)
GJCCo	676a	Self	Lock 56 (Bottom Side)
GJCCo	564	Self	The Canal
Hemel Hempstead	**1843**	DSA4/48/2	
Corner Hall div			
GJCCo	1035a	Self	Canal from Belswains to Dock
GJCCo	1100	William Hunter	(Frogmore) Mill Head and Tail from 1038 to parish boundary
GJCCo	1106	William Hunter	Mill House, yard, garden etc
GJCCo	1111	Thomas Emily	Lock House and Garden
GJCCo	1107	William Johnson	Cottage and Garden
Rev Christian Borkhardt	1225	Thomas Franklin	Brick kiln Ground
Rev Christian Borkhardt	1225a	Thomas Franklin	Brickfield
Rev Christian Borkhardt	1226	Thomas Franklin	Wood in ditto
William Cole	1055	Joseph Freeman	Beer shop & premises
Thomas Elisha Deacon	1025	Self	House, tannery & premises
Thomas Elisha Deacon	1025a	Self	Buildings & yard
Thomas Elisha Deacon	1031	Self	Farm buildings

Landowner	Plot No	Occupier	Usage
Hemel Hempstead (Contd)		DSA4/48/2	
Thomas Ebburn	1112	Self	Great Field (arable) (13 acres)
Thomas Ebburn	1113	Self	Cottage, (St Albans) Wharf, dock
Thomas Ebburn	1115	Self	Gravel Pit (I rood)
Thomas Ebburn	1117	William Robinson	Cottage, garden & (Albion) wharf
Rev Thomas White	1032	William Howard	House & garden
Rev Thomas White	1033	Horatio Hawkins	Yard, wharf, dock, building, house and garden (1 acre)
John Dickinson	1110	Self	Meadows and River by Frogmore End
Two Waters Division			
John Gore	1101	Self, Thomas Turner, empty	Wharf & two cottages
John Dickinson	1096	Self	Meadow at Apsley
John Dickinson	1097	Self	Stream in ditto
Charles Statham	591	Elizabeth Kinder	Meadow at Two Waters
George Davison	593	Self	Meadow at Two Waters
John Smith	592	Self and Ruth Godwin	Meadow at Two Waters
Thomas Ebburn	1074	Self	Building Ground
Field's End division			
Boxmoor Trustees	612	GJCCo	Clay Pits
Boxmoor Trustees	1028	Robert Bleakley, William Tipping	Boxmoor Wharf, buildings etc
GJCCo	1035	self	Canal and Towpath from Billingsgate to Howard's Wharf
GJCCo	57	Thomas Boyle	Lock House and Garden
GJCCo	605	John Jeffrey	Lock House and Garden
GJCCo	599	Richard Cooper	House, premises and garden
GJCCo	600	John Stevens	House, (Two Waters) mill, premises, garden
GJCCo	601	John Stevens	Mill head and tail from canal to 1041
GJCCo	602	John Stevens	Garden
Elizabeth Field	53	James French	Wharf and Stable (Winkwell)
Josiah Hales	627	Self	House, foundry etc
John Woodstock	628	Self and others	House, Mill, 9 cottages and Beer House
Town Division			
John Austin	332	Self, James Austin & others	Public House, cottage, wharf, 8 other cottages at the Fishery.
Charles Lambert	359	William Hunter and others	Mill cottages and Gardens at the Fishery
Gas and Coke Company	680	John Cox	Gas House, yard and Garden
Sarah Hill	759	Self	Ironmonger's shop & cottage
Henry Hill	358	Henry Norris	Brickyard & wharf
John William Liddon	726	Self	Brewery, malting yard
George Thorp	755	Self	House, warehouse & premises

Landowner	Date Plot No	Occupier	Usage
Hemel Hempstead (Cont)		DSA4/48/2	
Henry Campbell White	635	Henry Pedley, William Chambers	House, garden, coal yard
High Street Division			
William Henry Cranstone	1257a	Self	?
Shadrach Godwin	855	Joseph Cranstone	?
Gas Light & Coke Company	680	John Cox	Gas Works, Garden
Bovingdon	**1838**		
Henry Campbell White	90, 91	James Holloway	Fishery Meadow and River
Hon Granville Dudley Ryder	92, 126	William Rose	Grass meadows
GJCCo	88	Self	Lock House and Garden
GJCCo	89	Self	Canal and Towpath
Boxmoor	85		Common Meadow (Tithe Free)
King's Langley	**1838**	DSA4/64/2	
John Dickinson	109	Self	Apsley Mill
John Dickinson	134a	Self	Land & House next to Nash Mill
Thomas Toovey	353, 354	Self	Yard and Premises (water mill)
John Monk	583	Self, John Slade, John Price	4 houses, wharf, yard & buildings
Sparrows Herne Turnpike	578	Road	Road from Turnpike to Canal Bridge and Waterside
GJCCo	115, 134, 345	Self	The Canal
GJCCo	565	Self	Lock house & garden, lock 70 (Home Park)
John Andrew Groome	631	Self	Brewery (corner of High Street and road from canal
Abbots Langley	**1841**	DSA4/63/2	
Michael Drew	156	George Jaynes	(Hunton Bridge) Coal Wharf
John Dickinson	484	Self	Home Park Mill
John Dickinson	1033	Self	Nash Mill
John Dickinson	816	Self	Mansion (Abbots Hill)
John Goodwin	157, 158	George Jaynes	House, Premises
John Goodwin	176, 177	John Carpenter	House & Premises
John Goodwin	168	William Howard	Hunton Bridge Mill
John Goodwin	178	George Bone	Lock House and Garden
GJCCo	173a	Edmund Fearnley Whittingstall	Meadow
GJCCo	183, 682	Self	Plantation, Slipe of Land
GJCCo	680	Self	Lock House and Garden (Lock 69a)
GJCCo	1018	Self	Lock House and Garden (Apsley Bottom Lock)

Landowner	Plot No	Occupier	Usage
Abbots Langley (cont)		DSA4/63/2	
GJCCo	1036	Self	Lock House and Garden (Nash Top Lock)
GJCCo	1038	Self	The Canal, including Lady Capel's Lock
GJCCo	681, 1016	Self	Gardens
GJCCo	1017b	George Saunders	"Part of Cow Meadow"
Watford	**1844**	DSA4/111/2	
Cloth Workers Company	1628	James Smith	Hampermill Paper Mill
Earl of Clarendon	1044	James & Frederick Leach	Grove Mill etc
John Dyson	126	Self	Brewery etc
Christopher Dalton	200	James White	Water Corn Mill
Joseph Edmonds	1035	Thomas Ebburn	Lady Capel's Wharf
Earl of Clarendon?	1034	Not attributed	Grove Wharf
Earl of Essex	1020	Self	
Earl of Essex	1079	William Hutchings	Fisherman's Lodge and garden
Earl of Essex	1067	Self	Water Corn Mill
Thomas Rock Shute	1780	Self	Rookery Silk Mill
GJCCo	1066	Self (tithe free)	Iron Bridge Lock & House
GJCCo	1068	Self (tithe free)	Cassiobury Park lock & house
GJCCo	1074	Self (tithe free)	The Canal
GJCCo	1095	Self	Arable, Slipe
GJCCo	1025	John Willoughby	Cottage and garden (by Grove Mill Lane bridge)
Rickmansworth	**1838**	DSA4/80/2	
GJCCo	1231	Self	Cassio Bridge Lock & House
Gonville & Caius College	1237	John Cooper	Wharf, Yard & outbuildings
GJCCo	1239	Joseph Rogers	Cottage & Garden
GJCCo	1240	Joseph Rogers	Cassio Bridge Wharf
John Dickinson	1244	Self	Garden
John Dickinson	1245-1247	Cottagers	10 cottages
John Dickinson	1253	Self	Common Moor (Croxley) Mill
Gonville & Caius College	1257	George Smith	Chalk Quarry
GJCCo	1266a	Self	Lot Mead Lock & Lock House
Harrow Turnpike Trust	1651	Emma Dyer	Toll Bar
John Dickinson	1655-1657	Self	Batchworth Mill
John Dickinson	1658	Self	Mill House
Matthew Pickford	1630	Self	Stables
GJCCo	1631	Self	Batchworth Lock & Lock House
GJCCo	1632	Self	Land next to Pickford's Stables
GJCCo	1626	Self	Town Wharf Lock

Landowner	Date Plot No	Occupier	Usage
Rickmansworth (cont)		DSA4/80/2	
Alfred George Muskett	1620, 1621, 1622	John Laxton	Batchworth Bridge Wharf
John Laxton, Christopher Laroche	1618a	John Laxton	Frogmore Wharf
John Laxton	1618	Self	Frogmore Wharf
Jane Skidmore	1560, 1613, 1614, 1617	John Laxton	Frogmore Wharf
GJCCo	1555	Self	Mill Meadow
Joseph Strutt	1047		Half Moon PH
Trustees of Samuel Salter	1469	Letitia Griffith, Joseph Gristwood	2 tenements
Trustees of Samuel Salter	1360, 1360a	John Cooper	Town Wharf & buildings
Trustees of Samuel Salter	1358	John Cooper	Wharf Meadow
Trustees of Samuel Salter	1359	John Cooper	Cottage & Garden
Trustees of Samuel Salter	1814	William Farnborough	Blacksmith's Shop
Trustees of Samuel Salter	1483a, 1484	Joseph Beeson, blacksmith	Blacksmith's yard
Trustees of Samuel Salter	1344	Thomas Fellows, William Capel	Brewhouse
Trustees of Samuel Salter	1342	Thomas Fellows, William Capel	Malting
Trustees of Samuel Salter (Thomas Fellows)	1394	Thomas Fellows, William Capel	Malthouse, Timber yard
Thomas Rock Shute	1457	Self	Silk Mill
Joseph Skidmore	1458	John Boraston	Silk Mill Meadow
Mines Royal Co	956, 956a	Self	Meadows
GJCCo	1266	Self	Canal and Towpath
GJCCo	1266a	Self	Lot Mead Lock House
GJCCo	1603	Self	Stockers Lock House
William Wooldridge	1116	Thomas Weedon	Scots Bridge Mill
King's College Cambridge	978	Richard Morton	Troy Cut
King's College Cambridge	969-972	Richard Morton	Troy Farm and Mill

Appendix F

Hertfordshire landowners among early GJC Shareholders

Table C-1 below lists those recorded as taking shares as landowners selling their land to the GJCCo.

Name	Parish of Interest (note 1)	No of Shares
Duke of Bridgewater	Berkhamsted	
Richard Burch	King's Langley	
Caius College Cambridge	Rickmansworth (Manor of Croxley)	
Earl of Clarendon	Watford	
Sir James Cockburn	Northchurch	
Sir William East Bt	King's Langley	
Earl of Essex (also General Committee member)	Watford	10
Sir John Filmer Bt	Abbots Langley, Hemel Hempstead	
Richard Bard Harcourt	Tring, Aldbury	7
William Hayton Jr	Aldbury, Northchurch	
Joseph Hill	Watford	
John Holliday	Berkhamsted	
Nicholas Thomas Howe	Berkhamsted	
Griffith Jones	Abbots Langley	
Samuel Leightonhouse	Rickmansworth	
Mrs Mary Merry	Watford	6
John Norris	Berkhamsted	
Rev James Predy	Northchurch, Hemel Hempstead	
Mary Rider	Bovingdon	
John Roper	Berkhamsted, Northchurch	
Mrs Mary Seare	Tring	10
Joseph Skidmore	Rickmansworth	
William Smart	Northchurch	
St Thomas's Hospital	Rickmansworth	
Joseph Strutt	Rickmansworth	
Mr Sutton	Northchurch	
Simon Oliver Taylor	Northchurch	
Christopher Towers	Abbots Langley	
Trustees and Proprietors of Box Moor	Hemel Hempstead	
Trustees of Berkhamsted School	Northchurch	
Austis Wingfield	Abbots Langley	
Henry Fotherley Whitfield	Rickmansworth, Watford	

Table F-1
Early west Hertfordshire landowner proprietors
(shareholders) in the Grand Junction Canal
(to 1 June 1793, the first General Committee Meeting)

Notes

1. This is the point of known local interest, and does not show where the investor's main interest lay, nor where they lived. For example, the Duke of Bridgewater lived at Ashridge in Berkhamsted parish: but his main commercial interest was near Manchester, where he had built the first stillwater canal, and he invested in many canal schemes including this one.

Initial Proprietors with possible Hertfordshire Interests

The data in Table F-2 is derived from comparison between the Land Tax Redemption records for 1798/99, which have been used to identify most of the well-to-do of the county, and the listing of the Proprietors in the initiating Act and the early admissions recorded in the Minutes.[1] Only a few of the taxpayers even have the same names as Proprietors: some also feature in Table F-1.

Name of listed shareholder	**Parish of Interest (note 1)**
Drummond Smith	Tring
William Hayton	Aldbury
John Roper	Berkhamsted
John Day	Watford
Thomas Day	Watford
Benjamin Sutton (possible)	Northchurch
Thomas Bennett (possible)	Watford
John Field (possible)	Hemel Hempstead
Rev Joseph Smith (possible)	Berkhamsted (Vicar of Wendover)
Thomas Towers (possible – may be related to Christopher Towers of Abbots Langley and Hemel Hempstead).	
George Brooks (possible)	Puttenham
William Payne (possible)	Rickmansworth

Table F-2
Early west Hertfordshire investor proprietors
(shareholders) in the Grand Junction Canal
(to 1 June 1793, the first General Committee Meeting)

[1] 33 Geo III cap.80; TNA RAIL830/37, GJCCo Committee Minutes 1793; TNA IR23/33/39, 63, 78, 89,90,102,105, 107, 111, 113, 188 - Land Tax Redemption Records, accessed through www.ancestry.co.uk, consulted 2 Oct 2014.

No other west Hertfordshire early shareholders can be identified other than the landowners in Table F-1. Even if all the names in Table C-2 represent Hertfordshire land tax payers in 1798 who were also GJC early shareholders in 1793, there were not many: and it is entirely likely that some with the same name were not in any case the same people.

The implication is that, while Hertfordshire people were often but not always (Table F-3) ready to take the shares offered with the payment for their land, they were much less attracted to the shares as an investment. Some may have become shareholders later, but in the early days they did not feature strongly.

Sample of Hertfordshire landowners recorded as selling land[2]	**Recorded as taking up share option**
H F Whitfield	Yes
Samuel Leightonhouse	Yes
Joseph Skidmore	Yes
Joseph James	No
Joseph Hone	No
Lot Mead:	
James Bovingdon	No
Solomon Weedon	No
Jedidiah Strutt	Yes
Geo. Philip Ehret	No
Robert Clutterbuck	No
Joseph Skidmore	No
Caius College, Cambridge	No
Boxmoor Trustees	Yes
Mrs Rebecca Shipton	No
Earl of Clarendon	Yes
Matthew Sutton	Yes
Francis Cromack	No

Table F-3
Some landowners selling land to GJC and their take-up of offered face-value shares.

[2] TNA RAIL830/37, Minutes of GJC General Committee June/July 1793

Appendix G

Simple financial model of the Sparrows Herne Turnpike 1786 - 1806[1]

The revenues of the Trust, drawn from the Treasurer's Journal Accounts, in the period before the canal building started are at Table G-1. Examination of the Accounts suggest that one problem for the finances of the Turnpike throughout the period lay in the steady increase in the bills paid for work done, gravel and stones procured and so on, and another in the level of debt. Wages of the toll gate keepers did not increase at all in this whole period – Watford and Ridge Lane gates were taken as a pair and their keepers paid £109.4.0d a year altogether, while the keepers of the more remote (and less used) New Ground and Veetches gates were paid £27.6.0d each a year, less by 1806 than a labourer. Labour cost was remitted to some extent by parish compositions (not included here), but not nearly enough. The burden of interest payments is clear: the loan debt was £6745 in 1786, and was still £5455 in 1793. No balance sheet is provided with the 6-monthly accounts, so neither the rate of burn of the borrowed capital nor how much capital remained in 1786 are clear: but by 1794 it was being reduced quickly. This continued after work on the canal started (Table G-2): revenue increased, but outgoings did so more quickly.

The toll revenue increased somewhat in 1794 and 1796 (Table G-2), but not as much as the outgoings: operational losses were high and increasing as receipts stayed level and costs continued to rise. This is not evidence that the canal had any direct impact: the trends were established before cutting started, although some canal-construction traffic may be included. But it does suggest that the overall levels of traffic were increasing slowly until the canal opened through Watford in late 1796.

[1] Sparrows Herne Turnpike Treasurer's Journal Accounts HALS TP4/28, 29, 30, 31; Dan Bogart, 'Turnpike Trusts and the Transportation Revolution in 18th century England' in *Explorations in Economic History* Vol 42, Issue 4 (October 2005), pp. 479–508.

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With the canal open throughout toll receipts decreased further before rising again towards 1806 (Table G-3), during which year the Watford and Ridge Lane gates were “farmed out” to a contractor. But the outgoings had increased very markedly, and the operational losses were considerable in every year, not helped by continuing high interest payments on loans at 5% or 4.5%. It is possible, but cannot be confirmed, that the drop in tolls was due to the early years of the canal’s full operation, but it seems unlikely that the canal was responsible for the continued high outgoings.

Tables G-4 and G-5, with Figs G-1 and G-2, show the disproportionate amount of tolls collected at the different gates, with most coming in the south round Watford (Watford and Ridge Lane gates). This continued as the canal was being built and afterwards. The distortion in 1805 was largely due to the fact that Watford and Ridge Lane gates were farmed for the second half of the year, and payment of the fees was made in advance. We do, nonetheless, see a pronounced drop in the tolls in 1797 as the canal opened from the south, although it recovered somewhat afterwards: the drop was almost entirely due to the Watford and Ridge Lane gates, through which traffic as far north as Berkhamsted had to pass. This confirms that traffic from London was diverted to some alternative - the GJC seems the most likely destination, although the volume of trade due to that is insignificant compared to the total toll revenue of the GJCCo. The small receipts at the northern gates were almost unchanged.

The fact that the Watford gates took the lion’s share of the total tends to confirm that most of the traffic on the turnpike was coming from London but not getting much further than Berkhamsted, if that far; and the return traffic was generated largely on the London side of Berkhamsted. The implication is that the Sparrows Herne was not an artery of freight from the Midlands to London: its users were much more local, generally interested in Watford, Hemel Hempstead and Berkhamsted. This suggests that its trade was generally that of those towns: to

London wheat, flour and other agricultural produce, paper and some silk and cotton; and returning coal, manures, cotton and silk skein, manufactured goods as well as raw materials. But as Bogart has shown, up to 50% of the revenue was from passenger traffic, further reducing the contribution made by freight.[2]

It should be pointed out that this analysis of the affairs of the Sparrows Herne Turnpike is at some variance with the conclusions of Bogart, who has examined in much more detail a very much wider sample of English Turnpike Trusts. The figures, however, do not appear to support any other conclusion about this particular case.

[2] Bogart, 'Turnpike Trusts', p.499.

	1786	1787	1788	1789	1790	1791	1792	1793	1794
Toll Revenue	£1217.90	£1249.20	£1330.45	£1243.45	£1279.90	£1356.65	£1322.30	£1428.40	£1523.70
Outgoings	£1197.63	£1038.58	£1200.35	£1301.30	£1210.18	£1416.95	£1247.80	£1695.55	£2138.00
Inc Interest Payments	*£455.85*	*£246.80*	*£353.80*	*£257.10*	*£268.00*	*£268.55*	*£279.50*	*£245.45*	*£245.60*
Loan Repayments									
Operating profit/loss	£20.27	£210.62	£130.10	-£57.85	£69.72	-£60.30	£74.50	-£267.15	-£614.30

Table G.1 – Revenues before cutting of the canal in Hertfordshire, 1786 - 94.

Year	**1794**	**1795**	**1796**	**1797**	**1798**	**1799**
Toll Revenue	£1523.70	£1425.75	£1554.50	£1371.70	£1201.00	£1131.55
Outgoings	£2138.00	£2055.95	£1750.25	£1511.05	£1635.80	£1851.95
Inc Interest Payments	*£245.60*	*£239.20*	*£251.70*	*£246.70*	*£243.25*	*£248.40*
Loan repayments				*£50.00*	*£50.00*	
Operating Profit/Loss	-£614.30	-£630.20	-£195.75	-£139.35	-£434.80	-£720.40

Table G.2 – Revenues during the cutting of the Canal, 1794 – 1799.

Year	1800	1801	1801	1803	1804	1805	1806
Toll Revenue	£1094.40	£1111.15	£1182.65	£1249.70	£1341.15	£1476.48	£1601.54
Outgoings	£2186.40	£2320.05	£2234.00	£2202.90	£2325.20	£2416.70	£1252.15
Inc Interest Payments	*£316.25*	*£316.25*	*£242.00*	*£241.00*	*£252.70*	*£248.80*	*£209.70*
Loan repayments							
Operating Profit/Loss	-£1092.00	-£1208.90	-£1051.35	-£953.20	-£984.05	-£940.22	£349.39

Table G.3 – Revenues with the Canal in operation, 1800 - 1806.

Tolls	1786	1787	1788	1789	1790	1791	1792	1793	1794
Watford Gate	£543.60	£560.70	£589.50	£538.85	£544.20	£575.75	£562.40	£642.00	£676.00
Ridge Lane	£389.50	£392.40	£426.10	£382.40	£397.20	£434.70	£418.00	£427.40	£467.20
New Ground	£291.80	£211.90	£224.25	£221.80	£227.00	£237.00	£237.40	£247.10	£258.20
Veeches	£83.00	£84.20	£90.60	£100.40	£111.50	£109.20	£104.50	£111.90	£122.30
Total toll revenue	£1,217.90	£1,249.20	£1,330.45	£1,243.45	£1,279.90	£1,365.65	£1,322.30	£1,428.40	£1,523.70

Table G.4 - Individual Toll Gate takings 1786–1794

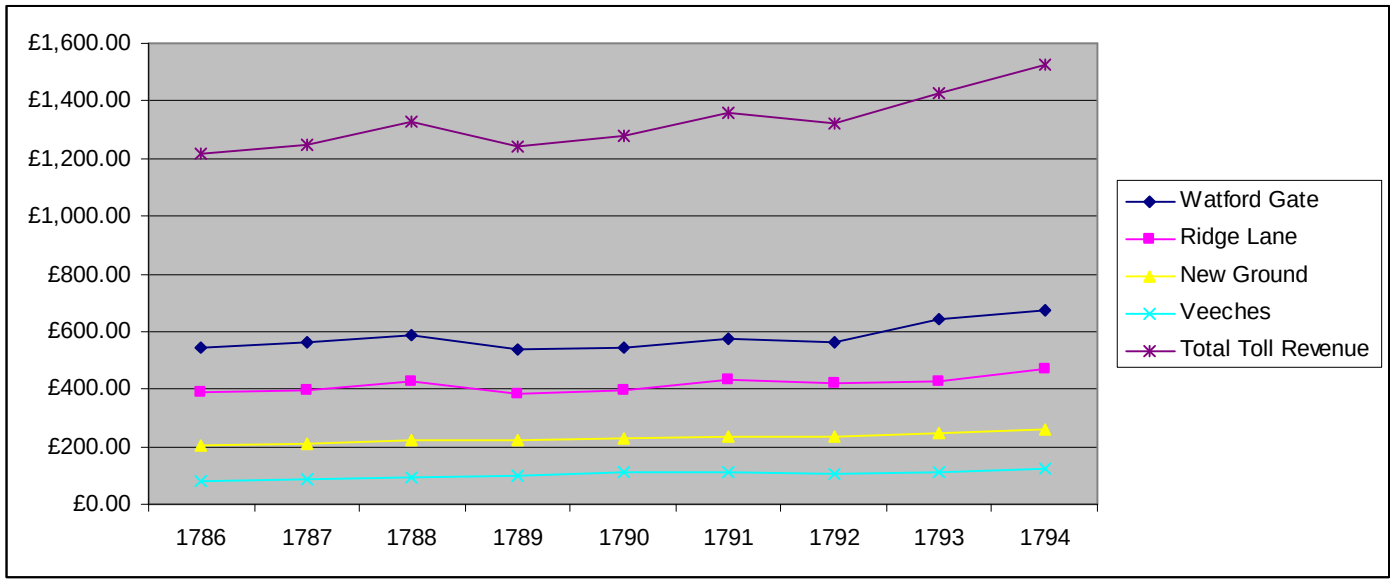

Fig G.1 – Individual Toll Gate takings 1786 – 1794

Tolls	1795	1796	1797	1798	1799	1800	1801	1802	1803	1804	1805
Watford Gate	£632.50	£691.95	£564.95	£453.80	£436.40	£429.00	£421.70	£432.75	£453.70	£509.00	£831.03
Ridge Lane	£406.20	£445.80	£395.80	£334.50	£319.40	£309.95	£327.20	£336.00	£359.90	£383.65	£183.30
New Ground	£254.20	£292.70	£284.65	£299.40	£252.05	£236.95	£250.20	£296.30	£297.80	£308.90	£313.40
Veeches	£132.85	£123.95	£126.30	£113.50	£123.70	£118.50	£112.05	£117.10	£138.30	£139.60	£148.75
Total toll revenue	£1,425.75	£1,554.40	£1,371.70	£1,201.20	£1,131.55	£1,094.40	£1,111.15	£1,182.15	£1,249.70	£1,341.15	£1,476.48

Table G.5 - Individual Toll Gate takings 1795 - 1805

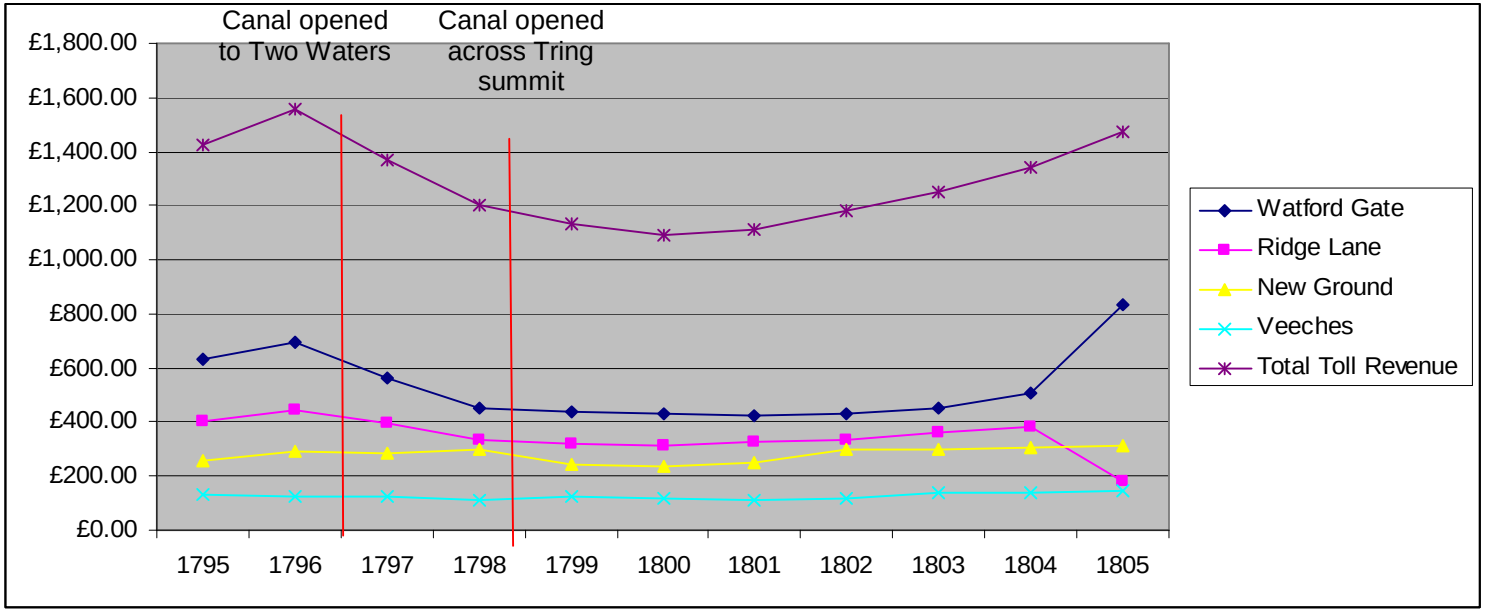

Fig. G-2 – Individual Toll Gate takings 1795-1805