

The Economic Development of Sheffield  
and the Growth of the Town c1740-c1820

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# THE ECONOMIC DEVELOPMENT OF SHEFFIELD AND THE GROWTH OF

THE TOWN c1740-c1820

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## SUMMARY

In the early eighteenth century Sheffield was a modest industrial town with an established reputation for cutlery and hardware. It was, however, far inland, off the main highway network and twenty miles from the nearest navigation. One might say that with those disadvantages its future looked distinctly unpromising. A century later, Sheffield was a maker of plated goods and silverware of international repute, was *en route* to world supremacy in steel, and had already become the world's greatest producer of cutlery and edge tools.

How did it happen? Internal economies of scale vastly outweighed deficiencies. Skills, innovations and discoveries, entrepreneurs, investment, key local resources (water power, coal, wood and iron), and a rapidly growing labour force swelled largely by immigrants from the region were paramount. Each of these, together with external credit, improved transport and ever-widening markets, played a significant part in the town's metamorphosis.

Economic and population growth were accompanied by a series of urban developments which first pushed outward the existing boundaries. Considerable infill of gardens and orchards followed, with further peripheral expansion overspilling into adjacent townships. New industrial, commercial and civic building, most of it within the central area, reinforced this second phase. A period of retrenchment coincided with the French and Napoleonic wars, before a renewed surge of construction restored the impetus.

For the most part, the great eighteenth century building enablers were the large estate property holders, most importantly the Dukes of Norfolk, who freed land on lease in ample quantity for development purposes. In the nineteenth century, it was mainly the beneficiaries of Norfolk and other estate disposals who did likewise. Sheffield's attorneys, surveyors, craftsmen, speculators and lenders all had an essential role in more than quadrupling the town's housing stock and adding in even greater degree a wide range of non-domestic building.

## DECLARATION OF PREVIOUS RELATED WORK

Between 1983 and 1989 I was involved in two successive research projects, both related to the topic "Water Power" in Chapter 8 of this thesis. The first was my own *Study of the Water Mills of the River Sheaf Downstream of Abbeydale Hamlet*, presented in 1984 in the form of a dissertation as part requirement for the degree of M.A. in Economic and Social History at the University of Sheffield. The second, in which my role was that of researcher and, later, assistant editor, was a group venture begun as a series of classes in industrial archaeology in the Division of Adult Continuing Education. It culminated in the production of *Water Power on the Sheffield Rivers* edited by David Crossley *et al* and published in Sheffield in 1989 under the auspices of the Sheffield Trades Historical Society, now the South Yorkshire Industrial History Society.

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My supervisors, David Crossley and Professor David Hey, deserve special mention for their expert guidance throughout concerning both content and organisation of this thesis

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<sup>1</sup> The various archives, libraries and repositories are listed in the Introduction.

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## INTRODUCTION

A single study combining the economic and physical development of eighteenth and early nineteenth century Sheffield presents an initial disparity. At a particular date, an urban area can usually be defined by the extent of its streets and its historic boundaries. Available empirical evidence for new streets, houses and other buildings taken from maps, plans and deeds enables the researcher to plot with reasonable accuracy the quantity and direction of development over a period of time. On the other hand, an economic area has inevitably much wider ramifications, and, therefore, must include the region of which the town is the central and essential core.<sup>1</sup> Lack of firm or consistent data is a perpetual difficulty, whether they be population figures or the individual and collective output of firms and industries. However, even though the separate studies appear to have a certain innate incompatibility, any notions that their subjects were not part and parcel of the same industrial revolution are illusory. Industrialisation and urbanisation were, for Sheffield, essentially components of the same growth package.

As may be anticipated, some topics in this thesis have already received detailed academic attention from others. Cutlery and steel are obvious examples. Why, then, attempt to write on subjects so thoroughly researched and expounded by experts in their own field? There are at least two good reasons. Firstly, it would be impossible to create a picture of Sheffield's growing economy in the period in question without devoting essential chapters to key sectors. Secondly, new archive material and additional research findings are constantly forthcoming to confirm, refine or modify earlier writings and conclusions. In particular, the massive collection of Memorials in the West Riding Registry of Deeds (WRRD), largely untapped hitherto, has provided from more than 11,000 relevant entries a plethora of new information, offering a whole new perspective not only about property transactions of all kinds, but also on occupations and careers, families, partnerships, accumulation of assets, finance, bankruptcies, industries and industrial building, new streets and housing developments, demolition, and, on occasions, immigration and emigration. More than any other source the Memorials have supported my decision to combine industry, commerce and

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<sup>1</sup> Of the 35 square miles or so of Sheffield parish, the main urban area (Sheffield township minus the Park acreage) was less than a twentieth (D. Hey: *The Fierly Blades of Hallamshire: Sheffield and its Neighbourhood 1660-1740* [Leicester] 1991 p29). At the same time, in 1736, about 70% of the population was resident in the town. The Company of Cutlers held jurisdiction for their wares over the country of Hallamshire (the parishes of Sheffield and Ecclesfield with the Chapelry of Bradfield) and six miles round, seemingly perceived in 1624 as the local district for cutlery production.

town growth into a single study. The value of the archive is so central to this thesis that a brief outline as to its history and operation is appropriate.

Initiated in 1704 to reduce the possibility of fraudulent land transactions, the WRRD at Wakefield is one of four Deeds Registries dating from the eighteenth century.<sup>2</sup> Registration of change of ownership of real estate was by convention, but for freehold property appears to be quite comprehensive. Norfolk (manorial) leasehold was not entered before the first 99 year leases from 1771, and afterwards only for some assignments and mortgages.<sup>3</sup> Church Burgesses' tenants were far more likely to have theirs recorded. Tenants in general may well have preferred to rely on amendments to rentals as in the case of earlier Norfolk copyholders, rather than incur unnecessary legal expenses. Memorials (referenced by volume, page and number) are essentially *summaries* of deeds and sometimes very brief. They contain dates of draft and registration, commonly, but not always, the type of deed (at times "Indenture" only is used), names of parties with occupation and township abode, and a concise description of the property. No plans from the originals appear in this period of study, nor, with rare exceptions, are prices recorded. One other drawback for the purpose of the present study is the relatively frequent omission of the word "mortgage" if it has been buried in the original text, leaving at the most the headline "Indenture of Lease and Release" or "of Assignment" for its Memorial.<sup>4</sup> However, by means of an ongoing people/property index and database, over eight decades a sufficient number of contracts - about 1100 - have been deciphered to provide sound empirical evidence concerning the occupation groups of both mortgagors and mortgagees.<sup>5</sup> A major hurdle for the researcher is the lack of a place name index from mid-1787, compounded by the steadily increasing number of (750 page) volumes per year - nearly three by the end of that index and six or seven in 1820.<sup>6</sup> Fortunately for the experienced page turner, the faded red-brown of the township entry usually stands out just enough for identification purposes. Even so, any further nineteenth century research of this kind would be more appropriate for teamwork.

Such a team currently working on the well known, but only partially indexed Fairbank Collection in Sheffield Archives has already revealed a wealth of previously unexploited

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<sup>2</sup> The others belong to the East and North Ridings of Yorkshire and to Middlesex.

<sup>3</sup> Norfolk freehold sales from 1802 were, of course, all entered.

<sup>4</sup> Lease and release was the most common contemporary form of conveyance.

<sup>5</sup> Details of the strategies employed appear on page 231.

<sup>6</sup> More than one book at a time must have been in use for registration as most adjacent volumes overlap widely datewise.

material.<sup>7</sup> The four generations of Fairbanks, Quaker schoolmasters turned surveyors, were employed by all the major landowners and hence had a unique over-view of Sheffield's development covering more than a century. During that time they amassed huge amounts of documentation of which upwards of 13,000 items including Field and Building Books, Account Books, maps and plans, and numerous other books and papers have survived.<sup>8</sup> Hence this archive provides a wide range of land surveys and, in the main, of better quality, mainly three storey, building appraisals. (The cheapest two storey tenements seem not to have been Fairbank territory.)<sup>9</sup> In addition there are to be found a gamut of building craft activities, trade practices and prices (particularly illustrating early inflationary trends), details of industrial and other buildings, setting out of streets, property ownership, turnpikes and canals, and related correspondence, all of which been utilised. This collection, too, in a unique way strengthens the common thread running through both parts of the thesis.

In similar manner, the familiar and frequently cited Norfolk (ACM) collection includes extensive source material for both economic and urban growth - details of the majority of waterpowered sites, mines, quarries, brickyards, tanyards, market, canal, enclosures, domestic and industrial building, new streets, assignments, valuations, accounts and so forth. As lords of the manor and principal landowners, successive Dukes of Norfolk (and their stewards) both tacitly and openly exerted enormous influence across the whole spectrum of development. Besides these three major archive contributions, new or newly applied findings are incorporated from London (Public Record Office, British Library, Guildhall Library and Royal Bank of Scotland Archives), York (Borthwick Institute and Minster Library), Hull (Local Studies Library, University Archives and Record Office), Beverley (Record Office), Scarborough (Library), Manchester (John Rylands Library), Birmingham (Assay Office Archives) and Sheffield (Local Studies Library, University, Continuing Education and Geography Department Libraries, Assay Office, Kelham Island Museum and private holdings), and, of course, from Sheffield Archives in which the remaining bulk of primary material for the town in the eighteenth and early nineteenth centuries is deposited.

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<sup>7</sup> The Fairbank Archive Research Group, of which I am a founder member, has been working since 1990 under the leadership of David Crossley at the Division of Adult Continuing Education. Our initial aim was to create a comprehensive computer index and database for the 311 Field Books, of which about half are now on disk. More recently, the scope of the project has been widened and other parts of the collection have been and are continuing to be researched and incorporated into the database.

<sup>8</sup> Many hundreds of Fairbank plans also appear in the Arundel Castle Muniments with dozens more scattered in other collections, including some out of Sheffield.

<sup>9</sup> The early series of Field Books (FB2-29 up to 1765) have a good number of tenement craft work valuations, but the Building Books (BB30-98 up to 1816) have very few.

Because increasing industrial and commercial activity attracted newcomers to Sheffield - some two thirds of the four-fold population increase between 1736 and 1821 was due to net immigration - and hence directly and indirectly created much of the demand for new building, it has seemed appropriate to review the main areas of the local economy in the first half of the thesis. After an initial chapter on population, a *sine qua non* of both economic and building development, others follow on the major industries. Cutlery, because of its historic nature as Sheffield's staple and its first industry to achieve world supremacy, takes pride of place. Then comes steel in a two part study illustrating the different but complementary paths followed by cementation and crucible production. Perhaps unexpectedly, yet fully justified by its value and national and international reputation, fused plate and silverware manufacture is aligned with cutlery and steel as a key element of the town's success. Supporting these three is coal, responding to unprecedented demand for industrial and domestic fuel. Regional iron, somewhat overshadowed by steel, has its own chapter illustrating growing output in both charcoal and coke phases. Certain subsidiary trades supply evidence of greater variety of manufacture than may have been portrayed in the past, and the whole industrial upsurge is underpinned by vital chapters on power, transport, the food supply, and the commercial and financial sectors. Part two contains three longer, chronologically divided, chapters devoted to building and town growth and their associated features over the eight and a half decades from 1736. Complementing the topics of volume one (demographic, industrial, commercial and financial), they examine in detail a relatively neglected facet of Sheffield's economy.

Both parts of the study fit comfortably within the broad parameters of c1740-c1820, although considerable encroachment, particularly into the earlier eighteenth century, has been permitted. Gosling's Plan of Sheffield and his population survey of 1736, Oughtibridge's North Perspective View of the town (c1737), Bowden's lease of the Duke of Norfolk's colliery (1737), the opening of the Don Navigation to Rotherham plus the first regional Turnpike (1740), and two landmark inventions - crucible steel and fused plate - in the early 1740's all endorse the choice of opening threshold. Completion of a long overdue Sheffield to Tinsley Canal which heralded a new trading era in 1819, inauguration of the last of the major Turnpikes (Sheffield-Glossop) in 1821 and census of the same year, together with Leather's Town Plan of 1823, confirm the close.

The whole thesis aims to provide an updated and wide-ranging appraisal of Sheffield's economy and urban growth between c1740 and c1820, and to contribute new material to the broader urban study movement. Sheffield, of course, was only one of many industrial centres

which were expanding in this period. Leeds, with Beresford's detailed analysis of its very varied building over a century and a half, makes a useful contrast, as does Manchester because of their totally different landownership structure.<sup>10</sup> Birmingham provides another kind of contrast because of its high-class Edgbaston suburb which had no equivalent in Sheffield. On the other hand, Birmingham had similarities elsewhere, like the Colmore estate where metal trades workers were as vigorous house-building entrepreneurs as those in the building industry in the middle decades of the eighteenth century.<sup>11</sup> Liverpool's corporation almost paralleled the Duke of Norfolk in dominating the supply of building land in its own area, but differed by working through developers rather than making direct contracts with individuals.<sup>12</sup> Considerable sales of Norfolk land after 1800, and consequent withdrawal of the estate from its traditional role as the major releaser of building land, set the town aside from the more typical cases where aristocratic involvement in urban development continued at a high level until the later Victorian era.<sup>13</sup> In other respects Sheffield had characteristics common to most provincial towns: finance for building was largely raised from the locality, restrictive covenants were used by owners to influence alignment, façades and trade usage, and, when affordable accommodation was in short supply, subdivision of houses was the norm.<sup>14</sup> Cellar dwelling, however, was not a known feature. Like most faster growing towns, Sheffield spread outwards from quite early in the eighteenth century, beginning to overflow traditional and township boundaries, yet not to the same degree as Birmingham, Leeds or Manchester.<sup>15</sup> In common with these and many other manufacturing centres, it drew heavily on its hinterland for the greater proportion of its population increase.<sup>16</sup>

On the industrial front, for specialisation and innovation in the metal trades, Sheffield compared most closely with Birmingham. Neither was incorporated, both were free from

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<sup>10</sup> M. Beresford: *East End, West End: The Face of Leeds during Urbanisation 1684-1842* (Leeds) 1988; C.W. Chalklin: *The Provincial Towns of Georgian England* (London) 1974 Chapter 4 pp89ff

<sup>11</sup> D. Cannadine: *Lords and Landlords: the Aristocracy and the Towns 1774-1967* (Leicester) 1980 Chapters 4 & 5; C.W. Chalklin op cit Chapters 4 pp81ff & 7

<sup>12</sup> C.W. Chalklin op cit pp98ff

<sup>13</sup> D. Cannadine op cit Chapter 26

<sup>14</sup> C.W. Chalklin op cit Chapter 3; C.G. Powell: *An Economic History of the British Building Industry 1815-1979* (London) 1980; S.D Chapman (ed): *The History of Working Class Housing: a Symposium* (Newton Abbott) 1971 Chapter 4 Nottingham; D. Cruickshank & N. Burton: *Life in the Georgian City* (London) 1990 pp115ff; P. Borsay (ed): *The Eighteenth Century Town: A Reader in Urban History 1688-1820* (London) 1990 Chapter 1

<sup>15</sup> D. Hey op cit p304

<sup>16</sup> P. Borsay op cit Chapter 1

barriers of religion, both produced high value artefacts with an almost infinite range of patterns for which experience and skill mattered above all else, and, essentially, their industries operated within a broad framework of customary practices and prices.<sup>17</sup> Within such an environment both enjoyed the benefits of a "continuum of small improvements" or of anonymous technical change.<sup>18</sup> In the more overt expansion of silverware, Sheffield and Birmingham, with similar interests, successfully petitioned jointly for their respective assay offices, and they were great competitors in this and other marketing sectors at home and overseas.<sup>19</sup> No entrepreneur of the stature of Matthew Boulton emerged in South Yorkshire, but even he was reliant on Huntsman's crucible steel for dies and rolls. However, unlike its midlands rival, Sheffield had its Company of Cutlers, which, with varying degrees of success, regulated entry into and operation of the cutlery and edgetool trades under its jurisdiction (over half the male workforce) up to 1814. The Company petitioned Parliament on numerous occasions, pressed for and partially financed both Navigation and canal, for a time ran a steel conversion service for its members, twice helped save local banks from collapse and supported with its funds a new Town Hall. It also took the initiative in advancing Hallamshire interests in London particularly, and in general acted as a focus for the promotion of local manufactures.

Sheffield also had elements in common with textile towns with their "relentless tendency" towards specialisation and concentration, and an overdependence on a particular manufacture.<sup>20</sup> Even so, large scale merchants in Yorkshire worsteds and independent clothiers in woollens, vast putting-out systems in the Nottingham hosiery industry, and highly capitalised silk factories in Derby<sup>21</sup> had no parallel in the Sheffield metal trades where fixed capital outlay was normally very small and significant amounts of circulating capital in the form of credit were initially provided by Hull and London. No local ironmongers (other than the Walkers on the outer fringe of Hallamshire) converted profits from their circulating capital into a major fixed capital works in the manner of merchant-manufacturers Arkwright, Oldknow and Strutt.<sup>22</sup> Further differences stem from the broad spectrum of cutlery wares,

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<sup>17</sup> M. Berg: *The Age of Manufactures 1700-1820: Industry, Innovation and Work in Britain* (London) 1994 (2nd edn) pp257-273.

<sup>18</sup> *ibid* p256

<sup>19</sup> Act 1773; Birmingham Assay Office Archives Non-book Items Letter Box M1 (Ma to Mit)

<sup>20</sup> J. Langton & R.J. Morris eds: *Atlas of Industrializing Britain 1780-1914* (London, for the Economic History Society *et al*) 1986 Chapter 11 "Textiles" by Paul Laxton.

<sup>21</sup> M. Berg: "Factories, Workshops and Industrial Organisation" in R. Floud and D. McCloskey eds: *The Economic History of Britain since 1700* (Cambridge) 2nd edn 1994 Vol I p130ff

including a wide variety of edge tools, plus steelmaking (even if largely for the secondary trades), silver and plated goods, and iron products, together offering a rather more heterogeneous output than at first apparent. More particularly, application of power to forging and grinding was not innovative as in textiles, it did not bring large numbers of workers under one roof, nor did it reduce the need for traditionally skilled craftsmen. Indeed, as the number of cutlers increased, shortage of essential grinding capacity in the 1780's hastened the introduction of rotary steam engines to supplement water.

Sheffield steel, like cotton manufacture, depended totally on imported raw material, but had little else in common. Unique among textiles, cotton experienced a rapid transition to the factory, most notably in Manchester and its satellites, from the 1780's for spinning and three decades later for weaving, whereas woollens in both Yorkshire and the West Country were much further behind, with less than half the workers in factories in the 1840's.<sup>23</sup> Employment of women and especially of children was a particular feature of powered cotton production. Sheffield's only "factories" before 1820, apart from the anomalous Silk/Cotton Mill, were less than a dozen plated and silver works with a total of 600 to 700 employees in 1785 (including some women), and perhaps 1000 forty years later.<sup>24</sup> Even then, most of their output, after initial rolling, was handcrafted like Boulton's at Soho. In fact, throughout the eighteenth and early nineteenth centuries, almost all Sheffield's metal trades had in their process of manufacture complementary applications of both power and handcraft, the first serving the second, not replacing it.

Reference to specific years draws attention to the continuing debate as to the timing and nature of an industrial revolution in Britain. McCloskey comments that "it sometimes seems that each economic historian has a favourite date", some going back to the thirteenth century!<sup>25</sup> Others in contrast, notably Clapham and Cameron, believe that the very use of the term "revolution" is an obstacle to understanding, and Crafts and Harley document the slowness of overall growth by reducing the weighting in the national index of rapidly developing sectors, particularly of cotton in the 1780's and 1790's.<sup>26</sup> Earlier researchers have,

<sup>22</sup> P. Hudson: *The Genesis of Industrial Capital: a Study of the West Riding Wool Textile Industry c1750-1850* (Cambridge) 1986 p16

<sup>23</sup> T.S. Ashton: *The Industrial Revolution 1760-1830* (Oxford) 1948

<sup>24</sup> see Chapter 4 p88

<sup>25</sup> D. McCloskey: "1780-1860: a Survey" in R. Floud & D. McCloskey op cit pp245ff

<sup>26</sup> ibid citing R. Cameron: "La révolution industrielle manquée" in *Social Science History* 14 (1990), J.H. Clapham: *An Economic History of Modern Britain: The Early Railway Age* (Cambridge) 1926, N.F.R. Crafts: *British Economic Growth during the*

in their view, been over-influenced by cotton's subsequent prominence. On the other hand, national accounts inevitably conceal atypical local changes however significant.<sup>27</sup> This is just one of the points raised by M. Berg and P. Hudson, anxious lest econometricians and gradualists might all but erase the concept of a "unique turning point".<sup>28</sup> Rather than attempt to seek out one hypothetical key strand - Mathias's latent and elusive "Holy Grail"<sup>29</sup> - among what was clearly a very mixed series of, at best, loosely related developments, they examine for fundamental and unique change four areas of the economy: technical and organisational changes outside the factory sector, use of female and child labour, regional specialisation, and demographic growth. In the substance of debate between these mainstream approaches, national statistics seem likely to be refined further (surely a process subject to diminishing returns), yet to continue to be criticised for depressing the significance of the regions. Conversely, the "four areas", supported by an amalgam of local and regional studies based on empirical evidence, are open to a constant, almost endless, flow of new information.<sup>30</sup>

In this latter context Sheffield is undoubtedly a classic case. The town already enjoyed significantly increased economic activity in the first few decades of the eighteenth century. Its population rose by 70 to 80 per cent between 1700 and 1736 and more than quadrupled from the latter date to 1821.<sup>31</sup> Water-powered sites on the Don and its tributaries began to increase markedly from the 1720's, vastly raising forging, slitting, rolling and grinding capacity in the next fifty years, and with this the number of cutlery workers and their output, as well as demand for locally made steel. Developments in these three sectors alone provide ample illustration for the Berg-Hudson "areas". Thanks to selective use of power and to specialisation the cutlery industry was enabled to undersell all rivals at home and abroad by the 1790's. Huntsman's crucible furnaces were so revolutionary that they attracted visitors from all parts of Europe, and his successful new technology, together with powered rolling and a working organisation evolved from cutlery, underpinned the rapid rise of a totally new

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*Industrial Revolution* (Oxford) 1985 and C.K. Harley: "British industrialization before 1841" in *Journal of Economic History* 42 (1982).

<sup>27</sup> ibid citing Mokyr's Weighting Theorem - if the older sector of the economy is growing at 1% per annum and starts with 90% of output, the modern sector with 4% growth will take 75 years to account for half of output (J. Mokyr: "The industrial revolution and the new economic history" in J. Mokyr ed: *The Economics of the Industrial Revolution* (Totowa, NJ) 1985 p5).

<sup>28</sup> M. Berg & P. Hudson: "Rehabilitating the Industrial Revolution" in *Economic History Review* XLV No1 1992

<sup>29</sup> P. Mathias: *The First Industrial Nation* (London) 2nd edn 1983 p7

<sup>30</sup> P. Hudson: "A New History from Below: Computers and the Maturing of Local and Regional History" in *Local Historian* Vol 25 No4 1995

<sup>31</sup> See the discussion in Chapter 1 footnote 49

sector with a proportion of female labour, that of fused plate and silver.<sup>32</sup> All were specific to the locality. Even when of universal application, like John Curr's colliery hauling and winding innovations of the 1780's and after, the changes could be dramatic, widely influential, and manifestly an industrial turning point.

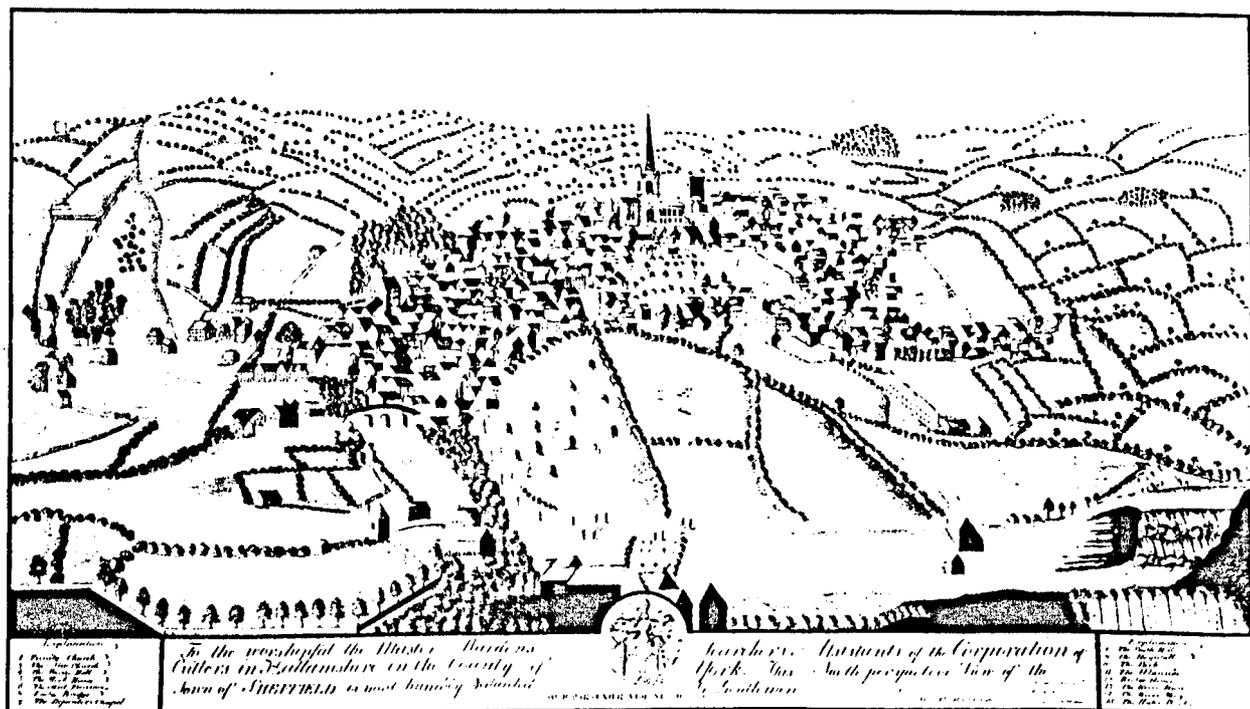


Fig. 0.1 Thomas Oughtibridge's North Perspective View of Sheffield c1737

Whilst exploring Sheffield's economic success within a national framework, questions must arise as to how and why so much was achieved locally in eight decades. Situated in the foothills of the Pennines, and, until the early 1730's nearly twenty miles from the nearest river port (Bawtry), the town appears in hindsight quite isolated and hence commercially disadvantaged. Failure to provide a water link into the heart of town for nearly seventy years after the successful extension of the Don Navigation to Tinsley in 1751 might seem to us another potentially damaging handicap. All water-borne goods had to be carried along the three mile road from or to Tinsley wharf, adding costs to both raw materials and finished goods. Eighteenth century visitors, as those of today, could not fail to appreciate the varying nature of the terrain within and surrounding the town. "I next came to Sheffield . . . It is a very large town situated on the side of a hill" said one in 1769. Another, later and more graphically, wrote: ". . . we passed through Chapel Town and down a terrible steep hill into Sheffield . . ."<sup>33</sup> Both Oughtibridge's *View* (c1737) and the Bucks' *East Prospect* (1745)

<sup>32</sup> For women's employment locally see Appendix 5.

convey the image of this steeply sloping and irregular landscape.<sup>34</sup> Obvious problems for coachmen and carters spring to mind. Encircling uplands, especially those to the west of the region, proved a troublesome barrier to long distance wheeled transport. Apart from those routes using the lower Don Valley, all had a long climb outwards, even after turnpiking, with slow movement of traffic and the option of smaller loads or additional horses.

Yet Sheffield succeeded in spite of such an apparently unpropitious location. The reasons are quite clear. Problematic as they may have been for land communications, the surrounding hills were of enormous and unquestionable net benefit to the town and immediate district. They provided an essential environment for the fast flowing rivers whose waters were so successfully harnessed to drive the one hundred or so mills in operation by the later part of the eighteenth century.<sup>35</sup> Without this proliferation of sites, Sheffield could hardly have achieved its clear superiority in the cutlery trades, and hence would have had little incentive to increase its output of steel. Many of the hills and river valleys were part of the strongly accidented coal measures. Moreover, they were well wooded, providing an ample, if slowly declining, supply of charcoal to the local metal trades.<sup>36</sup> The more distant gritstone plateaux of the higher western uplands, largely covered with peat, offered a reliable supply of water to the streams, and, at their outcropping edges, a source of coarser grindstones. Lower (older) coal seams succeeding the millstone grit to the west were mainly of little value, but ganister and fire clay in this area were particularly advantageous for the steel industry. The first important coal, the Silkstone seam, outcropped in and near the centre of town where it was exploited in the main by the Norfolk estate.<sup>37</sup> With the coal, interbedded sandstones, mudstones and shales occurred in repeated succession.<sup>38</sup> It was this reiterated sequence of outcrops, in the tributary valleys especially, which formed natural, almost ready-made locations for bypass dams, those apparently preferred by the vast majority of local millwrights.<sup>39</sup> Where sandstone edges occurred, quarrying furnished the various metal trades

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<sup>33</sup> MD 1869 pp56ff A series of anonymous letters entitled *Travels in different parts of England* (1769). Bright Papers 318vi extract from *A Diary of a Tour from London into Yorkshire etc* (1798) by "M".

<sup>34</sup> See also Appendix 7, a modern Ordnance Survey Contour Map of the region,

<sup>35</sup> D. Crossley (ed): *Water Power on the Sheffield Rivers* (Sheffield) 1989 Preface; and see Chapter 8

<sup>36</sup> D.L. Linton ed: *Sheffield and its Region* (published in Sheffield for the British Association) 1956 pp26ff

<sup>37</sup> Via tenants or "in hand".

<sup>38</sup> C. Downie: *The Area around Sheffield* (Geologists' Association Guide No 9, Colchester) 1960. The whole sequence is about 5000 feet thick, of which about one per cent only is or was workable coal.

<sup>39</sup> See Chapter 8 Water Power and Steam

with smooth grindstones, and water-powered sites with ashlar for weirs, goits and walls.<sup>40</sup>

Such local physical and mineral resources were amply utilised by a population with historic skills in metal manufactures. They were further successfully adapted by inventors, innovators and entrepreneurs during the eighteenth and early nineteenth centuries. Nothing illustrates this sequence more cogently than imported Baltic bar iron which was converted into blister steel using ganister chests, charcoal and coal. Most blistered bar, initially, was selectively appraised by eye and then forged and slit by water power for the different branches of the cutlery industry which, with its great variety of specialised artisans, in turn produced the knives, files, scissors, razors, shears, scythes, edge tools and so on. Later, following Huntsman's invention, a small, but growing, proportion of converted bar was melted in crucibles to provide a high quality cast steel suitable for dies, stamps, rolls, engraving and chasing tools and all those usages where homogeneity of texture and extreme hardness were of paramount importance. The ramifications of the process even spread to silver and fused plate production whose success was largely dependent on those crucible steel artefacts listed.

Sheffield made full use of its opportunities to increase both quantity and range of its metal wares as markets widened at home and overseas. Dominance of Hull and London merchants who provided most of the trade credit in earlier years was a mixed blessing. On the one hand it inhibited the town's autonomous progress in marketing its own products; on the other it enabled Sheffield's reputation to be spread nationally and internationally at a rate which may not have been possible from a purely parochially based mercantile network. Whatever the balance of argument, the town by degrees gained its commercial emancipation. Along with this it gained much more. In the early years of the eighteenth century Sheffield was known for its cutlery, as it had been since at least Chaucer's time; by the close it was the world leader. Within five decades of the discovery of fused plate around 1743, the town achieved worldwide recognition of the quality of its plated and silver ware. And from a modest output of cementation steel early in the same century, by its end Sheffield had become synonymous with quality crucible steel, and in 1820 was well on its way to becoming supreme in Europe and the world in all steel production.

PART ONE

ECONOMIC DEVELOPMENT

## CHAPTER 1 POPULATION OF TOWN AND PARISH 1736 - 1821

A town's population is the major determinant of the size of its workforce, of its housing stock and of its food and durable requirements. Furthermore, a rapidly increasing population is likely to be younger with a rising birth rate and a growing number of youthful immigrants. The younger the labour force the more mobile it is likely to be - amenable and adaptable to change.<sup>1</sup> Similarly, a quickly growing local economy in its turn may create changes in that population by influencing the rates of marriages, births and deaths and by promoting those conditions which encourage immigration. Rapid increase in the size of Sheffield township from 1736 to 1821 was closely related to these factors as both cause and effect. The nature of that increase is a phenomenon common to many industrial towns of the period in that, whereas the population of England and Wales doubled in the 120 years from 1700, urban densities increased up to five-fold.<sup>2</sup> Sheffield township had, in round figures, some 10,000 souls in 1736 and 42,000 in 1821; the parish totalled some 14,500 and 65,000 respectively in the same years.<sup>3</sup>

If these limiting figures are not in great dispute, considerable difficulties remain with most of those before the 1801 census as little is known of their origins or authenticity. Possible estimates via Parish Registers are thwarted because they do not show the inflow or outflow of migrants, and are often rendered inaccurate by the rise in the number of Dissenters whose demographic activities may not be recorded. Sheffield in fact had the largest dissenting congregation in Yorkshire in 1715 with an attendance of more than 1100 at Upper Chapel.<sup>4</sup> This total appears to have diminished somewhat by 1743 when about 700 attended the two meeting houses.<sup>5</sup> "The number of Dissenters is

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- <sup>1</sup> A. Cairncross: *Introduction to Economics* (London) 4th Edition 1966 pp43ff  
<sup>2</sup> C.W. Chalklin: *The Provincial Towns of Georgian England* (Lond.) 1974 Ch I  
<sup>3</sup> The 1736 figures from Gosling *Plan of Sheffield* are 9695 for the town to which should be added 172 Quakers and 246 Catholics, and from the Sheffield Local Register (quoting the petition to Parliament to make St. Paul's Church parochial) are 14,105 for the parish plus the Quakers and Catholics above and probably a few more, making a total of possibly 14,600. 1821 Census  
<sup>4</sup> D. Hey: *Yorkshire from AD 1000* (London) 1986 p207  
<sup>5</sup> S.L. Ollard and P.C. Walker: *Yorkshire Archaeology Record Series LXXV* (1929) Archbishop Herring's Visitation Returns Vol. III 1743. John Dossie, the Vicar of Sheffield, wrote: ". . . I believe there may be two hundred & fifty families, who are Dissenters, most of them are understood to be Independents & the rest Presbyterians." If the families were on average similar in size to those

very large and can't be well determined", reported Vicar Wilkinson for Archbishop Drummond's Visitation in 1764. By this time the Methodists had overtaken the Upper Chapel in membership.<sup>6</sup> Hunter emphasises the problem: "During the last century [ie the eighteenth] there have been many baptisms and burials at the different places of worship for Dissenters, which have not come into the parish register".<sup>7</sup> Cumulative surpluses of baptisms over burials in this register from 1731 to 1801 amount to 8347. If an arbitrary twenty per cent more is added for Dissenters not using the established church ceremonies and for other unregistered infants, the surplus is around 10,000.<sup>8</sup> From 1736 to 1801 the parish population rose from c14,500 to 45,755. The above surplus, then, in broad terms, accounts for only about one third of the increase. Those remaining two-thirds must have been the result of the largely unrecorded net influx of immigrants, the same proportion as Professor Beresford found for Leeds in the last quarter of the eighteenth century.<sup>9</sup> For Sheffield township, with deficits (more burials than baptisms) in the register in the decades of the 1740's and 1770's, the proportion of immigrants may well have been much greater over the same period as above.<sup>10</sup>

Unfortunately, there is no single means of discovering precisely the immigrants' origins, only samples which give some hints of previous location. Neither the Norfolk Lease Books nor the Rentals are helpful in this respect, both using current rather than any former home village or township. WRRD Memorials are little better, offering only about forty names in the eighty years from 1740.<sup>11</sup> Of these about equal thirds came from close to the parish - Eckington, Rotherham and Ecclesfield, for example; from ten to twenty miles - such as Tickhill, Doncaster, Barnsley, Hope and Youlgreave; and from the rest of England, including London and Birmingham. Cutlers' Company Apprentices' Records are a more fruitful source in that they provide not only the origins

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in Gosling's data, we might expect about 1100 men, women and children.

<sup>6</sup> Borthwick Bp V 1764 Ret 3 S Yorkshire

<sup>7</sup> J. Hunter: *Hallamshire* ed Gatty (London) 1869 p21

<sup>8</sup> This figure is maximised to avoid understatement.

<sup>9</sup> M. Beresford: *East End, West End: The Face of Leeds during Urbanisation 1684-1842* (Leeds) 1988 p252. For a much later date (1851) Pollard found that 49 per cent of those over twenty had been born outside the borough, ie outside the old parish boundary (S. Pollard: *A History of Labour in Sheffield* [Liverpool] 1981 pp6ff).

<sup>10</sup> Decadal information for the town from 1797 Directory.

<sup>11</sup> One might expect the incomers to be generally too poor to be involved in property purchases until they had established themselves, by which time their origins would be largely irrelevant.

of the boys, but also the occupations of their fathers.<sup>12</sup> E.J. Buckhartzsch, the first investigator, discovered that between 1624 and 1799 the common pattern was that some two thirds of the immigrant apprentices came from places less than twenty-one miles from Sheffield, which matches the very sparse WRRD evidence. As he was examining nearly 3000 apprentices in the period 1725 to 1799, he was using a significant minority of all incomers.

The Attercliffe Settlement Book offers a very limited local picture, and from a much smaller sample.<sup>13</sup> Officially settled families or individuals in that township between 1740 and 1793 number ninety-five, of whom some seventy per cent came from within ten miles and about twenty per cent from eleven to twenty-one miles. As only nine men are noted without a wife and/or children and no single women, there are doubts concerning just how comprehensive a list this is. Furthermore, only twelve entries are found in the three decades 1764 to 1793, which suggests considerable omissions at a time of very rapid population growth.

These three separate sources give similar and independent pictures of principally local migration swelling the town numbers far above what could be expected from natural growth. Evidence from elsewhere besides Leeds supports the phenomenon. Estimates of population in Lancashire and Cheshire in 1720 and 1778 illustrate the impact of such local movement, showing, for example, the deanery of Blackburn increasing by 161 per cent and that of Manchester by 287 per cent, whereas nearby Cheshire as a whole increased by less than the national average.<sup>14</sup> Birmingham doubled its population between 1770 and the first census. About half the increase is attributable to excess of baptisms over burials.<sup>15</sup>

Having explained the inherent difficulties and seen the trends, we must now examine in detail the figures available. For Sheffield township a dozen known estimates exist (with

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<sup>12</sup> E.J. Buckhartzsch: "Places of origin of a group of immigrants into Sheffield 1624-1799" in *Economic History Review* 2nd Series, II (1950); D. Hey in *The Fiery Blades of Hallamshire* (Leicester) 1991 p76 has refined the data, but for the eighteenth century is in general agreement.

<sup>13</sup> CA 26/1 The Attercliffe Settlement Record begins in 1712.

<sup>14</sup> C.B. Phillips and J.H. Smith: *Lancashire and Cheshire from AD 1540* (London) 1994 pp67/69.

<sup>15</sup> Marie Rowlands: *The West Midlands from AD 1000* (London) 1987 pp173ff.

variations) related to population between Gosling (1736) and the first census of 1801. Only two, both family totals, are for the parish. The data are set out here in tabular form together with the Gosling figures and the relevant censuses as follows:-<sup>16</sup>

Table 1.1 House, Family and Population Figures for Sheffield 1736-1821

<u>Source</u>	<u>Year</u>	<u>Houses</u>	<u>Families</u>	<u>Population(Town)</u>	<u>Parish</u>
Gosling	1736	2152 <i>d</i>	2152 <i>ab</i>	9695 [+418]	14,105 [+?] <sup>17</sup> over 2000 fams
Dossie <sup>18</sup>	1743				
	1755	2667 <i>d</i>	2667 <i>ab</i>	12,983 <i>a</i> 12,001 <i>b</i>	
Wilkinson <sup>19</sup>	1764		2833	(12,182/12,748) <i>c</i>	3939 fams
Goodwin <sup>20</sup>	1764		3000 approx	20,000 approx	
	1768		3842 <i>ab</i>	(16,520/17,289) <i>c</i>	
	1775		4704 <i>ab</i>	(20,227/21,168) <i>c</i>	
	1785		5256 <i>ab</i>	(22,600/23,652) <i>c</i>	
	1788	5874 <i>a</i> 6161 <i>d</i>	5874 <i>b</i>	26,538 <i>a</i> 25,141 <i>b</i>	
	1789	6065 <i>a</i> (287 empty)	6065 <i>b</i>	(26,079) <i>f</i>	
1797 Dir'tory	1796	7657 <i>d</i>	7112 <i>be</i>	29,013 <i>bde</i>	
Eden <sup>21</sup>	1797	6000	nearly 7000	35,000 approx.	
Univ Br Dir'y	1798			30,000 approx.	
Census	1801	7720		31,314	45,755
Census	1811	7927		35,840	53,231
Census	1821	10,036		42,157	65,275

*a* figures from Aikin: *A Description of the Country from 30 to 40 Miles around Manchester* (London) 1795, *b* from the 1797 Directory, *d* from P. Ramsey: *Picture of Sheffield* 1824, *e* from "an enumeration" by the editor of the 1797 Directory p24, *c* calculated from 4.3/4.5 persons per family as derived from the 1788/1736 & 1755 figures above, *f* calculated at 4.3 persons per family. Family average from the 1796 figures appears to be under 4.1, and persons per house for 1801, 1811 and 1821 between 4.1 and 4.5. Family size and people per house compare quite closely to those of Leeds 1740-1801.<sup>22</sup>

<sup>16</sup> The number of families in 1788 and 1796 is derived by the editor of the 1797 Directory from the total number of houses less those unoccupied.

<sup>17</sup> See footnote 3.

<sup>18</sup> Rev. John Dossie's returns for Archbishop Herring's Visitation (Borthwick). "The number of families in the parish of Sheffield is supposed to be above two thousand . . ."

<sup>19</sup> Rev. James Wilkinson's returns for Archbishop Drummond's Visitation.

<sup>20</sup> Rev. E. Goodwin: "Natural History of Sheffield" in *The Gentleman's Magazine* 1764 Vol 34 pp157ff

<sup>21</sup> Sir F.M. Eden: *The State of the Poor* 1797

<sup>22</sup> M. Beresford op cit p104

Gosling's 1736 figures above are not necessarily as accurate as usually assumed, although they are probably the safest of the series before the censuses. Since his survey and population findings were made with the express purpose of demonstrating that Sheffield township needed a second church, it seems unlikely that the total would be an underestimate when the Town Trustees wanted to present a good case. Conversely, when an accusation of false accounting could undermine that case, it was not likely to be a gross exaggeration either.

The core of the subsequent statistics to 1789 comes from Aikin's 1795 description of the town.<sup>23</sup> He supports his work with a considerable quantity of eighteenth-century dates, the majority of which are demonstrably accurate. In that respect he is a reliable recorder. On the other hand he belittles Sheffield's achievements before 1750, perhaps biassed by his Manchester interests. For population he notes no sources although he does use Gosling's town total of 9695 as a beginning and tabulates decadal Parish Register figures from 1701 to 1790, with annual totals from 1791 to 1794. The question remains: how accurate are the figures? There is also the supplementary question: are the figures strictly for Sheffield township in every case; that is are we comparing like with like? No easy answers are forthcoming. Closer examination of the Sheffield graph (p19) suggests that the 1775 total is rather high, a possibility affirmed by modifying Aikin's house totals of 1788 and 1789 with a deduction of the number of empty houses in order to arrive at a calculated "family" figure in the manner used by the editor of the 1797 Directory.<sup>24</sup> We cannot vouch for the accuracy of any one of these population statistics listed by Aitkin, but, with the likely exception of 1775, they appear together graphically as a coherent ensemble as well as conforming with the end figures of Gosling and the 1801 census, together illustrating the surge of growth experienced by many industrial towns in this segment of the eighteenth century.<sup>25</sup>

Rev. John Dossie's estimate for the parish of "above two thousand" families raises its own question. Did he really mean the parish and not the town?<sup>26</sup> Dossie, as a party to

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<sup>23</sup> J. Aikin: *A Description of the Country from 30 to 40 Miles around Manchester* (London) 1795 pp539ff.

<sup>24</sup> It is likely that similar numbers of houses were empty in the successive years 1788/89

<sup>25</sup> C.W. Chalklin op cit

<sup>26</sup> The original return in the Borthwick (Bp V 1743 Ret 3 Yorkshire) was checked to verify the transcript.

the dispute over St Paul's, must surely have been aware of Gosling's figures. If so, he should have suggested "above three thousand" to be more realistic.<sup>27</sup> This Visitation return is one of only two known contemporary sources in a sixty year span from Gosling to the 1797 Directory, and yet for the researcher is unsatisfactory. It is possible, of course, that the population had fallen, but hardly to this degree. Norfolk Rentals offer a little circumstantial support in that the total number of rents fell in the period 1740 to 1745 for both town and parish.<sup>28</sup> The other contemporary source is the Visitation return of 1764 by Rev. James Wilkinson for Archbishop Drummond.<sup>29</sup> Wilkinson explains a problem of compilation caused by "several Familys frequently inhabiting the same House" before offering both parish and town family numbers, about 3939 and 2833 respectively. His proportions are similar to those of Gosling - about 7:5 - which suggests a degree of authenticity, yet the totals are too low in comparison with both adjacent town family figures (that is for 1755 and 1768) which, as noted above, appear to be well related to the whole series. Furthermore it would not be realistic in view of national statistics to suppose that Sheffield's population grew by only thirty-two per cent in the twenty-eight years after Gosling, and then by 250 per cent in the ensuing thirty-three years. Goodwin's 1764 article is notably deficient in statistics and generally lacks dates.<sup>30</sup> His estimate of c3000 families in the town is probably about 400 too few, whereas his total population of c20,000 is in the region of 4000 too many. An average family of six and two thirds persons deduced from the figures is completely inconsistent with the averages from all other sources which show between four and five. This being the case, Goodwin should be rejected. Similarly, Sir F.M. Eden made an over-generous calculation in 1797, although, unlike most others

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<sup>27</sup> At 4.5 persons per family as in the 1736 (Gosling) figures, three thousand families would be equal to 13,500 persons.

<sup>28</sup> The Duke of Norfolk through his agent was making building leases throughout the 18th Century. As additions to housing stock broadly match population increases and the Norfolk Rentals are a complete series we are able to compare the known with the possible (p19). In the Land Tax Assessments of the 1780's and 1790's the Duke owned approximately 40% of the housing in the town (WYAS). Such a large sample carries considerable weight. From the end of the century large sales of property from the estate break the sequence. The discontinuity between 1762 and 1763 is caused by a change in procedure whereby tenancies were in the main noted separately in the Rental and no longer entered as one if a single tenant had several holdings. This form of consolidation may be an explanation for the apparent fall in total rents in the 1740's, although the Baptism and Burial Records for the town show an excess of deaths 1740-49.

<sup>29</sup> Borthwick Bp V 1764 Ret 3 S Yorkshire

<sup>30</sup> Rev. E. Goodwin op cit

involved in the table of figures, he realised that there were likely to be many more families than houses. His suggested population of 35,000 was not reached until about 1810.

John Robinson, editor of the 1797 Directory makes use of the same figures as Aikin to some degree, but not in every case, raising the possibility that he had access to a different source or sources. For example, his 1755 to 1785 families totals were the same, but the 1755 town population was 982 people fewer than in Aikin. In 1788 and 1789 the editor appears to use the latter's houses figures for his own families, perhaps misreading the switch from the one to the other in Aikin's text. However, in 1788, his total population is noted as almost 1400 persons less. At the time of the preparation of the Directory the editor made his own enumeration of families and total population of the town. He does not state how it was done, but the total of 29,013 is quite in keeping with the first census return of 31,314 five years later.

Ramsey appears to have drawn heavily on Aikin and the 1797 editor (above), yet omitted the families only figures of 1768 to 1785. He lists their earlier "families" totals as "houses" (which may well have been erroneous), yet his 1788 and 1796 house figures are at first sight unique to him.<sup>31</sup> What he has done, in fact, is add to the editor's "families" figures the number of empty houses listed with them in the 1797 Directory.<sup>32</sup> There is, therefore, nothing new to be gained from Ramsey. The single statistic from the Universal British Directory of 1798 with its c30,000 is logical. It was probably written as a moderate advance on the enumeration printed in the previous year's Directory cited in detail above. It also fits well with the subsequent census total for Sheffield township in 1801.

All the relevant census returns must be accepted with a potential minor error: Wrigley and Schofield calculate a shortfall of just under four per cent nationally in 1801 and 1811 and of a little less than three per cent in 1821 because of under-registration of young children and the omission of men in military or merchant marine service. They also make very minor adjustments to standardise the data which were acquired in

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<sup>31</sup> The compiler of the first volume of the *Sheffield Local Register* also has 2667 houses for 1755, without a source. He may, of course, have borrowed from Ramsey.

<sup>32</sup> 287 and 545 respectively.

Fig. 1.2 Totals/Estimates of the Population of Sheffield Township  
1736-1821

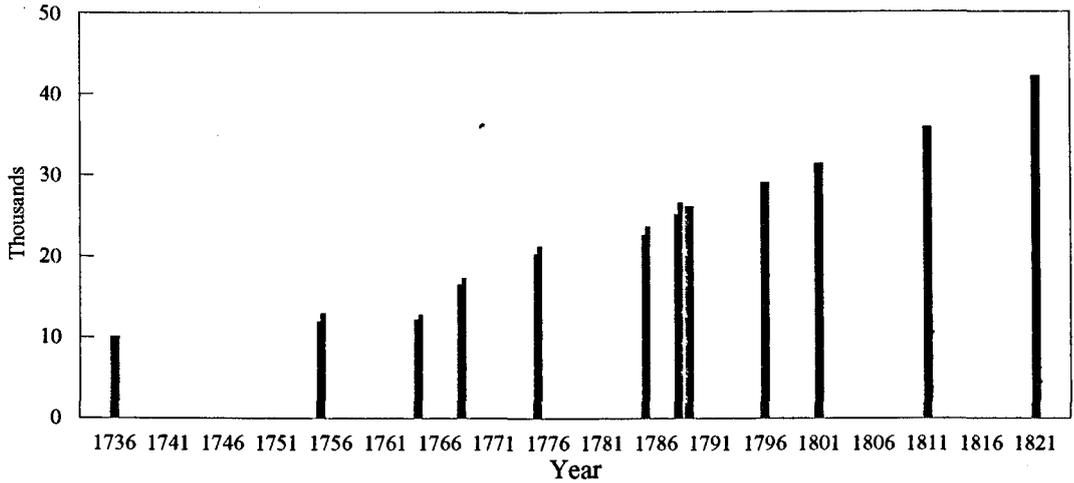


Fig. 1.3 Totals/Estimates of the Number of Houses or Families in Sheffield Township  
1736-1821

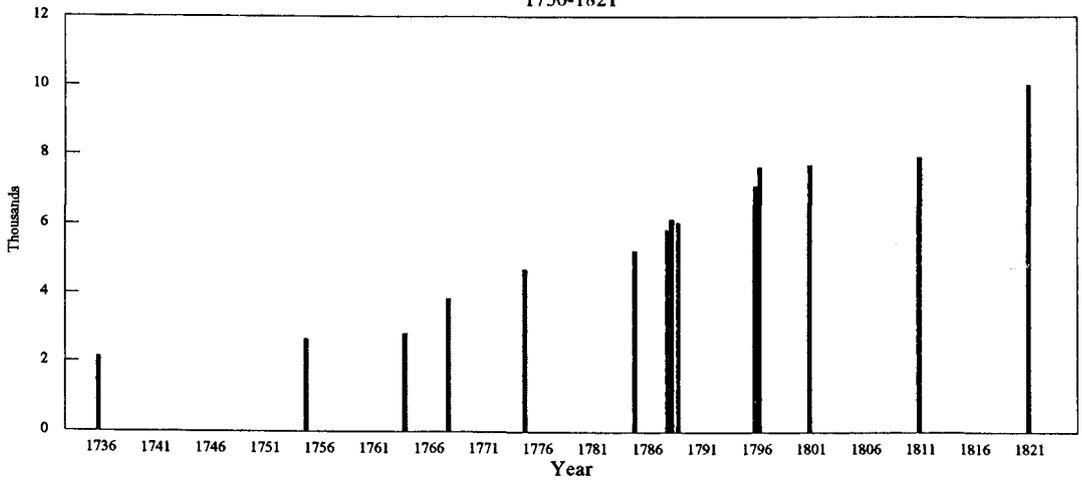
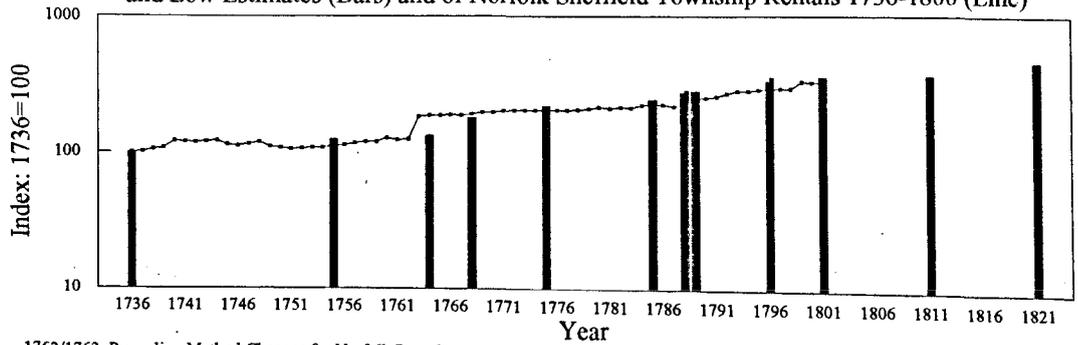


Fig. 1.4 Logarithmic Indexes of Houses/Families in Sheffield Township 1736-1821 with High and Low Estimates (Bars) and of Norfolk Sheffield Township Rentals 1736-1800 (Line)



1762/1763 Recording Method Changes for Norfolk Rentals  
1802 Norfolk Sales begin

different months of their respective years.<sup>33</sup> In spite of the deficiencies, the sources are known, the returns are reasonably consistent, and in addition the figures for the whole parish are available for the first time since 1736. As might be expected, the parish excluding the town had grown at a faster rate than the town itself, thanks to the urban expansion spilling over into Ecclesall, Brightside and Nether Hallam in particular.<sup>34</sup>

A graph drawn from these essentially inadequate and somewhat scattered figures confirms the continuing rise in the population throughout the period, with a steepening gradient after 1755, and steeper still post 1768; then a slower increase between 1775 and 1785, a sharp rise 1785 to 1788 and then a slightly less steep, almost straight, rise through to 1811, followed again by a further increase of gradient to 1821.<sup>35</sup> The shape of the graph is broadly corroborated by that of the Norfolk Rentals through to the end of the century, although the latter series has a downward trend to 1750/1751.<sup>36</sup> Steep rises in Rental number totals in the 1780's are paralleled by the emergence of new streets, both in the Norfolk Lease Books and in Church Burgess, Town Trustee and private holdings.<sup>37</sup> This is also the period of Dunn's list with its sharp increase in the number of grinders<sup>38</sup>, of the more than doubling of the number of grocers and of the building of the New Market, although the origins of the latter appear to have been in the later 1770's.<sup>39</sup>

Within this rapidly expanding population, demographic theory suggests that there

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<sup>33</sup> E.A. Wrigley & R.S. Schofield: *The Population History of England 1541-1871* (London) 1981 p588 and ff. Of course, it is not possible to say to what degree Sheffield mirrored the national pattern in these respects. If it did, 1000 to 1200 should be added to the 1801 town total, perhaps 1400 to the 1811 figure and some 1200 in 1821. Corresponding additions need to be made to the parish totals.

<sup>34</sup> The townships other than Sheffield had been very thinly populated.

<sup>35</sup> There is a two decade gap between the first and second population figure. It is possible in the light of other, notably the Norfolk Rentals and the Baptism and Burial Records, that there was a fall during the 1740's.

<sup>36</sup> This does suggest a fall in the number of tenants, which in turn may imply a decline in the overall population.

<sup>37</sup> New streets in this period are Arundel Street, Brockohill, Brocko Meadow, Carver Street, Charles Street, Edward Street, Eyre Street, Garden Street, Howard Street, Lee Croft, Pitt Field (Red Hill), New Hall Street, Shalesmoor, Solly Street and Union Street.

<sup>38</sup> MD 1747

<sup>39</sup> See Chapter 11 Feeding the Town.

would be a high proportion of children.<sup>40</sup> For Sheffield families this was a disadvantage economically compared with elsewhere, as children were not "useful" here until the age of twelve.<sup>41</sup> The *Register* article from which this evidence is taken mentions Birmingham and Manchester as having much greater advantages for child labour. Some evidence indicates large families. For example, an anonymous letter-writer of 1761 interviewed a silverplater (possibly Joseph Hancock) who had married at twenty-two, had had nine children and whose son, aged about twenty-one had recently married a girl of seventeen. The writer related this high birth-rate, and early marriage, to the success of the town: ". . . so great a connection has the encrease (sic) of mankind with industry . . .".<sup>42</sup> On the other hand, larger families were very much associated with poverty in the Applications for Admission to the Boys' Charity School from 1782.<sup>43</sup> Of the 571 applicants one quarter had three children living at home, twenty-one per cent four children at home, twelve and a half per cent five, six per cent six, and the same percentage seven or more. "Living at home" implies that some of these families were in fact bigger, possibly much bigger. In one entry the mother had had sixteen children, seven of whom were alive and three of those incapable of working. That large families were universal is belied by the data in WRRD.<sup>44</sup> It was rare for numerous offspring to inherit property; more often there were one, two or three children, in some cases "surviving children", and childlessness was not uncommon.<sup>45</sup> Widows and spinsters form a significant minority (seven per cent) of all entries in WRRD for Sheffield township, which almost certainly largely understates the real quantity overall, since widows in less affluent circumstances were most unlikely to be involved in the property market. Indeed, they were particularly prone to poverty as applications for Hollis Hospital places illustrate.<sup>46</sup> If a similar proportion of widowers and bachelors is added, it goes some way towards explaining the relatively low average family size calculated above. What cannot yet be estimated is the proportion of larger and smaller family units, or if there was any change over time in that ratio.

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<sup>40</sup> A. Cairncross op cit

<sup>41</sup> *Sheffield Register* 16 May 1789

<sup>42</sup> MD 1869 "Travels in different parts of England" p56ff (letter nine)

<sup>43</sup> MD 2081 (1782-1814) The boys concerned must have been born in and after 1771.

<sup>44</sup> Perhaps this is the other side of the coin from large families often being poor.

<sup>45</sup> The Borthwick Wills testify to the fact that nephews and nieces were frequently main beneficiaries for want of sons and daughters.

<sup>46</sup> LD 1163 Letter Sept 1747

In conclusion, Sheffield's surge of population growth in the course of the eight and a half decades from 1736 to 1821 is clearly evident, with a more than four-fold increase. Yet it is not possible to chart that growth with full confidence on even a broad decadal basis from the statistical detail currently available. Furthermore much of the source material is secondary and at times doubtful. That said, primary and contemporary figures often leave much more to be desired. Net immigration, for the whole parish outweighing natural increase by a factor of two, played the greater part in raising the rate of advance to over twice that of the national average.<sup>47</sup> As for the composition of the population, assumptions and difficulties have been outlined above. Unless further archive sources are discovered, the whole topic will remain very much an unsatisfactory one for the researcher. Too many questions remain unanswered.

Similar uncertainties pervade the spectrum of English urban population figures provided by E.A. Wrigley for c1700, c1750 and 1801.<sup>48</sup> Among provincial towns above 5000 inhabitants in 1700, Sheffield has no mention. It seems possible that the township could have been just below that cut-off figure. It is more likely to have been well beyond it.<sup>49</sup> Besides this, the c1750 total of c12,000 for Sheffield is for the township, that of 1801(c46,000) for the parish. As long as the change is similar for other towns - it is more realistic to use parish statistics as new building overflowed old township boundaries - the positioning is not compromised. If Sheffield were correctly

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<sup>47</sup> C.W. Chalklin op cit

<sup>48</sup> cited by R. Schofield: "British Population Change 1700-1871" in R. Floud & D. McCloskey eds: *The Economic History of Britain since 1700* (Cambridge) 1994 p88

<sup>49</sup> David Hey has estimated from the 1672 hearth tax returns that possibly upwards of 4500 people were currently in residence, but prefers a more modest range of 3900 to 4200 derived from the near contemporary Compton ecclesiastical census of 1676 (D. Hey op cit p65). During the last quarter of the seventeenth century, small baptism surpluses in the parish registers to 1690 were offset by an excess of 370 burials in the following decade, suggesting a near *status quo*. However, the population was swelled to some degree as a proportion of the 329 immigrant apprentices joining the Hallamshire cutlery trades came into Sheffield township, plus an unknown number of migrants from surrounding areas. If the total had been, say, 4999 in 1700 an annual average compound growth rate of exactly 2% would have been needed to raise it to Gosling's 9695 + 418, whereas the annual average rate 1736 to 1801 was very close to 1.75%. In view of the shape of the population graphs in the second half of the 18th century both nationally (Wrigley & Schofield op cit p578) and locally, it seems almost certain that 2% is far too high a rate for the first third and that Sheffield should have been comfortably in Wrigley's list of c1700.

placed out of the top thirty at the beginning of the eighteenth century, by c1750 it had moved up to twelfth equal with Nottingham. In 1801 it was sixth. Such a rise through the ranks was almost meteoric. In the mid-century list it was the only town, according to Wrigley, which had not been in that of c1700, and in the first census statistics had overtaken all the large old-established towns other than Bristol. Even when we suppose the 1700 omission was incorrect, as it appears to be, Sheffield's relative progress was still impressive.

Whatever the outcome of the discussion of the true picture in 1700, the fact remains that between 1736 and 1821 the population more than quadrupled.<sup>50</sup> In this growth the town was firmly linked by cause and effect to the local, national and international economies. Families and individuals were all consumers and many of them producers. The feeding of the town and provision of other goods and services will be discussed in later chapters. Sheffield's emergence as a leading industrial town depended not only on traditional craft skills, but also on the development of new trades, on vigorous entrepreneurs and on a growing labour force producing goods - particularly cutlery and edge tools, plated and silver artefacts and steel - in ever increasing quantities. For most of this, the growth of population was a necessary condition.

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Using township or parish figures.

## CHAPTER 2 THE CUTLERY AND EDGE TOOL TRADES<sup>1</sup>

The period 1740-1820 was one of great increase in the number of workers in the cutlery and edge tool trades and of tremendous expansion of their output. Within the industry significant structural changes took place, leading to greater specialisation by product, growing division of labour, new amalgamations of expertise through partnerships, the emergence of bigger firms and increasing integration. At the same time the sector retained many vestiges of its historic working regulations, its preponderance of small units and its traditional handicraft skills. Dr. Maxine Berg, writing of both Sheffield's and Birmingham's metal trades, attributes their respective successes above all else to the skill of the workers operating within a framework of local customary trade practices.<sup>2</sup> In this way, inspite of, or perhaps because of, the apparently contradictory facets of the cutlery industry's development, the quality and variety of its finished goods evolved in a manner that would have been almost impossible with any form of factory production. Cutlery and tools "made in Sheffield" became synonymous with the best standards of manufacture at home and abroad.

### HISTORICAL BACKGROUND

By 1740 local cutlery making was many centuries old, having been under the jurisdiction of the Manor Court of Hallamshire until the death in 1616 of Gilbert, the last of the Earls of Shrewsbury.<sup>3</sup> The incorporation of the Company of Cutlers in 1624 then offered a means of regulating the industry (with varying degrees of success) through a hierarchy of freemen. Knives, sickles, shears and scissors, and subsequently scythes, razors and files, came under their auspices.<sup>4</sup> Sheffield and district had long

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<sup>1</sup> This topic has been the subject of much attention, including the seminal works of G.I.H. Lloyd: *The Cutlery Trades* (London) 1913 and R.E. Leader: *History of the Company of Cutlers in Hallamshire in the County of York* (Sheffield) 1905/06, together with A. McPhee: *The Growth of the Cutlery Industry and Allied Trades* (unpublished typescript in Sheffield Local Studies) 1939 and P.C. Garlick: *The Sheffield Cutlery and Allied Trades and their Markets* (MA thesis Sheffield) 1951. D. Hey in *The Fiery Blades of Hallamshire* (Leicester) 1991 re-examines the period 1660-1740. This chapter will inevitably draw on the above texts, but also contains new material which will in some cases modify their conclusions.

<sup>2</sup> M. Berg: *The Age of Manufactures 1700-1820: Industry, Innovation and Work in Britain* (London) 2nd edn 1994 pp256ff & 273

<sup>3</sup> D. Hey op cit pp54ff

been noted nationally for the manufacture of knives, as testified by Chaucer's often cited "Sheffield thwitel" and numerous sixteenth century literary references. Recent discoveries of Hallamshire knives from the same century in the mud banks of the River Thames provide practical confirmation.<sup>5</sup> The specialisation within the industry was such that some areas within Hallamshire and its environs had already before 1700 become closely associated with a particular product. Eckington and Ridgeway, for example, were noted for sickles and Norton and (to a lesser degree) Wisewood for scythes.<sup>6</sup> "Cutlery" was, therefore, a generic term, broadly inclusive of all of the above mentioned trades.<sup>7</sup> Furthermore, as the Cutlers' Company held jurisdiction over some tools - awl blades for example, there was commonly a far from clear distinction between "cutlery", tools and hardware - chisels, planes, pincers, punches, saws, gimlets, corkscrews, engraving tools, rules, fleams and so on.<sup>8</sup> Because the district enjoyed long-inherited skills and such beneficial internal economies of scale (aided enormously by water power), quality and cheapness via intensive manufacture had not become mutually exclusive. Correspondingly, as specialisation continued to develop, so increasing national and international markets for the products were absolutely critical to the region's economic success.

Some writers have belittled the status of the industry in the 1740's, giving a critical portrayal of a rather pathetic workforce incapable of building up adequate stocks for marketing and obliged to wait for casual orders in order to practise their trade.<sup>9</sup> This view shows a total misunderstanding of the nature of the product and of the working of the system. Firstly, iron and steel wares were very prone to rust and, ideally, had to be

<sup>4</sup> G.I.H. Lloyd op cit pp114ff and see *Sheffield Register* 13 Sept 1788

<sup>5</sup> G.I.H. Lloyd op cit pp95/96 and D. Hey op cit pp 54 & 94

<sup>6</sup> These were out-of-town trades which persisted into the nineteenth century. See D. Hey op cit pp95ff

<sup>7</sup> A common and useful definition (to negate the notion of cutlery as tableware only) is "anything that cuts". A Cutlers' Company by-law of 1662 stipulated the necessity of a steel edge. *A propos* of this "cutlers" encompassed toolmakers (with the exception of awlblade smiths) until the 1770's, although filesmiths, razormakers, scissorsmiths, shearsmiths and sicklesmiths usually seemed to have their own categories from the seventeenth century or earlier.

<sup>8</sup> Bagshawe Colln (John Rylands Library, Manchester) 5/4/2 inside back cover 1735ff.

<sup>9</sup> Probably initiated by J. Aikin: *A Description of the Country from Thirty to Forty Miles around Manchester* (London) 1795 and then perpetuated by Hunter *Hallamshire* Gatty edn (1869) pp172/173.

stored in a room with an atmosphere kept perpetually dry by fire. The expense of restoration from corrosion more than cancelled out the profit margin.<sup>10</sup> Secondly and perhaps more importantly, the multiplicity of combinations for a particular item - say a table knife - with size and shape of blade, size and shape of handle, and wide variety of materials for that handle (silver, fused plate, ivory, pearl, tortoiseshell, bone, porcelain, agate, fish skin, and different types of horn or of wood, for example) made stocking of such goods in anticipation very inadvisable.<sup>11</sup> In fact, the industry's ability to provide in big or small quantities exactly what the customer wanted in almost infinite variety was part of its strength.<sup>12</sup> Richard Dalton, a Sheffield merchant, emphasised that stocks were not kept and that a delay between order and availability was the norm.<sup>13</sup> Makers also expected ready money, with the merchants having to bear the time lag between purchase and payment to themselves.

#### EMPLOYMENT IN THE TRADES

Total numbers of cutlery workers in the various sectors have been open to some conjecture. Professor Lloyd dismisses Gatty's figure of 6000 in Hallamshire in 1710 as a vast over-estimate, and suggests about 1800 rising to 5000/6000 a century later. His total taken from the "official" returns of 1824 in the *Sheffield Local Register* is 8419 for Sheffield with an additional 130 for "country workers".<sup>14</sup> What is not clear is whether Sheffield is the town or the parish with the country workers perhaps in the rest of Hallamshire. Nor is there mention of scythes or sickles in the *Local Register* listings, which means that we may not be comparing like with like. Dr. McPhee prefers 2000 to 3000 for the whole trade at the beginning of the eighteenth century and 7000 to 8000 at the end, with more than 10,000 in the mid-1820's.<sup>15</sup> Besides McPhee's higher totals, the

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<sup>10</sup> Bagshawe Colln op cit 5/4/3 19/26 March 1748

<sup>11</sup> The modern parallel is the small special steels firm of today which holds little or no stock, and supplies as per order because of the variety of alloy, of section (round, flat, square etc) and of dimensions required.

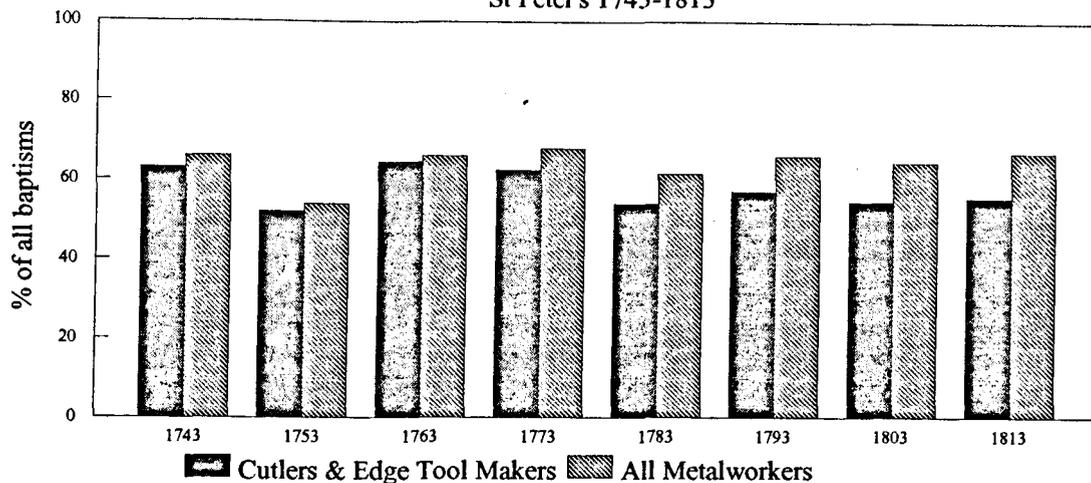
<sup>12</sup> M. Berg op cit pp263-265 cites a detailed example of penknife patterns, and makes the point of the similar nature of Birmingham "toys".

<sup>13</sup> Bagshawe Colln op cit 5/4/3 5 Dec 1747

<sup>14</sup> G.I.H. Lloyd op cit p154 and Appendix V pp445/446. The *Local Register* figures are broadly in line with House of Commons Select Committee statistics of 1833 cited by Lloyd in the following Appendix (p447). Directories use "in the Neighbourhood" to locate craftsmen in places like Upper Hallam and Bradfield. "In the country" sounds rather more distant.

<sup>15</sup> A. McPhee op cit pp26ff. M. Berg (op cit p266) calculates some 20,000 for the

Fig. 2.1 Fathers' Occupations from Sheffield Parish Records (Baptisms)  
St Peter's 1743-1813



difference between the two sets of estimates is: Lloyd has cutlery workers of all kinds slowly falling as a proportion of the whole parish population, whereas the former broadly maintains the *status quo*. The importance of metal working to the town and parish in the seventeenth and early eighteenth centuries is amply illustrated by Professor Hey through the occupations recorded in the baptism and burial register.<sup>16</sup> His findings permit him to observe: "Few, if any, contemporary urban societies were as specialized in their occupational structure as was Sheffield, where even in the seventeenth century over half the work-force was employed in the metal trades".<sup>17</sup> His break-down of the latter in 1698-1703 and in 1728-1733 show that the vast majority of those were occupied in cutlery and edge tool production. This concentration appeared to increase in the course of the following decades. In 1743, for example, in the occupations of fathers in St Peter's baptism records, cutlery trades (including grinders and edge tool makers) on their own made up 63% of all occupations. In 1753 it was just over half, in 1763 over 64%, in 1773 approximately 54%, in 1783 nearly 63%, in 1793 some 57%, and in 1803 and 1813 a fraction on either side of 55%.<sup>18</sup> The whole parish was only marginally different. Burial figures for the parish in 1813 and 1818 indicate a not dissimilar 54% and 52%, plus those turners, pressers and handle makers

"toy" trades of Birmingham and surrounding districts in 1759.

<sup>16</sup> D. Hey op cit pp99ff

<sup>17</sup> R.E. Pahl in Chapter 2 of *Patterns of Urban Life* (London) 1970 notes that both Northampton and South Shields had half the labour force organised around the respective trades (leather and coal), but only by the mid-nineteenth century.

<sup>18</sup> The majority of the burial records for this period have an insufficient number of occupations noted to provide firm data.

who were cutlery and edge tool related. The proportion of the labour force in the cutlery and tool industry, as McPhee proposed, seems to have been similar in the first decades of both eighteenth and nineteenth centuries, yet with higher points in some sample years giving the impression, perhaps, of a declining trend from the 1760's.

## SPECIALISATION

Specialisation by product and area has been mentioned above, with the filemakers and scissor-smiths, for example, clearly differentiated. What is less evident is the amount of specialisation in the making of knives and tools. A spring-knife cutler was not the same as a tableware cutler, and the production of saws, pincers and corkscrews needed other, different respective skills. Richard Dalton's invoices give some indication of the specialist abilities by naming the craftsmen with some of the items listed in the late 1730's.<sup>19</sup> From other sources, too, early specialisation of craft is evident: Richard Lowe was a "fleme" maker in 1742, and John Fox of Attercliffe a forkmaker in his will of 1750.<sup>20</sup> In subsequent decades John Spooner of the Farm, cutler, was dubbed "silver cutler" (from 1767) and John Eyre similarly (from 1772). But these samples are relative rarities in the archive material until the later 1770's, by which time the first extant Sheffield Directory illustrates the various major subsections of the cutlery trade as practised locally. Among the 1774 Directory cutlers listed are makers of spring knives, table knives, pen and pocket knives, case knives, butchers' knives, jack-, stag-, seal'd- and spotted-penknives, and various other "spotted" items.<sup>21</sup> Here is very clearly a wide variety within one product area, but almost certainly many cutlers of the time were sufficiently versatile to turn their hands to a range of goods within the spectrum.<sup>22</sup> What are noticeable by their absence are the toolmakers. They must be concealed among the other "cutlers" in the first section of the Directory. The WRRD offers

<sup>19</sup> Bagshawe Colln op cit 5/4/2 inside back cover (28 Dec 1737) Waterhouse made razors, Owen stagg haft penknives with and without "mawhooks", Youle inlaid penknives, J. Ellis ivory gutter'd folding penknives, Pogmore buffler haft penknives, Jonathan Dixon buck haft knives and forks, W. Broomh[ea]d red and black tip knives and forks, and so on.

<sup>20</sup> WRRD PP 250 351 and AD 499 645 A fleam was a type of veterinary lancet.

<sup>21</sup> Scales of horn were burned to imitate the appearance the more expensive tortoiseshell (D. Hey op cit p107)

<sup>22</sup> Later Directories often give a list of products manufactured by a particular firm. The "Little Mesters" currently working at Kelham Island Industrial Museum can turn their hands to a wide variety of products, although, of course, they are not working under extremely competitive conditions or trading restrictions.

evidence that edge tool makers did not describe themselves as such until the 1770's when three appear in the Memorials. In the 1780's there are ten, and in the 1790's fifteen new names. The 1787 Directory is certainly very different from its predecessor of 1774 in that there is no overall "cutler" category. It lists twelve firms making edge tools in the town and six more "in the Neighbourhood". This contrasts with nearly two hundred men making various kinds of pen and pocket knives and one hundred in the different table knife sectors. Even if we add hammers, saws, scythes, sickles and shears to the tool trades, the latter appear to be a distinct minority. The next extant Directory, that of 1797, provides similar data. Only twelve edge tool makers and four joiners' tool makers appear as against thirty-five fork makers and over two hundred and seventy pen and pocket knife cutlers in town and neighbourhood.<sup>23</sup> What we may conclude with some justification is that the term "cutler" from the later 1770's usually means some sort of "knife maker", and that tool making firms are in the distinct minority. Further declared specialisation is evident by 1817 with brace and bit makers, awl blade makers, an engravers' tool maker and a corkscrew manufacturer appearing in the Directory of that year.<sup>24</sup> A partial explanation of the relative dearth of edge tool makers may well be found in this Directory, with the example of John Sorby & Sons who were manufacturers of patent sheep shears, patent augers, edge tools, hammers and hoes. Perhaps tool making firms were bigger and more varied in their product than those producing knives or scissors.<sup>25</sup>

#### CUSTOMARY PRACTICES AND PRICES

Running across the great variety of individual specialities was a framework of local or customary practices. Dr. Berg, writing mainly about Birmingham, perceives these to have been essential to artisan independence, keeping the skilled producers from total subservience to factors and other intermediaries who were part of the supply and distribution organisation. Apprenticeship rules, employment regulations, wages, prices and trade demarcation all exerted a level of control at workshop stage.<sup>26</sup> Of these, the ones possibly most worthy of note are the application of customary or standard prices

<sup>23</sup> Fork makers (15 town, 20 neighbourhood); pen and pocket knife cutlers (134 town, 143 neighbourhood). There were also 81 table knife manufacturers.

<sup>24</sup> Awl blade makers have a long history (D. Hey op cit p7).

<sup>25</sup> See later in this chapter evidence for greater size in edge tool firms.

<sup>26</sup> M. Berg op cit pp273/274

and piece rates for the artefacts of those trades which came under the auspices of the Cutlers' Company, and, apparently by imitative tradition, for other things which did not.<sup>27</sup> When times were difficult some craftsmen, often outworkers, desperate to earn a small income rather than nothing, sold at lower prices (to the detriment of all), but otherwise the customary price or piece rate obtained. As long as all similar cutlery and tools were subject to the same respective pricing levels, the main differential became quality. Other things being equal, the commercial pressure was for improving standards. The point must not be undervalued. In the wider world it was this establishment of a qualitative superiority as well as a price advantage which placed Sheffield at the forefront of the whole industry.

### CAPITAL INVESTMENT AND PARTNERSHIPS

The minimum capital investment required to set up as an individual cutler or toolmaker in most sectors was small. Evidence from probate inventories supports this contention. In 1781 William Marsh of Sheffield Park had two smithies with three hearths of tools with pressing and glazing equipment together worth eight guineas and eight vices valued at £2-8-0. Similarly, in 1785 John Ellis had two hearths of tools worth £6-10-0 and in 1793 Joseph Webster's working tools were appraised at £12-10-0. Many comparable examples can be found.<sup>28</sup> This fact has always been used as one of the explanations of the industry's continuation as a collection of preponderantly handicraft trades into the twentieth century. However, such trends do not preclude the slightly bigger capitalisation evident in the inventory of John Billam (d. 1785) who had four hearths of tools worth £10-5-6, other equipment amounting to more than £16 and whose total inventory appraisal was £94-16-2 including the debts of his employees; or that of Jonathan Slack whose smithy contained two hearths of tools valued at £81, iron and steel at £28 and thirty gross of knives at 27 shillings per gross.<sup>29</sup> Further up the scale is the much bigger investment in the table knife trade by Benjamin Withers senior

<sup>27</sup> Wheat 1181 to 1185 (1764) Benjamin Roebuck contracted to take all the work of five local cutlers at Sheffield prices. Silver and plated ware followed the system. Customary prices for house building are noted in 1778 (ACM S158 M). During wartime metalware price levels were officially raised (*Iris* 12 Feb 1801, 24 Feb 1803, 6 Mar & 31 July 1810) and re-set in the peace (11 Apl 1820).

<sup>28</sup> Borthwick Institute of Historical Research, York: Wills and Inventories for the Deanery of Doncaster July 1781, Aug 1785, Dec 1793 and *passim*.

<sup>29</sup> *ibid* Mar 1785 and June 1790

(d. 1771) and his five partners, in cutlery by John Parkin whose stock in trade at his death in 1786 was worth £300, and in the edge tool manufacture of John Wilde (d. 1792) with stock and book debts totalling £850.<sup>30</sup> There appears to be a fundamental gap between the earlier and these last three examples. Once a cutlery firm had progressed beyond the size of a few journeymen and apprentices; more precisely, over and above the number of workers easily manageable by a master cutler whilst he himself continued to work, insufficient economies of scale were to be had within the business to permit the master to become solely a manager. Perhaps most importantly, there was far too great a risk in employing large numbers of journeymen in view of the vagaries of the market. A cutlery "manufactory" in this sense cannot have been viable in the eighteenth or early nineteenth centuries, or examples would surely have emerged.<sup>31</sup> Capitalisation of the kind employed by Withers & Co. permitted the partnership to become factors, supplying steel to outworkers and buying their finished or partly finished material.<sup>32</sup> The advantage of outworkers was that they provided their own accommodation and tools, and there was a form of quality control in that inferior work could be rejected. In this respect, they required no supervision, and, when trade was bad, the employer was under no obligation to maintain them.<sup>33</sup> Such arrangements did not prevent factors from producing or finishing themselves. Evidence from the ledgers of Nowill & Hague, cutlers, supports this thesis. In 1786 the two partners employed three men and a lad and had a small number of outworkers. By the 1790's the latter had increased to between twenty and thirty. Both Thomas Nowill and Thomas Hague travelled in turn on business several times each year, and were able to continue to manage in-house activities. Ongoing success for the firm, even after Hagues's death in 1797, is reflected in the growth of the outwork group to more than forty after the Peace of 1815.<sup>34</sup>

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<sup>30</sup> *ibid* Feb 1771, Nov 1786 and Nov 1792. Withers's share in the partnership was valued at £133-6-8, hence the total capital was £800 if all were equal. Wilde also had over £40 in cash and bills in the house.

<sup>31</sup> No inventories have been found with large numbers of hearths. The organisation of the plated industry with high capitalisation and considerable division of labour was in total contrast.

<sup>32</sup> In the WRRD Memorials Withers was always "cutler" in the early and mid-1760's. By 1769 he was "factor" (BL 128 188).

<sup>33</sup> One of the old by-laws of the Cutlers' Company required a journeyman who was "idle for want of work" to be paid by his master (G.I.H. Lloyd *op cit* p116)

<sup>34</sup> LD 192 Ledger. Matthias Spencer followed a similar pattern in his file making business over more than two decades from the late 1750's (LD 1725).

The question of size of partnerships in cutlery (ie knife making) and edge tools is relevant here and relates to an earlier part of the chapter where variety of output is discussed. Besides bringing more capital together, partners often allied different skills (not least commercial) and possibly even different trades.<sup>35</sup> This fact must have been particularly important across a large part of the range of toolmaking where wood turning and haft pressing were an essential part of production.<sup>36</sup> A survey of all partnership dissolutions between 1793 and 1797 in the *Courant* and from 1798 to 1820 in the *Iris* reveals that cutlers were preponderantly partners in pairs or trios. Of the thirty-five cases, twenty-two were twos and ten were threes. From a smaller sample of seventeen joiners' tool and edge tool makers over the same period the sizes were more evenly distributed from two to five or more.<sup>37</sup> But additional pieces of evidence from the newspapers do imply that edge tool producers were bigger in scale: an advertisement for a partner in an established edge tool manufactory in 1804 indicated a premium of £1000, and another the following year £500 to £800.<sup>38</sup> Comparable sums for "cutlery" were between £200 and £500 and for a table knife partner £500 to £700.<sup>39</sup>

Partnerships in edge tool making also showed a propensity towards both horizontal and vertical integration (especially the latter) and hence even greater growth. James and Joseph Kenyon, filesmiths, in 1757 joined in a venture with John Plummer, wine merchant, and Robert Jones of Kidderminster, sawmaker, with a capital sum of £600 to manufacture saws.<sup>40</sup> Possibly shortly before this date the Kenyons had leased from William Burton the grinding wheels and "a mill for tilting steel" at Middlewood which provided them with file making material.<sup>41</sup> Later, in 1765, with new partners, they took the lease of Pond Forge which was subsequently expanded to include a rolling and slitting mill.<sup>42</sup> The 1797 Directory has John Kenyon, a successor, as a steel maker.

<sup>35</sup> A saw making partnership of 1763, for example, was made up of a factor, a cutler, a mercer and a saw maker (Wheat Colln 819). A locksmith and edge tool partnership of 1768 brought together a merchant, four razormakers, a saw maker and a cooper (Wheat Colln 1562). Conversely, most (knife) cutlery partnerships were composed of (knife) cutlers.

<sup>36</sup> Haft pressers as a distinct trade are first mentioned at the end of the eighteenth century (*Iris* 18 Jan 1799 Dissolution of Partnership John Booler *et al*)

<sup>37</sup> Five had two partners, five had three, four had four and three had five or more.

<sup>38</sup> *Iris* 29 Nov 1804 and 11 April 1805

<sup>39</sup> *ibid* 8 May 1800, 4 Aug 1803, 28 May 1809 & 23 Aug 1804

<sup>40</sup> Wheat Colln 2818 and 1553

<sup>41</sup> D. Crossley ed: *Water Power on the Sheffield Rivers* (Sheffield) 1989 p2

Other sawmakers followed a not dissimilar path. Thomas Boulsover, for example, who had moved to Whiteley Wood to set up a rolling mill and saw manufactory (1762) was listed also as a cast steel maker in the 1774 Directory. Similarly Messrs Greaves, Loftus & Brightmore were saw makers and steel manufacturers. Samuel Newbould, edge tool and saw maker, joined with others in 1784 to manufacture saws and fenders; by 1817 the Directory listed them as makers of edge tools, shears, fenders and steel.<sup>43</sup> The same Directory has eight other examples including Daniel Doncaster (files and steel), John Spear (files, saws and steel) and Peter Cadman & Co. (table knives and forks and steel). In this way they benefited from greater control over both costs and quality of raw material.

These partnerships and integration of processes create a very different picture from that of the ubiquitous "little mester" with two or three hearths, or an outworker in his workshop with just a few tools and a stithy. Supposedly traditional egalitarianism of the local secondary metal trades had clearly given way to a considerable degree of hierarchy, at least by the early nineteenth century.<sup>44</sup> That industrial hierarchy had been in part encouraged and in part reinforced from another quarter of the cutlery trade. It was not only Thomas Boulsover and the Hancocks who had moved into plated wares from knives. John Winter and five co-partners, who had been together since 1766 or sooner, still called themselves cutlers ten years later by which time they had erected near Barker's Pool smithies, workshops and warehouses.<sup>45</sup> However, in the last three months of 1773 Winter & Co. had taken for assay over one hundred and seventy pairs of silver candlesticks and more than two hundred buckles.<sup>46</sup> In similar manner, Samuel Roberts, cutler, who was a partner with Jacob Roberts in the table knife trade, was also in silver with Winter and with others.<sup>47</sup> John Elam, Richard Creswick and Matthew Fenton, all cutlers turned platers together with Winter and Roberts, had been apprentices of Thomas Law, himself Master Cutler in 1753, and at his death in or before 1778 described as cutler *and* plater.<sup>48</sup> But whatever numbers formed the

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<sup>42</sup> *ibid* and ACM S379 ff8/9

<sup>43</sup> MD 6193

<sup>44</sup> This assertion contrasts with the findings of Lloyd op cit p114, although the latter is more vague with his dates.

<sup>45</sup> WRRD BD 686 865 & BZ 223 299

<sup>46</sup> Sheffield Assay Office Plate Book 1773ff

<sup>47</sup> *ibid*, PC 738 and MD 5244

hierarchy, it would be unwise to deny the fact that the large majority of workers in the cutlery and edge tool trades were still operating on a very small scale.

#### DIVISION OF LABOUR

The gradual outward partition of the metal trades had its equivalent internal developments with the division of forging, grinding and assembling in the cutlery and edge tool industry. Both Lloyd and McPhee write in terms of little separation within the specialisations in the seventeenth century and differ over the beginnings of division of labour, the former suggesting the middle of the eighteenth century, the latter the end (apart from the scythe trade which was a little earlier).<sup>49</sup> However, the proliferation of water-powered grinding wheels up to 1740, with only a few having permanent day or half day rents, is good circumstantial evidence that grinders were already becoming a particular trade.<sup>50</sup> This is firmly supported in WRRD by the appearance in memorials of individuals calling themselves "grinders" from the early 1740's. For example James Bennett was described as a grinder in 1742, and his father, Edward, a cutler in 1737, was noted as a grinder by 1751.<sup>51</sup> Similarly Richard Hall was a grinder in 1743, and others appear in the early 1750's.<sup>52</sup> (The more specific trades of razor-grinder and scissor-grinder are not met until the 1770's or after.)<sup>53</sup> Lloyd counted nearly 900 troughs at water-powered grinding mills in 1770 and more than 1400 powered by water and steam in 1794.<sup>54</sup> Baptism records also firmly support the rise of the grinder. In

<sup>48</sup> E.J. Law: *Origins of the Silver Trade in Sheffield* (unpublished typescript in Sheffield Assay Office) 1991. The conversion of the one to the other and the binding of plated apprentices as cutlers caused problems for the Company in the later eighteenth century and the eventual separation of the two trades (R.E. Leader op cit Vol I p78). Some "imported" silver workers, Tudor and Leader, for example, had never been cutlers.

<sup>49</sup> G.I.H. Lloyd op cit Ch VII; A. McPhee op cit p. 27/28

<sup>50</sup> Indicating hire for use by craftsmen doing other operations the rest of the week. D. Crossley op cit. It is likely, of course, that some tenants of grinding wheels would sub-let spare capacity informally on a day or half-day basis. The Grinders' (Sick) Society was founded in 1748 (date order of Societies *Iris* 5 July 1814).

<sup>51</sup> WRRD QQ 183 219 (1742) & TT 37 60 (1744) James Bennett, grinder, was involved in the mortgage and assignment of property in Pinson Croft; CB 1634 (1737), ACM S378 (23 Mar 1750/51)

<sup>52</sup> WRRD SS 34 53 (1743) Richard Hall (Ecclesall) grinder sold or mortgaged Birkin House, Bradfield. WRRD AG 632 836 (1752) William Spooner.

<sup>53</sup> WRRD BT 608 770 (1774) & CE 473 601 (1779); ACM S382 102r (1783)

<sup>54</sup> G.I.H. Lloyd op cit p157. He undercounted in 1794 as the List of that year

1743 only six of the 266 cutlers and related trades were classed as grinders, in 1753 none were noted, and in 1763 two only.<sup>55</sup> By 1773 there were over twenty, with little advance a decade later. Yet by 1793 nearly 140 were listed, or about seventeen per cent of all cutlery trade workers. Evidence from the early nineteenth century Parish Registers has grinders at the even higher proportion of some twenty-one per cent.<sup>56</sup> Corresponding details from the Cutlers' Company Apprentices records provide full support for the above findings.<sup>57</sup> Of the fathers of new recruits, the first cutler grinder was noted in 1738, the first file grinder in 1766, the first scissor grinder and saw grinder during the 1770's, and the first tool, razor and fender grinders in the 1780's. Fathers who were grinders (other than of scythes) numbered ten and forty-seven respectively in the 1760's and 1770's. In the same two decades grinder-masters of new apprentices totalled seventy-seven and 144, confirming these years as the ones of rapid change. There is no corresponding evidence for forgers to parallel this surge.<sup>58</sup> The ubiquitous "smithy" strongly supports the hypothesis that the cutlers in general did their own forging, or employed their own forgers.<sup>59</sup> In February 1742 Robert Broomhead, cutler, made an agreement to employ a fellow cutler, John Goodlood (sic), "in the Work, Trade or Business of fforging Knife Blades called Jack Penknife Blades . . . for the term of Three Years . ." Goodlood was to work exclusively for Broomhead, producing eight gross of blades per week at 1s 4d per gross. All steel would be provided.<sup>60</sup> It seems probable that others made similar agreements, thus concealing a tacit division of labour by private arrangement which may have been quite widespread. Lloyd commits himself firmly to one section of the Sheffield trades in this respect: ". . . the process of forging remained an integral part of the cutler's task in the spring knife

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(SCL) does not include the wheels on the River Sheaf above Heeley. See also Chapter 8 Water Power and Steam.

<sup>55</sup> These were both saw grinders.

<sup>56</sup> Burial data for 1813 and 1818

<sup>57</sup> J. Unwin et al: *Cutlers' Apprentices and Freemen* Group Research Project (Divn of Adult Continuing Education, Sheffield University)

<sup>58</sup> *ibid* Only two masters in the 18th century are named as forgers: James Downes of Attercliffe was a cutler-forging in 1777 and Thomas Clarke of Sheffield a forger in 1794. The next recorded was Robert Foster in 1813. Those forging at the large water-powered forges and slitting mills were invariably called "forgemen", so there is no risk of confusion.

<sup>59</sup> Table knife, razor and edge tool forging, for example, typically needed two men (G.I.H. Lloyd *op cit* pp290ff)

<sup>60</sup> Tibbitts Colln 762

trade till well on in the nineteenth century".<sup>61</sup> He goes on to state that the full separation of forging, grinding and hafting in the remainder of the cutlery industry occurred early in the same century. Sparse contemporary evidence seems to confirm his view. The WRRD only records one man classed as a forger before 1820 - William Smith, table knife blade forger, who leased a parcel of land in Orange Street from Thomas Holy in 1816, and in the same year the *Iris* contained its first advertisement for forgers.<sup>62</sup> An examination of the 1817 and 1821 Directories has revealed no individuals described as forgers. In corroboration, a scan of the Parish Registers has had a similar negative result. Circumstantial evidence provided by complaints against the common and dangerous practice of cutlers carrying steel rods over the shoulder after dark also suggests that they still did their own forging.<sup>63</sup> Of course, it must have been that the term "cutler" (as in bygone years) or "edge tool maker" still concealed separate practices within the trades. Lloyd found lists of piece work prices for razor forgers for 1810, scissors forgers for 1819 and pen-knife forgers for 1820.<sup>64</sup> A list in the *Sheffield Local Register* (1 May 1824) has over 1900 forgers and strikers in the various knife, fork, razor, file and edge tool sectors.<sup>65</sup> This enumeration purports to be "for official reference" and "made by persons engaged in the respective branches, with great care". It is difficult to believe that many of these men were not employed as such for some time before 1820. A tentative conclusion to be drawn is that forging was tacitly a separate activity at least as early as 1742 with John Goodlood, and progressively becoming more overt in the various trades, possibly from shortly after the turn of the century, if not before.

An extreme example of the division of labour in a cutlery industry can be found in the French town of Thiers, and described in an article in the *Iris* in 1803.<sup>66</sup> From slitting to assembling there were nine different sequences, each performed by a different person "who confines himself for life to his own branch of the work".<sup>67</sup> The tone of the article

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<sup>61</sup> G.I.H. Lloyd op cit p178

<sup>62</sup> WRRD GN 316 269 and *Iris* 16 Jan 1816. One heavy and two light edge tool forgers were wanted. No other references have been found to date in any other source.

<sup>63</sup> *Iris* 24 Mar 1807 and 10 June 1817

<sup>64</sup> G.I.H. Lloyd op cit Appendix XV pp475ff

<sup>65</sup> Cited in Lloyd op cit Appendix V p445

<sup>66</sup> *Iris* 16 June 1803

<sup>67</sup> Women worked at Stage 6 - "A woman forms the ornaments, which are to

using phrases such as: "the subdivision of Labour in this Manufacture is highly remarkable" clearly indicates that Sheffield cutlers were not organised in such a way or anything approaching it, even by the early nineteenth century. A system of this type is rigid, creates total interdependence and tends towards bigger units. All three of these characteristics run counter to the perceived patterns of behaviour of the majority of local cutlers in the eighteenth and early nineteenth centuries.<sup>68</sup> Knowledge that each Hallamshire freeman was entitled to his own mark strongly supports the view that he produced his own artefacts. It must be remembered, however, that not all apprentices took up their freedom. Recent research has shown that, apart from the scythe trade where the take-up was in excess of eighty per cent, less than half of all apprentices became freemen of the Company of Cutlers.<sup>69</sup> That is to say the greater remainder waived the privilege of joining the ranks of the Company and any possibility of elevation into the hierarchy. They had no mark of their own and were not permitted (officially) to take apprentices.<sup>70</sup> Many preferred to work or were only capable of working as journeymen, in other words as employees or outworkers. A few even covenanted themselves for life to a factor, trading loss of independence for regular employment.<sup>71</sup> Clearly some aspects of interdependence existed, but in no way approaching the degree described at Thiers.

## SOURCES OF MATERIALS

Having examined the development of practices within the industry, we may next pose the question - what were the sources of the metal and other materials used by cutlery and its allied trades? Dr. Barraclough believed that Newcastle steel, often used under the generic term of "German", was a major component in the early eighteenth century. Hull imports of genuinely German steel, however, were very small, peaking in the later 1720's (some thirty-three tons in 1728) and falling to below ten tons in 1751 when imported Baltic iron stood at more than 5000 tons.<sup>72</sup> Richard Dalton of Sheffield

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appear where the nails fasten the pieces of the handle together".

<sup>68</sup> The mutual exchange of unfinished articles by little mesters earlier in the present century was almost certainly forced upon them by competition from the bigger firms.

<sup>69</sup> The average to 1814 was 47% with a declining trend through the eighteenth century (J. Unwin op cit)

<sup>70</sup> By the 1780's this restriction was clearly being ignored (R.E. Leader: *History of the Company Of Cutlers in Hallamshire* (Sheffield) 1905 Chapter VII.

<sup>71</sup> Wheat Colln 1181 to 1185

imported small quantities of steel from Hamburg via the Hull route from the later 1730's, but no primary evidence has been found to support the thesis that steel from Newcastle was of any significance at this time.<sup>73</sup>

Nearly a century earlier, Sheffield and district had begun to import the Swedish Oregrund bar iron which became the staple raw material for the cementation (or blister) steel preferred by the craftsmen.<sup>74</sup> Broad control of the carburisation process, by the timing of the heat in days, followed by the selection of steel pieces before forge welding, provided the different trades and sub-sections of trades with materials of varying degrees of hardness appropriate to their individual requirements. The texture of the forged metal was also especially suited to most cutting edges. In 1736 three local merchants were sufficient to supply the trades with all such steel.<sup>75</sup> The imported iron bars had come initially through Bawtry (having been brought from the Baltic to Hull), and then mainly via the Don Navigation to Aldwarke in the early-1730's, to Rotherham by 1740, and to Tinsley from 1751.<sup>76</sup> Russian bar, used seemingly only to supplement the Swedish in earlier years, had risen to more than a quarter of all iron imports in the 1750's, and at Hull probably peaked at about forty-eight per cent in the late 1760's.<sup>77</sup> In 1750 the price differential - £13-10-0 per ton ready money from Hull compared with Swedish at £16 - gave it a distinct advantage, "tho' not so well drawn as Sweeds Iron".<sup>78</sup> B.A. Holderness suggests that the use of Russian bar was beginning to outstrip Swedish in Sheffield soon after this period. Certainly his examination of Osborne & Gunning's accounts reveals that from 1758 and into the early 1760's almost all their imported iron was Russian.<sup>79</sup> A few years later, the fact that 250 local signatories

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<sup>72</sup> G. Jackson: *Hull in the Eighteenth Century* (Oxford) 1972 Appendix 2  
<sup>73</sup> Bagshawe Colln op cit 5/4/1 150 and passim. See Chapter 3 The Steel Industry  
*ex info* Professor David Hey; Bag Colln op cit 5/4/1 365  
<sup>74</sup> John Fell, Elizabeth Parkin and Samuel Shore (Bagshawe Colln op cit 5/4/1  
104). Richard Dalton became an importer soon afterwards, bringing in about  
40 tons per annum 1737-1748.  
<sup>75</sup> see Chapter 10 on Transport  
<sup>76</sup> G. Jackson op cit p41 Russian bar rose to 63% of all imported Baltic iron by  
the 1780's and settled to one third by 1801 (*Iris* 5 Feb 1801).  
<sup>77</sup> Hull Local History Archives L382.5 Letter from Wright & Twigg (Hull) to  
William Longston (Eyam) 26 Sept 1750. 10s per ton was added for credit for  
both types.  
<sup>78</sup> OR 3 & B.A. Holderness: "A Sheffield Commercial House in the mid-18th  
Century" in *Business History* 15/1 1973

presented to the Marquis of Rockingham an illuminated address in appreciation of his good offices in achieving the Anglo-Russian Commercial Treaty of 1765 appears to confirm that Russian iron was still of major significance in Sheffield.<sup>80</sup>

Whatever the sources of the iron, the purpose of its importation was to make steel for the trades. Even though blistered bar derivatives suited most of them, an innovative variety was introduced into the town by Benjamin Huntsman in mid-century. The impact of the crucible product on the cutlery and edge tool industry and its timing are difficult to assess as so little primary evidence is available. Lloyd mentions Huntsman, but does not enlarge on the use of his more homogeneous metal. An apocryphal story is that the Sheffield craftsmen initially rejected cast steel as too difficult to forge because of its greater hardness, and only accepted it when superior imports made of the new material posed a threat to the town's reputation and their markets. A primary consideration, however, must have been the additional cost which cutlers would not wish to bear if it could not be recouped by higher prices.<sup>81</sup> A critical factor, too, was the dearth of supply. Huntsman produced from small crucibles and had little or no successful opposition before the mid-1760's.<sup>82</sup> Dies, rolls and stamps, especially for the burgeoning plated industry and for Matthew Boulton's activities in Birmingham, would be likely to have absorbed most of the production in the earlier years. The rise in the number of cast steel makers, from three in the later 1760's to at least ten by the end of the century, and to twice that number by 1820, plus the increase both of the size of the crucibles and of the number of crucible holes operated by the average firm, is proof that local producers of particular metal goods were progressively using more of this type of steel.<sup>83</sup> One trend apparent from 1774 (already noted) was for larger scale makers of edge tools, files and saws to integrate vertically into cast steel production.<sup>84</sup> Such a development appears to indicate the full acceptance of the new metal by at least some of the leading manufacturers. Other firms' purchases add support. In the earliest extant Huntsman Ledger (1785-1805), of the 350 or so clients, about forty per cent came from the town.<sup>85</sup> Thomas Brammall & Sons, filemakers, for example, spent

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<sup>80</sup> WWM R59-4 & R68

<sup>81</sup> Huntsman's price was 90s per cwt, the equivalent of £90 per ton

<sup>82</sup> See Chapter 3 Crucible Steel

<sup>83</sup> *ibid*

<sup>84</sup> *ibid* and Directories

<sup>85</sup> LD 1612

some £350 in the years around 1788, and Nowill & Kippax, cutlers, were customers at least from 1791 and spent about £300 in a two year period 1795-1796.<sup>86</sup> Further local users included more cutlers, tool makers, razorsmiths and at least one scythesmith.<sup>87</sup> Even so, blister steel continued to be made in quantities which vastly outweighed the total crucible output, perhaps by ten times or more in 1802 when an estimated 2950 tons of iron would have been shipped in via a proposed Tinsley to Sheffield canal. Of this total only a few hundred tons would have been melted by the casters.<sup>88</sup> Clearly there was considerable growth in the use of crucible steel in the secondary metal trades, but over many decades and with a much slower change in its proportionate use in relation to cementation steel.

Most cutlery and edge tool trades also used other metals besides steel. Local iron still had a role to play. John Fell and partners were the main providers in the 1740's. At the time they supplied over 100 firms in and immediately around the town.<sup>89</sup> The biggest customers by far were Joseph Broadbent and John Roebuck who, as factors and ironmongers, in turn furnished many others with their needs. Iron, a much cheaper material than steel, was often used for those component parts which did not bear an edge. Iron tangs might be welded to tool blades, for example, and scythe makers forged an iron/steel sandwich in which the thin steel core always provided the cutting edge and was supported and strengthened by iron shoulders. The same principle was achieved differently by the later "patent scythe" with its horse-shoe section backing riveted to the steel, but iron still provided the essential support. Non-ferrous metals, too, were in frequent use for cutlery handles. Thomas Boulsover was allegedly repairing a silver-handled knife and using both silver and copper when he made his discovery. Silver handles were quite common throughout, and, after Boulsover, those made of fused plate.<sup>90</sup> Richard Dalton listed "brass-framed French penknives" in a box of hardware destined for Hull in 1735 and "brass fram<sup>d</sup>" rules of various lengths and

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<sup>86</sup> *ibid* f13 and f11

<sup>87</sup> *ibid* ff 83, 122, 131, 246 and *passim*

<sup>88</sup> See Chapter 3 Cementation Steel

<sup>89</sup> Bagshawe Colln op cit 5/4/2 (8 Oct 1743); SIR 22 Ledger 1736-1744

<sup>90</sup> Bagshawe Colln op cit 5/4/2 (Invoice dated 6 June 1738); Boulton Archives (Birmingham Assay Office) Box Assay Office 1 Minutes of the Parliamentary Committee Proceedings, William Abdy's deposition; Sheffield Assay Office Plate Books *passim*.

joints in a similar consignment in 1746.<sup>91</sup> Brass handled knives were due to rise in price in February 1800.<sup>92</sup> The silver used in Sheffield was largely that manufactured as a by-product of the lead industry (much of it via the London Lead Company) and sent from the metropolis by London bullion merchants until John Read & Co. took over as the major local supplier in the 1770's. Read began to sell metal refined from sweep imported from the Royal Mint and other London sources.<sup>93</sup> Copper was very much a Cornwall monopoly until the discovery of large deposits in Anglesey in 1770.<sup>94</sup> Brass, an alloy of copper and zinc, was produced mainly in Birmingham.<sup>95</sup> Hence, in contrast to foreign bar, Sheffield purchased its other metals from within the kingdom.

Metal handles, however, were in a small minority compared with those made or inset with a wide variety of animal horn and bone.<sup>96</sup> The most expensive of these organic materials was probably ivory, long used for high quality cutlery.<sup>97</sup> Richard Dalton dispatched ivory handled tableware and penknives to Hull in the 1730's and 1740's, and attempted to purchase "elephants teeth" from Liverpool.<sup>98</sup> Those tusks at two to the hundredweight and more were too large for the Sheffield market, said Dalton. Of the smaller ones, he indicated that Old Malabar and Bonna were the best, and Gambia not at all suitable. When his first essay failed he was told that more "Guineamen" were due to arrive within weeks.<sup>99</sup> Ivory was also imported via Jamaica to Hull, and to London.<sup>100</sup> Staghorn, hartshorn and buckhorn were all in popular use by cutlers in the 1730's and 1740's.<sup>101</sup> It appears that hartshorn and staghorn were comparable in esteem in Sheffield, having a wholesale price in 1746 of between 48s and 58s per hundredweight "according to their goodness", whereas buckhorn was much cheaper at

<sup>91</sup> Bagshawe Colln op cit 5/4/2 Invoices 15 Sept 1735 & 9 Aug 1746

<sup>92</sup> *Iris* 17 Jan 1800

<sup>93</sup> A.Raistrick & B. Jennings: *A History of Leadmining in the Pennines* (London) 1965 Chapter 6; R.E. Wilson: *Two Hundred Precious Metal Years* (London) 1960 pp20/21

<sup>94</sup> H. Hamilton: *The English Brass & Copper Industries to 1800* (London) 1926 p330; see Chapter 4 Silver and Old Sheffield Plate.

<sup>95</sup> H. Hamilton op cit p332

<sup>96</sup> Bagshawe Colln op cit 5/4/2 Invoices 1735-1746

<sup>97</sup> Between £5-12-0 and £10 per cwt depending on size in 1743 (ibid 29 June)

<sup>98</sup> ibid 29 June, 27 Aug & 1 Oct 1743

<sup>99</sup> ibid 7 Aug 1743

<sup>100</sup> *Lister's Sheffield Weekly Journal* 18 Feb 1755 (in York Minster Library); *Iris* 7 Feb 1800

<sup>101</sup> Bagshawe Colln op cit 5/4/2 Invoices 1735-1746

23s to 33s.<sup>102</sup> Dalton purchased all three in considerable quantities through his Hull contacts from the Baltic and northern Europe - the largest consignment being two tons of hartshorns worth £114 from Charles Metcalf & Son of Hamburg in September 1749.<sup>103</sup> The same port was the source of six hogsheads of horns for auction advertised in the *Courant* in 1796, and possibly for the one ton of "superior staghorn" to be sold in lots in 1820.<sup>104</sup> "Buffler" (buffalo) horn was an occasional alternative, although very hard of composition and therefore quite difficult to work.<sup>105</sup> Animal bones were a cheaper substitute for horn and readily available. They could be cut to imitate the more expensive horn and dyed appropriately.<sup>106</sup> Quite commonly they were pared into scales, as were all kinds of British and foreign horn and tortoiseshell whose figuring made them ideal for pocket and pen knives. Increasing specialisation led to scale-pressing becoming a subsidiary trade in its own right by the end of the eighteenth century.<sup>107</sup> Wooden handles were rather less frequent than horn and bone for domestic table ware because of the practical problem of washing. However, cacao wood handles are noted for the 1730's, and other types intermittently afterwards.<sup>108</sup> Lignum vitae was apparently not favoured by cutlers in 1740.<sup>109</sup> Wood came into its own, of course, for tool handles of all kinds and with it the trades of haft turners and pressers.<sup>110</sup> Local hardwoods, particularly ash and beech, provided most of the raw materials. Ash was preferred for chisel handles, whereas beech was used for saws and for planes. When tools such as rules demanded a true fine grain and freedom from knots the ideal medium was boxwood.<sup>111</sup>

<sup>102</sup> ibid 5/4/2 4 June 1746 The differential was reflected in the price of the finished product - Stag [handled] table knives at 3s 6d per dozen, buck at 3s (ibid 3 Oct 1744).

<sup>103</sup> ibid 5/4/3 5 Sept 1749

<sup>104</sup> *Courant* 16 Apl 1796 & *Iris* 7 Mar 1820

<sup>105</sup> Bagshawe Colln op cit 5/4/2 invoice 28 Dec 1737; Valerie Answer: *Sheffield's Traditional Craftsmen* (Sheffield) 1980 Booklet

<sup>106</sup> ibid (both); JC 1117 (74)

<sup>107</sup> Horn and scale pressers appear occasionally in property records eg Robert Fisher in Wheat Colln 1211 (1797), Paul Eyre in WRRD FH 300 361 (1809) & Thomas Vickers in WRRD GH 132 142 (1815).

<sup>108</sup> Bagshawe Colln op cit 5/4/2 invoices; MD 1728 (1784)

<sup>109</sup> ibid 5/4/1 432 " . . [Lignum vitae] won't doe here for the Cutlers use."

<sup>110</sup> More than a dozen haft pressers are noted in WRRD from 1793 to 1818. At his death in 1818, John Bramwell, haft presser and formerly cutler, had numerous haft and scale presses among his working tools to be sold (*Iris* 28 July 1818).

<sup>111</sup> *ex info* Ken Hawley; *Sheffield Weekly Journal* 17 Feb 1756; MD 1737 (4); *Iris* 15 Feb 1799

Within the period 1740 to 1820 cutlery and edge tool workers consistently made up over half, sometimes rather more than half, of the male adult labour force, a clear advance on former years. As the whole population quadrupled in the same years, it is reasonable to state that those occupied in the cutlery trades must have done similarly. The rapid surge in the number of grinders in particular, and the latent development of specialist forging, strongly support the view that output must have expanded at an even greater rate. During this expansion another structural change had taken place with the development of partnerships as a significant minority form, and a visible emergence of a hierarchy within the cutlery and edge tool manufacturers. Finally, there was some change, if only partial by 1820, in the choice of steel for the making of the wide variety of artefacts by those manufacturers. Over the same period, Sheffield's cutlery and edge tool trades grew to the point of dominating not only national, but many international markets. Thanks to a combination of local skills, of specialisation and of the application of power to most of the grinding and some of the forging, the region's producers could completely undersell all their rivals. The nature of the development also meant that quality and variety were not sacrificed to quantity or to any form of mass production. In the early nineteenth century several thousand firms, the great majority of them tiny, yet with a significant minority of bigger combinations in their midst, still normally operated within a customary practice and price framework, which provided both safeguards and constant competition and pressure to improve standards. As with crucible steel and with plated ware, cutlery and tools manufactured in Sheffield had the highest reputation.

### CHAPTER 3 THE STEEL INDUSTRY

Very much a junior industry, in terms of establishment, to the long famed Sheffield cutlery trade, local steel had little or no reputation outside the area in 1740.<sup>1</sup> By 1820, however, the town was probably almost as well known nationally and internationally for its steel as for the more traditional product. During the following decades the industry would continue to develop to such a degree that Sheffield (together with Rotherham) dominated not only the British market, but by the mid-nineteenth century manufactured nearly fifty per cent of the world's output.<sup>2</sup> Significantly, too, Benjamin Huntsman's crucible steel discovery, although very slow to burgeon, was quite early in the history of those technological innovations which helped precipitate or accelerate the Industrial Revolution. Dating from the early 1740's, it was a quarter of a century and more ahead of the spinning jenny, the high pressure steam engine and the water frame.

The eighty years of this study were essentially a formative period for the two different lines of development taken by steel. The cementation process (making "blister steel") evolved principally in a two-fold quantitative manner, by size of furnaces and number of firms. Crucible ("refined" or "cast") production began with an innovative discovery, had a slow formation over some twenty years, probably because of technical difficulties, and, from the mid-1760's, gradually increased capacity, but on a very much smaller scale than for cementation steel.<sup>3</sup> Demand for the latter came directly from the hugely expanding cutlery and edgetool trades, and, to a lesser extent, from the refining method which melted both scrap and blister steel pieces. Refined output found its main market initially in steel for rolls, dies and stamps in the silver and fused plate industry and in those cutting tool sectors where extreme hardness and durability were essential.

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<sup>1</sup> Grateful acknowledgement is made to the pioneering work in this field by the late Dr. Kenneth Barraclough. Further details are given at the beginning of the two separate sections.

<sup>2</sup> K. Barraclough: *Early Steelmaking Processes* PhD (Sheffield University) 1981 Chapter 11

<sup>3</sup> A cementation furnace produced in tons, up to seven tons at a time in mid-18th century, although each heat took a week plus another to cool. Sheffield's second largest producers, Walker & Wilde, were estimated to be carburising 500 tons per annum in 1802. A crucible melted only pounds, but a series of daily heats with multiple crucibles over a year's sequence of campaigns might have enabled an average firm in 1820 to make between ten and twenty tons.

In short it was employed wherever the high premium of additional processing was justified by the benefits. Making a backward linkage, Sheffield steel of both kinds was manufactured almost exclusively from imported Swedish and Russian iron bar. It thus essentially depended on, and created a rising demand for, the Baltic product which was its essential raw material. The iron came by water via Hull and the Don Navigation. It was converted into steel, then further processed into cutlery, tools and hardware or into crucible steel, and perhaps processed again or used in some other trade. Finally, large quantities of finished articles were sent away by road or back down the Navigation to Hull for shipment to London or overseas. In summary, Sheffield bought in metal, applied local skills and experience to add considerable value, and redistributed very profitably.

#### CEMENTATION STEEL IN SHEFFIELD

This section inevitably draws heavily on the work of Dr. Kenneth Barraclough whose PhD thesis and subsequent two-volume book *Steelmaking before Bessemer* (London) 1984 are the seminal studies on this topic. However, there will be questions raised as to the role of imported steel, particularly that from Newcastle and the north-east, as a major source for the Sheffield trades during and from the 1730's and a firm suggestion that the Hallamshire area by that period was more self-sufficient than hitherto supposed. There are two facets to this argument - it has to be shown that less steel was coming into the town and, conversely, that more was being made locally. Much of the evidence is circumstantial, but, even so, sufficient to support a reasoned discussion.

A cementation furnace contained two separated and built-in coffin-like chests made from large pieces of sandstone, with ample space for the coal fire below and a cone-shaped chimney above.<sup>4</sup> In 1809 a pair of new "pots" at Ibbotsons' in Colson Crofts each measured 10.92 feet long, 4.04 feet wide and 6.29 feet deep.<sup>5</sup> Wrought iron bars (up to about three inches wide, a half to three-quarters of an inch thick and as long as would fit) were packed in layers into the chests in such a manner that any one bar rested on a bed of crushed charcoal and was insulated from its neighbours or the outer

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<sup>4</sup> Single chest furnaces are known to have existed, but were far less common. John Marshall had one at Millsands (K. Barraclough: *Steelmaking before Bessemer* (London) 1984 Vol. 1 pp91/92).

<sup>5</sup> Fairbank BB92 f31 Earlier versions must have been much smaller.

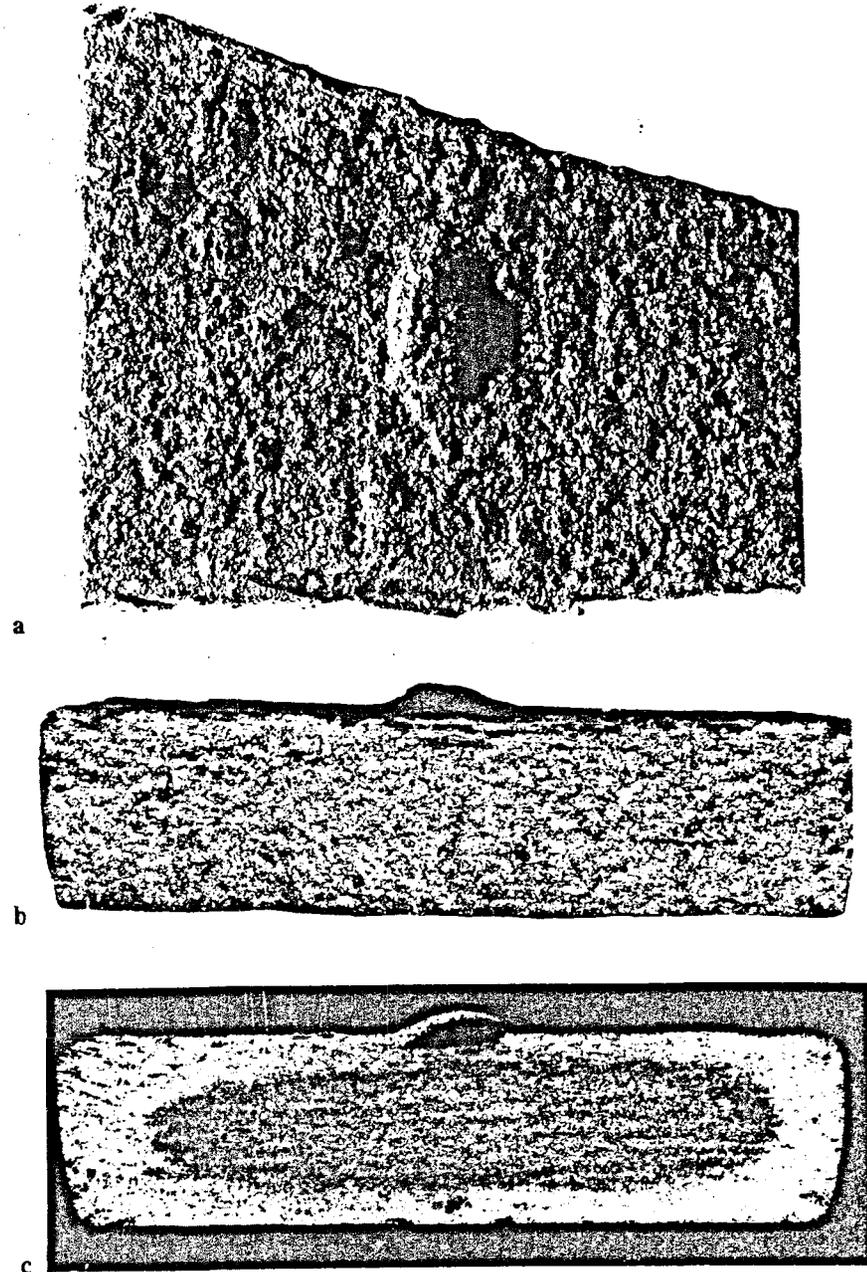


Fig. 3.1 Blister Steel

Illustrations derived from the examination of a piece of blister steel from the last cementation heat on the No. 2 Doncaster furnace in Hoyle Street, 1951, and reproduced from K. Barraclough Vol. I Plate 3 by permission of the Institute of Materials.

a Flat surface of the piece showing blister.

b Fracture section through the bar, with evidence of slag streaks and some blistering.

c A similar section after grinding back, polishing and etching, showing higher carbon envelope and lower carbon centre. The average carbon content of millings taken immediately below the oxidised surface was 0.97%; that of drillings from the centre was 0.64%.

stone casing by more charcoal. Each chest was then sealed with wheel swarf or some other cover to keep out the gases and the whole was coal fired to bright red heat (1050<sup>o</sup> - 1100<sup>o</sup>C) and kept at that temperature for up to a week.<sup>6</sup> Another week was required for the furnace and contents to cool. When extracted the bars were heavily blistered and, more importantly, carburised to varying degrees between about 0.5% and 2% by the diffusion of carbon from the charcoal.<sup>7</sup>

By the 1730's cementation or blister steel, the type largely used by the cutlery trades, had been made in the Sheffield area for nearly a century.<sup>8</sup> The three local importers of Swedish Oregrund iron bar, reputedly the best material for steelmaking, were, in 1735, the Fell Partnership, Elizabeth Parkin and Samuel Shore.<sup>9</sup> The latter left no business documentation, and Mrs. Parkin's sole extant account-book contains only her financial and property-related activities.<sup>10</sup> Fell's archive on the other hand is very detailed, including every aspect of the developing (mainly iron producing) company via ledgers and journals from 1690 to the mid-1760's.<sup>11</sup> Dr. Barraclough has been able to produce a full picture in tabular form of their annual sales of "Ruff" steel, and of "Faggott", "Gadd" and "Slitt" steel.<sup>12</sup> A search of the "Steele Trade", outpayments and stock sections of the relevant volumes has revealed no mention of imported steel of any kind.

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<sup>6</sup> K. Barraclough: Vol. 2 p44ff

<sup>7</sup> *ibid.* The steelmaker appraised the nature of the metal by the appearance of the fractured end of a broken bar. Because the carburisation varied within the chest the bars were sorted into batches for different branches of the secondary metal trades. See Fig. 3.1. There is a full description of the whole process in Barraclough Vol. I Appendix 14.

<sup>8</sup> David Hey: *The Fiery Blades of Hallamshire* (Leicester) 1991 p184, and the steelmaking of Charles Tucker at Rotherham or Thrybergh from the 1640's (*ex info* D.Hey)

<sup>9</sup> K. Barraclough: Vol. I p36 The author explains the value to the steelmaker of Swedish Oregrund or Dannemora iron. Its freedom from phosphorous and sulphur was even more valuable in the crucible process. Bagshawe Colln (John Rylands Library, Manchester) 5/4/1 (104). Cheaper Russian bar was also being imported at this time, but probably not on a regular basis (Bagshawe Colln op cit 5/4/1 (76).

<sup>10</sup> OR 1

<sup>11</sup> Staveley Iron Records (SIR)

<sup>12</sup> K. Barraclough: Vol. I pp71-74. "Ruff" was blister steel as from the furnace after carburisation. "Faggott" was Ruff broken into pieces of about 18 inches, ten or so of which were tied for forging and then drawn into smaller bars. "Gadd" was drawn further. First "Gadd" (early 1740's) and then "Faggott" (1751/2) were replaced by "Slitt" steel.

Fell & Co. appear not to have been buying in from Newcastle or from the continent.

Richard Dalton, merchant and importer, and the man who named the three Oregrund buyers above, began his business in Sheffield in June 1735.<sup>13</sup> Although primarily a timber man, judged by his most frequent correspondence, within weeks he wrote to John Anthony Crop and Co. of Amsterdam enquiring about the cost and freight charges for German steel.<sup>14</sup> His resulting purchases were very small, averaging about half a ton per year for the next eight years with an exceptional ton and a half in 1741.<sup>15</sup> This compares with the more than forty ton average for Baltic, mainly Swedish, iron he imported over the same period. The fact that he was offering three tons of best quality English (Sheffield) steel "as good as can be used" to Samuel Mowld of Hull in 1738 does suggest that his initial suspicion that German steel could not compete as value for money against the local product was justified.<sup>16</sup> As to steel from elsewhere in England, there is no mention of it. Had there been a market for this particular commodity Dalton would surely have tried samples or made enquiries. Since he imported, besides timber and iron, large quantities of horns of various kinds, ivory, hemp, oil, wine, brandy, raisins, writing paper, rolled latten (brass) sheet, melting potts, china, oats (when there was a local crop failure), and in fact almost anything from which profit could be made, it seems strange that he did not identify a demand for Newcastle steel if its qualities were perceived as superior to or different from those of the Hallamshire product.

Contemporary accounting in the Hull Port Records shows that only a tiny fraction of the ferrous imports were steel, and a marked fall (about half) from the quantities of a decade earlier.<sup>17</sup> Jackson notes 3914 tons of iron imported into Hull in 1737. Less than

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<sup>13</sup> Bagshawe Colln 5/4/1 op cit (13) and see chapters on Finance and Transport.

<sup>14</sup> David Hey op cit p184 makes the point that in the seventeenth century "German steel" was often a generic name for steel made by the cementation process. In this case and following the term does describe the metal's origin (Bag Colln 5/4/1 f69 & 5/4/2 7 Feb 1740/1). The makes bought were EB Bird & Pinchers and Heart & Club

<sup>15</sup> Not all was good quality material. Dalton's comment in 1738 about one steel delivery was: "It flies like glass" (Bagshawe Colln op cit 5/4/1 306a 1738). In another letter (ibid 447 1740) he enquires about the price of "small steel fit for Razors, double EB Bird and Pincers (German)". Perhaps the imported steel was particularly hard, and close to the forging margin.

<sup>16</sup> ibid (320 & 69).

<sup>17</sup> Gordon Jackson: *Hull in the Eighteenth Century* (Oxford) 1972 Appendix 2;

half of one per cent of that weight (16.95 tons) could be added for imported steel. That compares with 33.4 tons of mainly "Long German Steel" against a smaller figure of 2581 tons of iron in 1728. Jackson does make the comment that "English steel - several tons at a time - was imported [from the north-east] before Huntsman had perfected his crucible process, and, . . . small quantities were constantly arriving"; this compares again with the large and increasing quantities of iron noted, unfortunately without matching figures for appropriate years.<sup>18</sup> There is the detail that much earlier, in 1706, four tons of Newcastle steel came into Hull at a time when the Fell Partnership produced about ten tons, and some 2000 tons of imported Baltic iron were registered annually.<sup>19</sup> In 1706 forty-two coasters came from Newcastle and seventy-one from Sunderland; in 1728 111 and 138 respectively; and in 1737 94 and 129. After this the numbers declined sharply.<sup>20</sup> The ships would need to have carried vastly more than the "small quantities" noted by Jackson to make any real impact. And what is not known is what proportion of the whole was coming to Sheffield in those years. That some steel was travelling on the Don Navigation is reflected in the Lock Dues charges of 1733 - 3/- per ton (not exceeding 25 cwts) between Doncaster and Aldwarke.<sup>21</sup> It may also have been carried from Sheffield.

If the water-borne route offers little information to support a significant imported steel trade, is it possible that some supplies were coming by road? As long as Hull goods had to bear the cost of the long trek from Bawtry, there just might be acceptance of the heavy premium of over-land transport from the north-east. Once the Don Navigation had reached Aldwarke in the early 1730's and Rotherham in 1740 that additional expense from Hull had more than halved. Even if Newcastle blister steel possibly cost a little less than the local circa £23-£24 per ton (and over £40 when drawn into superior "German" steel compared with under £30 for Sheffield "Gadd") it would hardly have borne the premium of road carriage of upwards of £4, unless its perceived value was

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Hull Local History Department Archives L 387.1 The Port Records are very difficult to read because of the congestion of entries. Probably because of this Jackson selects only sample years to illustrate the range and quantity of imports.

<sup>18</sup> Jackson op cit p 77. He implies that the supply continued into the 1770's.

<sup>19</sup> ibid Appendix 2 & 14 The 4 tons of steel was among more than 2000 tons of goods from Newcastle to Hull in 1706 including coal, salt, glass and fish. K. Barraclough Vol. I p71.

<sup>20</sup> G. Jackson op cit Appendix 12

<sup>21</sup> PRO RAIL 825-1 (9 Aug 1733)

much greater.<sup>22</sup> Indeed one piece of somewhat anachronistic evidence suggests that it was considerably dearer. B.Q. Andersson, travelling in England in 1766/67 when Hallamshire prices for Gadd/Slitt had increased by about £2 per ton since 1740, stated: ". . . the shear steel made at Blackhall Mill [in County Durham] is also used to some extent by the cutlers in Sheffield and is known as Newcastle steel. It is sold at £50 to £55 per ton, which is the usual price for German steel in England nowadays".<sup>23</sup> This quotation sends mixed signals, firstly that some of the cutlery trades were still using the steel, but secondly that the price was so high as to be prohibitive. The tentative conclusion from all the available information is that, although small quantities of imported metal were being purchased, Sheffield and Hallamshire were well on the way to self-sufficiency in cementation steel production by 1740.

This latter statement needs firmer justification. Dr. Barraclough suggests an annual total for the area of something of the order of 150 tons for the early 1740's.<sup>24</sup> His figures are based on the supposition that about 1000 tons of Swedish iron ore were being converted into steel in the country as a whole.<sup>25</sup> There are two sources of underestimation. Firstly, the Fell Partnership was producing 60 to 70 tons per year from the 1720's. They had a new erected steel furnace and steel house at Attercliffe by 1740, but the one hundred ton mark was not surpassed until 1747/48 and not commonly after that.<sup>26</sup> In Dr. Barraclough's reasoning is possibly the tacit assumption that the Partnership was the area's major steel producer, perhaps because of the number of ironworks operated. That may well not be the case. Elizabeth Parkin had inherited a steelhouse in Blind Lane from her grandfather (it could already at this time have had two furnaces); and Samuel Shore had two cementation furnaces at Steelhouse Lane, a steelworks at Darnall and possibly another at Handsworth Woodhouse.<sup>27</sup> Even a very

<sup>22</sup> Staveley Iron Records Vol 8 Section I p15 and passim, and WYAS QS 10/19, the carriage rate extrapolated from the London-Sheffield, Sheffield-Nottingham (1736ff) and Leeds-Selby summer scale as 1738. K. Barraclough Vol. I pp79 & 217

<sup>23</sup> K. Barraclough Vol. I pp73 & 196

<sup>24</sup> K. Barraclough PhD op cit Ch 5 (v) and Vol. I p61

<sup>25</sup> ibid citing *House of Commons Journal* Vol. 23 (1737) p 854

<sup>26</sup> WRRD NN 463 649

<sup>27</sup> WRRD BA 486 674; OR 2 f7; David Hey op cit p191ff. Oughtibridge's View of Sheffield (c1737) shows two Shore furnaces in Steelhouse Lane. Shore was dealing with Messrs Sykes of Hull, one of the largest iron importers, in 1747 & 1748 (Hull Univ. Archives DDSY 101/91 & Bagshawe Colln op cit 5/4/3 June

modest three ton heat in each of four furnaces once per month would produce 144 tons. Later practice in the 1750's suggests that about fifteen to seventeen heats per annum were then the norm.<sup>28</sup> In addition, Richard Dalton was importing each year over forty tons of Swedish iron; and he certainly dabbled in steel production - he appears to have rented (rather than built) a seven ton capacity furnace at the end of 1735, and he continued to buy Swedish bar until his final illness in 1749.<sup>29</sup> Secondly, the Hull import total of more than 3900 tons of Baltic iron in 1737 needs to be reconsidered. If only ten per cent of it had come to Sheffield for conversion to steel, it would have nearly doubled Barraclough's figures for local steel output. As the town was described twenty years before as England's premier centre for "Iron Ware", and in view of the 1200 tons of steel made in Sheffield (out of approximately 4000 nationally) as reported during the 1749/50 Commons debate concerning the import of American bar, it is certain that much more foreign iron would have been coming from Hull than one tenth. Indeed twenty per cent or over looks much more likely.<sup>30</sup> Extrapolation from such figures might even suggest a total of seven to eight hundred tons of steel per annum made in Sheffield in the later 1730's, and all the more probable since additional Baltic bar was coming to Hull from London via the separately accounted coastal trade.<sup>31</sup>

Having attained the 100 tons sales figure for steel in 1747/48 the Fell Partnership never exceeded it by more than nineteen tons (1749/50). Most frequently the production total was in the 60 to 80 ton range through to the end of the ledgers in 1765, confirming

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<sup>28</sup> OR 2 f10 (1758)

<sup>29</sup> Bagshawe Colln op cit 5/4/1 (39) His attempts at production may have been short-lived, as no other direct references to this furnace have been found. From 1741 Dalton's Swedish iron imports were between 42 and 46 tons per annum except 1745 (61 tons) and 1748 (55 tons).

<sup>30</sup> Rev. Thomas Cox: *Magna Britannia* (London) 1720 p507; Wharncliffe Muniments 118 (20ff) (According to the Hull Port Book of 1751 the total iron import figure was 5260 tons - Jackson op cit Appendix 2 - in which case, if that was typical for the period, some twenty-two per cent of Hull-imported iron came to Sheffield for conversion at that time).

<sup>31</sup> 800 tons per annum gives an approximate weekly figure of 16 tons. If there were 2000 cutlers (see Chapter 2) each man would have on average about 18 lb of steel. John Goodlood in 1742 was forging eight gross of jack penknife blades weekly (TC 762). At a ¼ ounce (7 grammes) per blade, the approximate weight of a 2p coin, he would need 18 lb. His blades were probably bigger. A modern 4½ inch table (dessert) knife blade after grinding, with tang but without handle, weighs about 1 ounce. G. Jackson op cit Appendix 14 & SIR 11 f107.

them as important, but not the major suppliers. An examination of the Staveley Iron Records which show 400 to 450 tons of forge iron sold annually at this period and a response by Richard Dalton to one of his Hull correspondents in October 1743 that Fell & Co. appeared to be unable to make use of their current surplus of that metal, together suggest that the Partnership was, and continued to be, primarily an iron producer.

Hitherto there appear to have been four Sheffield firms bringing in bar iron, three of whom, possibly four, were making blister steel. During the 1740's another company, John Roebuck & Son, may have begun to produce it. They were purchasing some (unknown) commodity from Messrs Sykes in December 1747 for which they paid £32-9-8, and in the Deed of Partnership between John Roebuck and his three sons in August 1750 reference is made to a steel furnace. Unfortunately its location is not identified and it could have been the out-of-town Kimberworth furnace built by John Roebuck sometime before 1756.<sup>32</sup>

Madam Parkin's relative, partner and eventual successor, Walter Osborne, was operating two "vaults" in the Upper and Lower (cementation) Furnaces, each with a pair of "potts", in 1756/57.<sup>33</sup> As the earlier was described in the phrase "Built a new vault in the Up Furnace 15 November 1756" it seems likely that it was on the site of an older one, almost certainly that in Blind Lane built by Joseph Parkin and noted above.<sup>34</sup> The vault in question lasted for forty-three heats, the "potts" sixteen.<sup>35</sup> Indication as to how frequent the heats were is forthcoming in 1758 to 1760 when twenty-seven heats were carried out in twenty-two months and twenty-three in sixteen months.<sup>36</sup> On 9th January 1758 the heating commenced of three tons (150 bars) of OO "Double Bullet" iron and almost two and a half tons (100 bars) of Hoop L. If this was normal capacity for one of the two furnaces (the same day of heat firmly suggests the one vault with its two "potts") it was producing in the order of one hundred and seventy tons per annum. Two

<sup>32</sup> Hull University Archives DDSY 101/91; WC 1840; WRRD BO 469 678

<sup>33</sup> OR 2 f6 and ff

<sup>34</sup> WRRD CR 553 817ff Two cementation furnaces in Blind Lane were sold by the executor of Mary Osborne, Walter's widow, in 1786. See also Fig. 3.2.

<sup>35</sup> These must be cementation chests and not crucibles - (a) the latter lasted for only three heats (Barraclough PhD ch8 pt ii), and (b) the "potts" were made of stone. A vault is costed at £35-5-8 and a pair of potts at £14-0-3 (OR 2 f7). Fairbank used the same terminology in BB92 f31(1809).

<sup>36</sup> OR 2 f10

vaults' output would, logically, double that. The capacity of the firm had probably increased compared with that inherited by Elizabeth, as there was a trend for the quantities per heat to rise with each rebuilding in this period.<sup>37</sup> Stock-taking in the Osborne ledgers reveals a very small amount of German steel in 1758.<sup>38</sup> Six years later the firm held 7/4d worth of Newcastle steel ends and nearly a ton of Eltringham steel of three kinds, and in mid-1765 just under fourteen hundredweight of the Newcastle product and half a hundredweight of best tilted German, the latter two together less than three per cent (in value) of the stock held. This period of the 1750's and 1760's was marked by the growing importance of Russian iron. Much of Osborne's (later Osborne & Gunning's) imports were named varieties from St Petersburg - Demidov, Brinsky, Shurdov, Stroganov and Baldovsky, for example. B.A. Holderness, who examined the accounts in great detail, suggests that Swedish bar at this time might well have been challenged and then even outstripped by its Russian rival because of its price advantage.<sup>39</sup> The critical importance and value of this source to the local trades is amply illustrated by the determination of those numerous Hallamshire manufacturers and traders to commemorate the re-affirmation of trade links between Russia and Britain in 1765.<sup>40</sup>

In contrast with the history of most of the private firms above, that of the Cutlers' Company in cementation steel production has been well documented.<sup>41</sup> In 1759 they built a furnace in Scotland Street with a three and three quarter ton capacity under the control of Joseph Ibberson, Master Cutler at the time of its inception, until 1763 when it was decided each new Master Cutler should succeed to the responsibility of the oversight. By 1768 the capacity had risen to four and a half tons, and in that year a new furnace was built to take over seven tons per heat. The operation was eventually leased in 1772 and sold in 1774. Barraclough concludes that it fulfilled its purpose under the Cutlers' jurisdiction and refutes the previous criticism that the venture was a failure in

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<sup>37</sup> K. Barraclough PhD ch8 pt ii op cit

<sup>38</sup> OR 2 f7; see also pp38 of Chapter 2

<sup>39</sup> B.A. Holderness: "A Sheffield Commercial House in the mid-18th Century" in *Business History* 15/1 1973 & OR 3

<sup>40</sup> WWM R59 (4) 9 Aug 1766; see p39

<sup>41</sup> K. Barraclough Vol. I p80 & P.C. Garlick: *The Sheffield Cutlery and Allied Trades and their Markets in the Eighteenth and Nineteenth Centuries* (MA Thesis Sheffield University 1951 deposited in Sheffield Archives as MD 2109)

that profits were negligible. Within the above period the Cutlers provided what Barraclough calls "a hire conversion service" by which clients provided their own iron to be converted in the Company's furnace at a charge of 30/- to 40/- per ton, depending on the degree of carburisation.<sup>42</sup>

During the early 1760's Shore and Co. were still supplying steel. A major customer was Matthias Spencer, probably Sheffield's leading file maker of the period.<sup>43</sup> Spencer also obtained blister steel from William Parker, described as a cutler, who had purchased a freehold steel furnace in Darnall in 1760.<sup>44</sup> Another contemporary producer was John Marshall at Millsands where he had a melting- as well as a converting-furnace sub-leased from Sarah Broadbent, daughter of Thomas Buck. Her father had originally leased the property from the Duke of Norfolk as a tanyard. There is no indication of a date for the change to steel production.<sup>45</sup> It was in the early 1760's that another furnace for converting iron into steel was built in Green Lane on the site of a tanyard purchased by Nicholas Steade, merchant. No detail of its operation is given.<sup>46</sup> The addition of extra capacity by these men and by the Cutlers' Company is supported circumstantially by the Hull Port Books which show imported iron rising from 6058 tons in 1758 to 8027 a decade later.<sup>47</sup> It also coincides with the building or conversion of eight or nine tilts and forges and a similar number of grinding wheels on the Sheffield Rivers between 1748 and 1762.<sup>48</sup>

In 1772 Huntsmans appear to have built a cementation furnace at Attercliffe to satisfy their own demand for casting material.<sup>49</sup> William Huntsman & Robert Asline, classed as button makers, certainly acquired "a furnace for converting steel" in Attercliffe from

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<sup>42</sup> K. Barraclough Vol. I p88

<sup>43</sup> LD 1925 f34 (1763)

<sup>44</sup> ibid cited by Barraclough and WRRD AS 507 681. In the conveyance Parker is noted as the occupier (probably as tenant), but there is no clear indication as to who was the previous operator.

<sup>45</sup> ACM S378 26 Sept 1747 and S379 (232) 4 Feb 1769

<sup>46</sup> WRRD AW 481 624 (April 1762) The furnace appears to have been under construction as the site has "a building intended for a furnace to convert iron to steel". It was certainly completed by July 1762 (AX 25 32). John Mekin (next page) was an eventual operator.

<sup>47</sup> G. Jackson op cit Appendix 2

<sup>48</sup> D. Crossley ed: *Water Power on the Sheffield Rivers* (Sheffield) 1989

<sup>49</sup> K. Barraclough Vol. I p 90

the assignees of William Fullard in 1776.<sup>50</sup> It may have been such a growing market for cast steel, as well as demand from cutlers and toolmakers, which encouraged the Walkers, a little farther afield at Rotherham, to add two furnaces (in 1771 and 1776) to triple their converting output.<sup>51</sup> The 1774 Sheffield Directory has five "manufacturers of steel" including John Marshall of Millsands producing cast and blister steel and William Parker & Co., manufacturers of iron and steel, both continuing from the previous decade. Besides Huntsmans, the others are Boulsover & Co., sawmakers and cast steel manufacturers and Greaves, Loftus & Brightmore of Townhead Cross, sawmakers and steel manufacturers. The last mentioned may well have been making cementation steel as they were classified as converters in 1787.<sup>52</sup> Besides these five firms, in the same Directory there appears John Mekin/Makin of Attercliffe, mason and steelburner.<sup>53</sup> According to Dr. Barraclough, he worked for both the Fell Partnership and the Cutlers' Company and subsequently set up on his own. This latter enterprise was at Green Lane at the furnace of Nicholas Steade which was assigned in 1777 to John Micklethwaite, a Leeds merchant, but apparently with Mekin still working. By 1794 the site, late John Mekin and Hall, was described as having a cast steel furnace.<sup>54</sup> Others are noted from different sources, but the type of activity, converting or casting, is not clear. Richard Swallow had taken over the Fell concerns in the early 1770's from the widow of his adoptive brother, the third John Fell (who had died in 1763), and purchased an Attercliffe steel furnace from William Hildreth and Charles Greaves, sawmakers, who were bankrupt. Shores still had two furnaces at the Dole near West Bar in mid-decade, and John Green, edgetool-maker, took possession, probably as mortgagee, of a Pea Croft property which included a steelhouse from Thomas and Samuel Smith, cutlers.<sup>55</sup> Expansion, if not dramatic, was clearly continuing.

Gales and Martin's Directory of 1787 lists eight converters excluding the Masbrough Walkers, five refiners and six unclassified. Of the refiners we know from the previous paragraph that Huntsman & Asline had purchased a cementation furnace and probably

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<sup>50</sup> WRRD BZ 335 455 This was a Church Burgesses' property and mortgaged in 1772 by Fullard, a mercer and former immigrant from London.

<sup>51</sup> K. Barraclough Vol. I p90

<sup>52</sup> Directory (as Loftus, Brightmore & Co. of Townhead Cross)

<sup>53</sup> ie blister steel maker (see K. Barraclough Vol. I p78 footnote)

<sup>54</sup> WRRD CA 293 406, CA 666 947 & DO 224 290

<sup>55</sup> ACM S158 Michaelmas 1773 f22, WRRD BX 477 659 & CD 560 759

had a second, and of the unclassified makers, John Marshall of Millsands produced both types of steel.<sup>56</sup> Hague & Parkin of Gibraltar (refiners) may at this time have had the seven ton capacity Cupola Converting Furnace auctioned along with their Cast Steel Foundry in 1796 after their bankruptcy.<sup>57</sup> Younge, Sharrow & Whitelock (no classification) had two converting furnaces in Blind Lane as well as two casting furnaces near Barker Pool and to the North of Balm Green. The former structures, purchased from Mary Osborne's executor, were almost certainly those detailed earlier in Walter Osborne's ledger.<sup>58</sup> John Walker of the Wicker (also not classified) was subsequently described as a converter and refiner.<sup>59</sup> John Harrison & Son of Hollis Croft (again unclassified) had in 1781 taken out a 99 year Norfolk lease of a parcel adjoining Broad Lane and Garden Street with workshops and furnace already built.<sup>60</sup> They may have been converters at this stage.<sup>61</sup> Besides the listed works, the former Cutlers' Company furnace in Skargell Knowle/Scotland Street was still operative in the hands of Peter Cadman & James Camm; Joshua Hawksley, filesmith, had purchased an iron house and steel furnace in Darnall from Bayliffe and Binks in 1780; and the former Parker converting furnace in Darnall had continued.<sup>62</sup> At least twelve firms, therefore, were producing cementation steel at this stage. Hull iron import figures are not noted by Jackson for the late 1780's, but after a slight fall earlier, had risen significantly by 1790.<sup>63</sup> In the secondary metal trades, during the decade preceding 1789, according to Dunn's list, there had been a thirty per cent increase in the number of grinders and a forty per cent rise in the total of tilts, forges and slitting mills.<sup>64</sup>

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<sup>56</sup> K. Barraclough Vol. I p90

<sup>57</sup> *Courant* (167) 16 Aug 1796

<sup>58</sup> OR 2 f7, WRRD CR 553 817ff. There is a caveat - the address of the firm in the Directory is not the same as the location of the furnaces. This probably applies also to Roebucks and Fenton of Church Lane and possibly to others on the list.

<sup>59</sup> WRRD EQ 75 94 (1802)

<sup>60</sup> ACM S383 (109)

<sup>61</sup> J. G. Timmins: *Commercial Development of the Sheffield Crucible Steel Industry* (MA Thesis Sheffield University) 1976 p18/19 Harrison supplied cast steel to Peter Stubs in 1799.

<sup>62</sup> WRRD CO 687 930 (1784) & DE 206 283 (1790); CG 573 747/748 Hawksley immediately mortgaged the property to William Binks (Brightside) merchant. The former or his heir appears to have been working in 1802 (MD 1740-21); Thomas and Ebenezer Parker, the successors of William, had gone bankrupt in 1784. The Darnall property was conveyed to John Micklethwaite (Leeds) the following year (CQ 535 770) and continued in his ownership into the 1790's.

<sup>63</sup> G. Jackson op cit Appendix 2 (7879 tons in 1783, 12,525 tons avg 1790/92)

Development in primary and secondary sectors seems to have continued in parallel fashion, with steam (first wheel 1786) just beginning to take up the shortfall in water power capacity.

Fig. 3.2 Converting Furnaces in Blind Lane W. Botham (1802)

Reproduced by permission of Sheffield City Museums



The overall list of converters and refiners in the next extant Directory, that of 1797, contains the names of only fifteen companies (if we again omit the Masbrough works) and no classification. Without the latter, it is difficult to be fully certain of more than a minority - Brightmore, Huntsman, Marshall, Walker of the Wicker and Younge & Whitelock (at Blind Lane, above) from the previous Directory had been converters, and Benjamin Micklethwaite, not listed, had succeeded his uncle at the furnace in Darnall "for the conversion of iron into steel".<sup>65</sup> There were also the former Cutlers' Company furnaces, the Hawksley operation at Darnall and the steelhouse in Pea Croft noted twenty years earlier.<sup>66</sup> However, Dr. Barraclough cites a contemporary independent witness who claimed that sixteen firms in the town were producing blister steel at this

<sup>64</sup> MD 1747 250 more grinders and eight new tilts etc.

<sup>65</sup> WRRD DZ 405 555

<sup>66</sup> K. Barraclough Vol. I p93 and WRRD DW 739 888

point. He also quotes extracts from *The Hatchett Diary* concerning the six ton capacity of Mr. Marshall's single chest furnace and compares it with the sixteen ton output at Masbrough.<sup>67</sup>

An 1802 estimate of the quantities of iron likely to be carried on a proposed Tinsley to Sheffield canal provides further evidence of cementation steel makers and gives a fresh insight.<sup>68</sup> The amount of iron (800 tons) stated for Jonathan Marshall, for example, confirms that he must have had more than the small furnace described. Next highest (claiming 500 tons) were John Walker and Thomas Wilde of the Wicker, which contrasts with the 75 tons each for Swallow and Huntsman. In addition, support is provided for the theory that others formerly classified as refiners, like Love and Spear (50 tons), were in fact making small quantities of their own blister steel.<sup>69</sup> With an increasing number of firms converting and refining at this time, such integration in the industry appears to have been a worthwhile development. The list includes only eight of the firms of the 1797 Directory, but does contain several of those omitted, notably Cadman & Son (proprietors of the ex-Cutlers' furnaces), Hawksleys (of Darnall) and Knuttons (almost certainly Thomas Knutton the younger who purchased the other Darnall furnace from Benjamin Micklethwaite at the end of 1797).<sup>70</sup> The total of 2950 tons may have been derived from a higher figure than the average Hull importation of 8848 tons for 1799 to 1802.<sup>71</sup> There is also the clear possibility that Sheffield was at this time taking a third of Hull's iron, compared with the smaller proportion (a little over 20%) half a century earlier.

Directories of 1814/15 and 1817 each contain over twenty firms under the heading "Steel" of whom only seven are described as converters, including James and Francis Huntsman, and plus Jonathan Marshall who is called a "Bar, cast and german steel Manufacturer". Two are located at Grenoside (Josiah Ashton & Sons and William

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<sup>67</sup> K. Barraclough Vol. I pp91/92

<sup>68</sup> MD 1740 f21 The wording of each case is: Mr. (X) says he has (N) tons of iron annually.

<sup>69</sup> It is equally likely that they were making use of cementation furnace hire facilities and/or using new iron to modify the carbon content of purchased steel.

<sup>70</sup> WRRD DZ 405 555 & EB 519 741

<sup>71</sup> The total excludes Mr. Sturges of Bowling near Bradford; G. Jackson op cit Appendix 2

Tingle & Levi), and of the remaining four Eyre Smith & Co continue from earlier Directories, Joseph Bailey is a successor to Richard Swallow, bankrupt in 1809, and the other two appear to be new - Daniel Doncaster of Allen Street and Matthew Tingle of Bell-Alley.<sup>72</sup> As in previous cases there appear to have been omissions: J.G. Timmins estimates from the Rate Books and Directories that about thirty-four firms were making steel in 1816/17.<sup>73</sup> The discrepancy seems to be largely made up by eight steelmakers who appear only in one of the two Directories - for example John Hoyland was operating a converting furnace at Swift's Dole near Pea Croft and casting metal at West Bar Green, possibly in succession to the earlier Shore and Smith operations of the 1770's; and Timmins suggests that Brittain & Co in Carver Street had cementation furnaces as well as the refining capacity indicated by an earlier deed.<sup>74</sup> This is confirmed by a Fairbank survey of 1806 indicating a "converting furnace" as part of the premises.<sup>75</sup> Ibbotsons of Bridge Street, whose property was also appraised by Fairbank, had a pair of new cementation "potts" installed by 1809.<sup>76</sup> But Joseph Birkinshaw of West Bar who advertised, among other things, for a steel converter and a melter in 1814, gets no mention in the Directories, nor does George Edwards whose engine house and steel manufactory in Steam Street were mortgaged in the same year.<sup>77</sup> From the named converters and those who were (or appear to have been) carrying on both forms of steel production the total number of blister steel manufacturers firmly identified is sixteen. There were probably more. Kenyon & Co. were still at Pond Forge and listed under the heading of Iron Founders and Masters in the Directories of 1814/15 and 1817, but also as Converters & Refiners in 1821. And someone may have succeeded Younge, Sharrow & Whitelock at the Blind Lane furnaces; William Fowler & Co. of Holly Street seem to be the likely ones.<sup>78</sup>

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<sup>72</sup> Tingle is a "refiner" in the 1814/15 Wardle and Bentham.

<sup>73</sup> J.G. Timmins op cit p30ff

<sup>74</sup> WRRD FR 109 113; Timmins op cit p42; WRRD FG 123 183

<sup>75</sup> Fairbank BB87 f1

<sup>76</sup> ibid BB92 ff31 & 49

<sup>77</sup> *Iris* 6 Dec 1814 No other information has been found for this firm. WRRD EY 216 272, GY 212 223 and GW 433 391 The installations may have been too late to be included in the Directories.

<sup>78</sup> Blind Lane was "Holly Street" on the 1797 Fairbank Town Plan and in an assignment of 1798 (WRRD EB 338 470). "Blind Lane" was still in use in 1819 (HB 167 195). Fowler & Co. are named in the 1821 Directory.

What seems to be the case from the overall known figures is that a slowdown in the addition of new firms to the cementation steel industry occurred from the end of the eighteenth century, perhaps the result of uncertainty engendered by the long period of war.<sup>79</sup> Up to that time the ongoing growth of blister steel output from the 1740's had been evident from the rise in the number of firms, even though it is difficult to put forward an exact figure for each landmark date. The concurrent increase in the size and/or number of furnaces per firm, in general not well documented, but quite clear for the Masbrough works of the Walkers, almost certainly continued in Sheffield and with it blister steel output.<sup>80</sup> Circumstantial corroborating evidence is the continued growth of crucible production which took blister steel pieces as its raw material. Two noticeable trends accompanied this development: firstly, the increasing integration of the two steel processes, so much so that the 1821 Directory has a large combined category; and secondly, the likelihood that newcomers to the industry were vertically-integrating secondary metal manufacturers intent on making their own steel.<sup>81</sup>

#### CRUCIBLE STEEL DEVELOPMENT

As with the cementation process this section on crucible steel draws heavily on the writings of the late Dr. K.C. Barraclough via his PhD *Early Steelmaking Processes* (Sheffield) 1981 and Volume 2 of his *Steelmaking before Bessemer* (London) 1984. What will be added is the over-view of the firms which gradually moved into this sector, very slowly at first and rather more rapidly in the second decade of the nineteenth century. Because the industry used only small quantities of cementation steel and scrap there are no ready figures to support an estimate of output - only the growing number of firms and of cast-steel furnaces providing circumstantial evidence of rising production.

The importance of the painstaking pioneering work of Benjamin Huntsman, a clockmaker in Doncaster from 1725, in the discovery of cast or refined steel is

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<sup>79</sup> Work was very short in 1798/99 (Iris 22 Feb 1799); the town was on the verge of ruin in 1801 (MD 1738 bundle 2 f110); 1804 was the start of thirty years of depressed overseas sales of steelware (J.G. Timmins op cit p22).

<sup>80</sup> K. Barraclough Vol. I p90ff

<sup>81</sup> Doncasters were filesmiths, John Hoyland a hardwareman, Brittain & Co. cutlers and steel casters, and Ibbotsons sawmakers.

regarded as paramount.<sup>82</sup> The date of actual "invention" is unlikely ever to be firmly established as the exacting process of trial and error may well have continued over many years at both Doncaster and Handsworth. Dr. Barraclough is careful not to attempt to be too precise other than to note that Huntsman removed to the latter township in 1742 and took on an apprentice clockmaker during the following year. Only by 1751 did he confidently feel "able to set up as a steelmaker and move to premises which he designed himself in Worksop Road, Attercliffe".<sup>83</sup> Whilst he was still at Handsworth he purchased small amounts (about twelve hundredweight) of "olde steele" from the Fell Partnership in 1748 and 1749, and, after his move to Attercliffe, slightly larger quantities of harder material and "loos steel", and eventually, between 1757 and 1765, a varied cross-section of steels rising irregularly from just over two tons per annum to nearly ten tons.<sup>84</sup>

Crucible steel was, by tradition, the result of Huntsman's search for a more uniform metal from which to make watch-springs. Blistered bar when forged produced an excellent material for cutlery blades, but the imperfections and general lack of homogeneity made it unsuitable for finer applications like polished buttons, rolls, dies, wire, tiny files and, particularly, clock and watch springs. Huntsman was inspired by brass founders and by glass makers, and he was certainly indebted to the discovery of coke as a fuel which reached higher temperatures, remained incandescent for longer and resisted the weight of a crucible much better than charcoal. Steel had to be heated to upwards of 1525° C and preferably more for a period of three to five hours in order to melt adequately and burn off all impurities. Charcoal was an unsuitable fuel as it would only reach a temperature of about 1425° C. Coke made from Barnsley hard coal was better, reaching 1530° C, but the standard material eventually used from the early

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<sup>82</sup> There were some doubts, deliberately or accidentally created, in the late 18th century and reiterated in the *Times* in 1864 that a man named Waller from London actually made the discovery. The section on iron in the third edition of the *Encyclopædia Britannica* (1797) repeats the story, suggesting that Waller was an English forerunner of Huntsman and that the method (the word "crucible" is not mentioned) had been used in Germany previously. Dr. Barraclough has thoroughly refuted the claim.

<sup>83</sup> K. Barraclough Vol. 2 p2 The author notes that the descendants' firm had "Established 1751" on its stationery.

<sup>84</sup> *ibid* p11 extracted from SIR 9,10 and 11 Exact types and quantities are tabulated. Huntsman was listed among the small debts in the Ledger in 1751, but had his own account from 1754 (SIR 24).

nineteenth century was Beehive coke which would heat to some 1600°. <sup>85</sup> Crucibles, too, were a key element in the process. They needed to withstand the above temperatures for the requisite period (up to five hours), they had to take the weight and resist any corroding effect of molten steel, and they had to be sufficiently tough to be man-handled when full and with the contents still liquid for teeming into ingot moulds. <sup>86</sup> The amount of heat to be generated and maintained required a strong through-draught necessitating a cellar area under the furnace and a large chimney above, and, in the furnace itself, refractory materials which would not crumble as a result. <sup>87</sup> There were so many variables it is not surprising that Huntsman took years experimenting with fuels, clays, furnace design and stone, as well as steels, to be able to reach the point of becoming a cast steel manufacturer.

The value of the discovery and apparent success of the business (Matthew Boulton of Birmingham was a valued customer even before he established himself at the Soho works) contrast clearly with the dearth of early competitors. <sup>88</sup> Others in this field are difficult to find. Walkers had a steel refining furnace, possibly short-lived, at Grenoside in 1750. J.L. Robsahm, a Swedish visitor during the summer of 1761, noted the existence of three crucible melting furnaces close to a cementation furnace in Sheffield operated by a Mr. Smith whom Dr. Barraclough subsequently links with the Cutlers' Company operation. <sup>89</sup> The Company made trials between 1764 and 1768, seemingly with no success. John Love went into partnership with Thomas Manson "for the running and casting of steel" in 1765 or 1766 and with Alexander Spear in 1769, and in February of the latter year Sarah Broadbent took out a twenty-one year Norfolk lease on a property in Millsands with messuage, melting furnace and converting furnace then occupied by John Marshall. <sup>90</sup> Such evidence suggests that Huntsman had no real rivals before the mid-1760's. <sup>91</sup> It is possible that the technical difficulties may

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<sup>85</sup> *ibid* p43 The coke ovens were of beehive shape.

<sup>86</sup> *ibid* p33ff

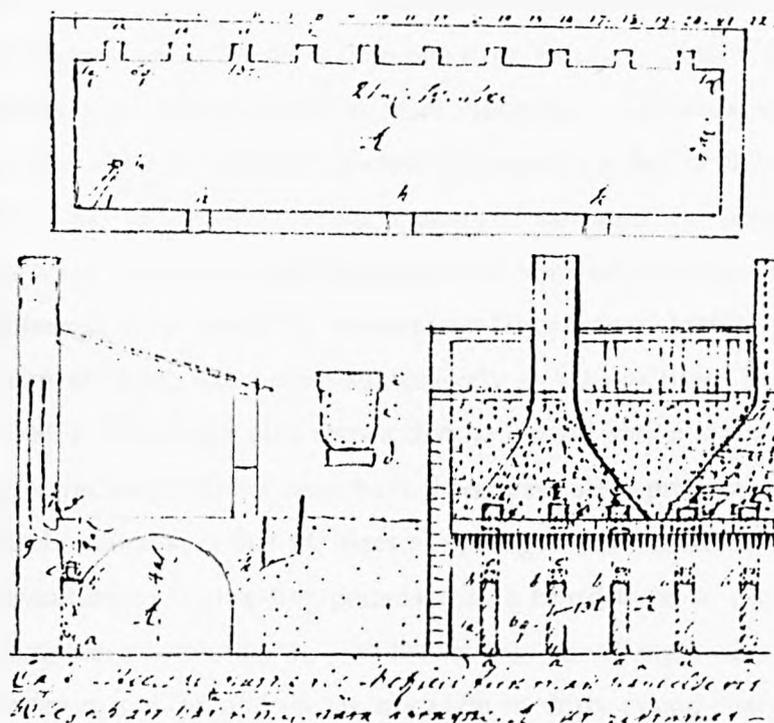
<sup>87</sup> *ibid* p30-32

<sup>88</sup> Ph C 373

<sup>89</sup> K. Barraclough Vol. I pp82-83

<sup>90</sup> *ibid* Vol. II pp6ff; Love took out a Church Burgesses' lease in 1766 of a parcel in Townfield Close, later Trinity Street, with warehouses, workshops and a furnace (CB 1634); ACM S379 (232) The property appears to have been formerly a tanyard leased by Mrs. Broadbent's father, Thomas Buck.

<sup>91</sup> There was a "melting house" at Townhead Cross in the possession of Joshua



Erik Geisler was a Swedish engineer who visited Sheffield and in his report left this drawing, as reproduced by T. Althin, 'Erik Geisler och hans Utlandska Resa, 1772-73', *Med Hammare och Fackla*, XXVI (1971), 32-33. It shows a 10 hole crucible furnace, with three chimneys, the end two covering three holes each and the middle one, four. The holes are in line and it therefore seems doubtful that this was the Huntsman Attercliffe Works, which had transverse chimneys; the Swedish text, however, seems to indicate that it could well have been drawn after a visit to Huntsman. The shop floor was  $41 \times 11$  ft; each hole was 18in square and almost 4 ft deep. The cellar was 8 ft high and the same distance wide. The height of the shop was 12 ft over the holes and 7 ft at the back; the chimney was 16 ft above ground level and 5 ft above roof level. As far as can be made out, the crucible was about 8in high, with a 6½in outside diameter and an internal diameter of about 5in.

Fig. 3.3 A Sheffield Crucible Furnace seen by Erik Geisler in 1772

have been too great an obstacle for newcomers to flourish, or, less likely, that the market was too small for more than one firm, although Timmins raises the question as to whether poor quality material from Huntsman's imitators retarded the industry.<sup>92</sup> Even in the 1774 Directory the picture is limited. Boulsover & Co. of Sycamore Street are named as, among other things, makers of cast steel. No supportive evidence from other sources has been found. Huntsman and Marshall are noted, but Love & Spear are not (although they appear in subsequent Directories). Matthias Spencer, filemaker, dealt with all these latter three successively at various times between the 1760's and early 1780's. His ledger also shows that he bought single ingots from two other men whom Barraclough thinks may have been cast steel producers.<sup>93</sup> Spencer's book is particularly valuable in that the sizes of the ingots purchased are recorded. They varied from seventeen to twenty-five pounds with a broad trend to rising weight over time. They compare, in progression, with the thirteen pound ingot calculated by Barraclough for Huntsman in 1761 and the twenty-eight to thirty pound charge listed by the same researcher for 1818.<sup>94</sup> The use of scrap cast steel in the crucibles is also a noteworthy item derived from the ledger.<sup>95</sup> Following the insight into quantities, it is useful to observe that it takes over one hundred ingots of twenty pounds each to make a ton. It is not surprising, therefore, that Huntsman's purchases from the Fell partnership appear so modest.

Before the Directory of 1787, three cast steel makers have been identified from other sources. Benjamin Bell, cutler, took a twenty-one year lease of a newly erected messuage in Bailey Field near Trippet Lane and a nearby cast steel furnace in June

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Matthewman, cutler, in a deed of 1751 (WRRD AD 703 904). The same was sold on in 1764 (BA 543 742) and finally converted into tenements in 1804 (ET 462 576). The word "steel" is not mentioned, so the nature of the property remains a mystery.

<sup>92</sup> J. Timmins op cit p19 Huntsman's own steel was occasionally criticized by Boulton who in 1757 wrote that he wanted it a little harder, indicating that his workmen were complaining about its quality, and "in consequence I have a great deal of waste." (Birmingham Assay Office 133 Letter Book 1757-1765)

<sup>93</sup> LD 1925 quoted by K. Barraclough Vol. 2 p8. The Samuel Jubb who sold an ingot to Spencer in 1768 may have been a member of the family of Elkanah Jubb filesmith ie the ingot was probably not made by them, but sold on. This is also possible for the Joseph Mellor from whom Spencer purchased an "ingate" in 1773.

<sup>94</sup> K. Barraclough Vol. 2 pp8-9 and p42

<sup>95</sup> ibid. Barraclough points out that 100% scrap charges were unlikely.

1777. A few months later the same property was transferred to a ninety-nine year term and the furnace described as small and lately erected by Bell.<sup>96</sup> No subsequent references have been found. In May 1785 George Brittain, cutler, was sub-tenant of a property in Alsop Fields (later Arundel Street) with messuage, smithies, warehouses, workshops and a cast steel furnace. The 2926 square yard parcel had been let to Adam Broomhead, cutler, by the Norfolk Estate as a ninety-nine year lease building plot in 1781 with no indication of earlier construction. It seems likely, therefore, that the furnace was built with the other structures within that four year period, possibly by Broomhead who had moved to London by 1785.<sup>97</sup> Brittain does not appear in the 1787 list, but is included in the 1797 Directory with others. A firm which was to be included in the former Directory, Younge, Sharrow & Whitelock, merchants and copartners, was the occupier of several properties including two cast steel furnaces the North side of Balm Green sold to Younge by the executors of the widow of Walter Osborne in February 1786. These were not the same as the two converting furnaces in Blind Lane used previously by Osborne and also occupied by Younge & Co.<sup>98</sup> Intriguingly, as early as 1766 Osborne was supplying Russian iron to Younges, but there is no indication as to how long the latter had used either of the pairs of furnaces.<sup>99</sup>

In 1787 Younge & Co., along with John Marshall from the earlier Directory, are not classified as either converters or refiners. Could this be because they fulfilled both functions? If that is the case, then we must also consider three other firms: John Harrison & Son of Hollis Croft, John Walker & Co. of the Wicker and Richard Swallow of Attercliffe.<sup>100</sup> Harrisons had had a furnace in 1781 in Broad Lane, they also appeared (unclassified) in the 1797 Directory, and supplied cast steel to Peter Stubs, the Warrington filemaker in 1799.<sup>101</sup> Walker & Wilde were stated in 1802 to have a requirement for 500 tons of bar iron, which suggests they were substantial converters, and Walker had been described as a refiner in a 1797 assignment; so they may have been both as early as 1787.<sup>102</sup> Swallow, as heir to the Fells, had several furnaces at

<sup>96</sup> ACM S380 (117) and S382 (14)

<sup>97</sup> WRRD CQ 354 507 & ACM S382 (94). Brittain had leased an adjoining plot.

<sup>98</sup> WRRD CR 553 817ff

<sup>99</sup> OR 3 f70

<sup>100</sup> Plus Walkers of Masbrough who possibly were casting steel at this time.

<sup>101</sup> ACM S382 (109); Timmins op cit p18/19 quoting from T.S. Ashton.

<sup>102</sup> MD 1740-21; WRRD DZ 524 694 A John Walker, steelmaker, appears in the

Attercliffe and could well have been a producer of cementation and cast steel. The named refiners include Huntsman & Asline and Love & Spear from an earlier period, and also three new sets of names: Hague & Parkin of Gibraltar, William Houlden of Millsands and Townrow, Burdekin & Tingle of Townhead Well. Jonathan Hague and John Parkin became co-partners as steel casters in 1786 and continued until their bankruptcy in 1794. Their cast steel furnace was advertised to let again in 1804.<sup>103</sup> No other reference has been found for Houlden, but Matthew Townrow, Joseph Burdekin and John Tingle were co-partners as steel refiners in 1786.<sup>104</sup> Although not in the 1797 Directory, there are several Tingles in later lists, including one from Grenoside who may have been a descendant of the Masbrough Walkers' early collaborator.<sup>105</sup>

This same Directory has fifteen Sheffield Steel Converters and Refiners, unfortunately without any separation. Nine continue from the 1780's, the remainder are new.<sup>106</sup> Of these, Barber, Genn & Co. of Bower Street, appear elsewhere as saw and fender manufacturers and eventually merchants and have no apparent further connection with making steel.<sup>107</sup> Joseph Blake of Green Lane was a successor to John Mekin, formerly a steel burner (ie a converter), who was missed by the 1787 Directory. The furnace was described as a cast steel furnace in 1794 and Blake a maker of files, fenders, saws and cast steel in a partnership agreement of 1801.<sup>108</sup> Nothing is known of Joseph Brownell of Attercliffe, but George Carr of Green Lane was described as a steel caster in his 1792 lease of a parcel in Clayton Dam Field adjoining Green Lane. His executrix assigned the same land with messuage, workshop and furnace in 1802.<sup>109</sup> Eyre, Hall, Smith & Co. appear in later directories as converters, but may have supplied cast steel to Peter Stubs.<sup>110</sup> John Eyre was a merchant and Hall and Smith cutlers. Jointly and separately they were involved in numerous land transactions, yet without further

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Sun Insurance records in 1779 and 1782 as an owner of a property with no given location. It is probably the same man (Guildhall Library, London, MSS 11936/276/417747 and 11936/304/465541)

<sup>103</sup> PC 740; PC 925 (2); WRRD DQ 699 720; *Iris* 12 Jan 1804

<sup>104</sup> MD 5246

<sup>105</sup> See K. Barraclough Vol. 2 p7

<sup>106</sup> The known firms are: Brightmore, Brittain *et al*, Harrison, Huntsman, Love & Spear, Marshall, Swallow, Walker (of the Wicker), and Younge & Whitelock.

<sup>107</sup> WRRD EW 100 75 (1805), FN 508 635 (1811) & GF 560 612 (1816)

<sup>108</sup> WRRD CA 293 406 & DO 224 290; PC 787

<sup>109</sup> WRRD DK 634 781 & EN 155 212

<sup>110</sup> J.G. Timmins op cit p18/19

confirmation as to their steelmaking activity. Finally John Kenyon of Hollis Street is noted in the Directory and in the Sheffield Canal survey of 1802.<sup>111</sup> For want of another man of the same name he seems most likely to be the partner of Bamforth, Frith and Woolhouse of the Pond Forge complex with its forges and slitting mill. The 160 tons of imported iron via the canal survey suggests steel converting, yet with nothing more to indicate refining.

Dunn's Sheffield Canal list of 1802 provides a useful landmark in a period of seventeen years between extant Directories, but it is not comprehensive for refiners. Some of the latter, as smaller users, may well have purchased steel direct from blister steel manufacturers and thus do not appear on the list. For example, Joseph Blake & Son, noted earlier in 1797, had a new co-partnership from 1801 and continued to the subsequent Directories of 1814/1815 and 1817.<sup>112</sup> Brittain, Wilkinson & Brownell and George Carr are other firms which spanned the seventeen years and more.<sup>113</sup> John Wright, saw and edge-tool maker, may also have been a missing name. He had leased a parcel at Broomfield, Little Sheffield, from Robert Unwin in 1800, and by August 1805 had constructed a house and cast steel furnace on it. He still had the furnace in 1814, but not, apparently, in 1816 when a moiety was assigned to a relative.<sup>114</sup> Similarly, David Ward and Francis Pearson, edge-tool makers, had a cast steel furnace on property at the junction of West Street and Rockingham Street at the end of 1805. The date of construction is not known. The furnace was mortgaged a few months later and finally redeemed to Ward in 1818, but with no record in either of the Directories (1814/15 and 1817).<sup>115</sup>

What is very noticeable is the increasing number of secondary metal craftsmen, particularly edgetool makers and saw makers, who integrated backwards into crucible steel. Control over the raw material for their products possibly as much as over costs may have become, by implication, an essential aspect of progress or survival within the industry. Refined steel was essentially more expensive, but for some artefacts provided

111

MD 1740-21

112

PC 787

113

Carr died in 1802, but his daughter and sons carried on the business (WRRD

114

EN 155 212 &amp; FG 538 757)

115

WRRD EU 218 222, GC 247 273 &amp; GK 130 138

WRRD EY 216 272, EY 218 275 &amp; GY 212 223

an important advance in quality. In difficult markets this may have been paramount. The perceived cost/benefit ratio must have favoured the crucible furnace because it could be small and relatively cheap, and scrap was available for some of the charge.<sup>116</sup> Certainly far more newcomers entered this aspect of steelmaking than converting in the first two decades of the nineteenth century. To these can be added a number of converters who also built refining capacity.

By the time of the Directories of 1814/15 and 1817, nearly thirty converters and refiners are accounted for if we take from both lists, and more than half are noted as (or known to have been) makers of cast steel. Some are already familiar because they or their predecessors were refining in earlier years: Joseph Blake, Brittain Wilkinson & Co., George Carr, Eyre Smith & Co., John and Francis Huntsman, Jonathan Marshall, John Spear, Joseph Tingle and Walker & Wilde (of the Wicker) and possibly John Harrison and Potts Parkin & Co. (the successors of Richard Swallow).<sup>117</sup> Others are apparently newcomers: Richard Bayley of Norfolk Street was involved in a short-lived partnership making saws and joiners' tools from 1797 to 1798. He is noted as a steel refiner in the purchase of a Grenoside messuage and closes in 1815.<sup>118</sup> John and Riley Carr and John Woodhouse, saw makers, had been together since at least 1808 when they took over from the creditors of a bankrupt partnership the property they occupied in 1817.<sup>119</sup> There is no earlier reference to their steelmaking. William Caldwell or Coldwell had been a partner of John Spear as saw and steel makers in 1802 after the death of John Love. Caldwell was called a saw manufacturer when apparently purchasing Spear's moiety of the Gibraltar parcel and furnace jointly held by them to 1805.<sup>120</sup> In the same year the two men entered into a saw and steel copartnership with William Barker.<sup>121</sup> The latter, as sawmaker, seems to have been in another partnership by 1809, so it is possible that Spear and Caldwell had also broken up by this date. John

<sup>116</sup> Brick and stone costs for an eight hole crucible steel furnace in 1777 had been £103 (Fairbank BB58 f138). Brick and ashlar costs for a two chest cementation furnace in 1809 were £475 (BB92 f31). Even allowing for wartime inflation, the capital cost difference is obvious.

<sup>117</sup> Harrison was dead by 3 Nov 1818 when his "nearly new" Cast Steel Furnace in Garden Street was to be let (*Iris*).

<sup>118</sup> PC 774, 775; WRRD GD 685 777

<sup>119</sup> WRRD FE 130 185 There is no mention of a furnace in 1808.

<sup>120</sup> WRRD EL 424 549ff & EW 334 375

<sup>121</sup> PC 815

Hoyland of Peacroft, and probably, therefore, a successor of the Abraham Hawley and Hoyland of the 1802 list, had a casting furnace at West Bar Green as well as a converting unit at Swift's Dole from 1811.<sup>122</sup> Thomas Mottram, edge-tool maker had leased a cast steel furnace in Arundel Street in 1810 from the executors of Robert Unwin, one of several generations of carpenters and builders.<sup>123</sup> Which member of the Greaves family was his partner is not known. Thomas Weldon, John Furniss and Joshua Scholefield were edge-tool makers and copartners in 1803 and the following year leased Castle Hill from the Norfolk Estate and an adjoining parcel in 1809. Scholefield left in 1811.<sup>124</sup> There is no indication of when they began to refine steel, but Furniss & Co. were still at Castle Hill as steel manufacturers in 1821.<sup>125</sup>

Of the remainder from 1814/15 and 1817 Directories, William Boothby had been a saw and fender maker as early as 1802 and was at Green Lane by 1806.<sup>126</sup> There is no evidence for the date of the start of his refining. Peter Cadman & Co. were noted as being in Norfolk Street. They appear to have disposed of the old Cutler's Company converting furnace in Scotland in October 1817, that is after the publication of the two Directories. It is possible that they were refining there. Cadman also partnered William Smith who died in 1814 and then William Broadhurst (each in one of the Directories) at Ashen Carr Wheel on the Loxley. Samuel Newbould & Co., edge-tool, shear, fender and steel manufacturers, based at South Street on Sheffield Moor, had a long history of saw and tool making from 1784 and were also involved with a Loxley wheel (Old Wheel), as well as Broomhall Wheel and Norton Hammer Wheel.<sup>127</sup> However, no evidence of steelmaking other than in the later Directories has emerged. As to Rayner & Co. (in Paradise Square 1814/15 and Duke Street, Park 1817) nothing more has been found; the only doubtfully eligible candidate is a Mr. Rayner, factor, (or his descendant) who took a lease of Norfolk property in the Park in 1783.<sup>128</sup>

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<sup>122</sup> WRRD FR 109 113

<sup>123</sup> WRRD FM 544 664

<sup>124</sup> PC 806, ACM S383 (f294 & 310), PC 849

<sup>125</sup> Directory

<sup>126</sup> MD 5287; WRRD EX 439 541 His partners were Shaw, Hoole and Ridge. Boothby & Groves were saw manufacturers and steel refiners in 1817 and 1821 (Directories).

<sup>127</sup> MD 6193, YWD 867, WRRD FI 725 873

<sup>128</sup> ACM S382 (111r)

All these cast steelmakers were part of a momentum carrying on through the 1820's into the Victorian era in which massive expansion took place.<sup>129</sup> Within the eighty years of this study the pattern (from available evidence) appears as follows. From discovery to the mid-1760's Huntsman operated with little or no opposition. By 1769 three producers were in operation and within five or six years two more, albeit possibly short-lived. In 1787 there were about eight; in 1797 at least ten, and by 1805 a dozen. Then the total reached about fifteen in 1814 and twenty or so three years later, almost certainly overtaking in number the cementation steel makers, although the increase in firms making both kinds of steel makes that comparison less clear cut. Still more were added by 1821.<sup>130</sup> What is not known is the rate of increase in the number of crucible holes per firm which must have taken place over the same decades.<sup>131</sup>

Dr. Barraclough relies heavily on the testimony of foreign visitors for detailed insights into production methods which are not recorded in English sources, in the main because of the secrecy surrounding them. Ludwig Robsahm reported that in 1761 Huntsman melted ends of bars cut off after cementation rather than whole bars, and that with the assistance of three men he was making about eight tons of cast steel per annum, but with more hands could have made up to twelve.<sup>132</sup> In his third Appendix Barraclough has substantial translated extracts from G. Broling's descriptions of the whole process made during his visit to England at the end of the eighteenth century which provides a rather different viewpoint.<sup>133</sup> "In foreign plants, where in most cases twelve furnaces are used," may well refer to Sheffield, but the extreme claim of "a building, where one can annually manufacture up to 100 tons" seems out of reach in an era of twenty pound ingots. However, if twelve "furnaces" (ie crucible holes) were fired simultaneously, if there were three melts per day, and if a campaign lasted for ten to twelve days before damage to the furnaces necessitated a partial rebuilding (perhaps too many conditions), a firm would produce upwards of three tons of cast steel. In practice a reduction of the charge was made in the second and third melts to perhaps

<sup>129</sup> K. Barraclough Vol. 2 Chapter 5

<sup>130</sup> J.G. Timmins op cit Ch 3 Pt1 New firms in the steel industry were being added at an average of more than two per annum after 1815, mainly for cast steel.

<sup>131</sup> Each individual "furnace" or crucible hole had its own coke, draught and chimney. Neither Timmins nor Barraclough offers estimates for this period.

<sup>132</sup> K. Barraclough Vol. 2 p10 (See also Huntsman's account in SIR 9, 10 & 11).

<sup>133</sup> *ibid* pp246ff

fifteen and ten or twelve pounds respectively, some crucibles cracked and were withdrawn and generally furnaces were operated in threes so that campaigns overlapped, giving more continuity of production and, at the same time, requiring fewer operatives and allowing greater supervision. Even so, given that every furnace was used for, say, ten campaigns per annum, the total output might reach thirty tons.<sup>134</sup> Once that is related in 1820 to some twenty to twenty-five cast steel makers, although very varied in size, the maximum annual output of the town was certainly several hundred tons. Put in a Sheffield all-steel context, that was at the time still only a fraction of the whole production, probably approaching twenty per cent, but subject to extremely rapid growth both relatively and absolutely.<sup>135</sup>

The importance of Huntsman's discovery is well documented by Dr. Barraclough, using one quotation which likens it to the invention of printing, and another which gives the discoverer the honour of establishing Sheffield's reputation for quality steel. However, one other facet of the value of cast steel to the local economy's development must not be ignored. Without the rolls, dies, stamps and graving and chasing tools made of that material, it is very unlikely that Thomas Boulsover's fused plate discovery would ever have evolved so rapidly or even evolved at all into an industry of the magnitude and value to the town of the luxury Old Sheffield Plate and solid silver manufactures.

Regular foreign visitors to Sheffield from the 1760's, if not before, and international imitations of and eulogies for Huntsman's product are ample testimony in themselves to the tremendous respect in which it was held.<sup>136</sup> Although output was small, and the crucible steel industry as a whole grew only slowly in the eighteenth century, it is not unreasonable to argue that Benjamin Huntsman's modest Attercliffe works stood with Coalbrookdale, Soho, Etruria and Cromford as one of those most influential centres

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<sup>134</sup> J.G. Timmins (op cit p41ff), using a *pro rata* method from the Rate Books of 1810, indicates that several steel casters may have had more than twenty crucible holes, but modifies this with the suggestion that four or six was probably the most frequent.

<sup>135</sup> K. Barraclough PhD Ch VI sect ii By c1830 about half of all blister steel was being melted, rising to three-quarters in 1860. See also J.G. Timmins op cit Chapter 3. The c20% for 1820 is not a substantiated figure.

<sup>136</sup> K. Barraclough Vol. 2 p1 & p26ff

"from which ideas and enterprise radiated to other parts of the land".<sup>137</sup>

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<sup>137</sup> T.S. Ashton: *The Industrial Revolution 1760-1830* (London) 1948

CHAPTER 4 SILVER AND OLD SHEFFIELD PLATE:  
THE NEW LUXURY INDUSTRY

Tradition has it that Thomas Boulsover, cutler, accidentally stumbled on his discovery of silverplating in or around the year 1743 whilst repairing a damaged knife handle.<sup>1</sup> There is no reason to suppose that earlier cutlers had not known that silver and copper would fuse, but Boulsover found that in the state of fusion the two could be hammered and handcrafted as one metal, in fact almost as silver alone.<sup>2</sup> His innovatory contribution to the plating trade was in recognising the potential of such a discovery and in marketing his product - mainly buttons, probably silver-plated knife handles, and possibly buckles and other small items - on a successful commercial scale. If the date above is correct, he made so rapid a fortune that he was able to lease land in Beeley Wood in 1749 to build his own grinding wheel which, in partnership with Joseph Broadbent, a Sheffield merchant, he later converted into Nova Scotia Tilts. In 1752 he purchased the Whiteley Wood estate comprising hall and some 100 acres for £1360 "in hand" from Strelley Pegge, the squire of Beauchief Hall. Then within a decade he built one (or possibly two) forge(s) on the River Porter near his new residence in order to forge and roll steel for the manufacture of saws and fenders.<sup>3</sup>

Boulsover's success was possible because rising national wealth was already being converted, by those fortunate enough to benefit, into the purchase of personal goods and luxuries once enjoyed only by the few.<sup>4</sup> Silver buttons and buckles may still have been too expensive for them, but plated items at about half the price, yet looking exactly like the solid versions, were a substitute which fulfilled the demand of increasing public display in dress and fashionable possessions.<sup>5</sup> It was this kind of

<sup>1</sup> John and Julia Hatfield in their *Oldest Sheffield Plater* (Huddersfield) 1974 give biographical details of Thomas Boulsover and his family. They state that the discovery was made "early in 1743", but give no primary source for such an assertion. In fact, very few sources are indicated in this volume.

<sup>2</sup> It seems likely that Boulsover would flatten the fused plate by hammer, at least initially. The difference from solid silver was the edge where the copper could be seen.

<sup>3</sup> D. Crossley ed: *Water Power On the Sheffield Rivers* (Sheffield) 1989 p4 (it was Joseph and not Thomas Broadbent who was his partner) and 71ff, WRRD B 387 129.

<sup>4</sup> Roy Porter: *English Society in the Eighteenth Century* (London) 1982 p232ff

<sup>5</sup> *ibid.*

expenditure spreading into homes which created a market for a much wider range of plated household utensils, beginning largely with candlesticks. Soon the variety of products widened enormously, and, as affluence grew, solid silver artefacts were produced and marketed concurrently by the same firms.<sup>6</sup> So successful was this facet of development that Sheffield (jointly with Birmingham) petitioned for and achieved its own Assay Office for the marking of solid silver manufactures.<sup>7</sup> However, the new industry began to all intents and purposes with Boulsover and his plated buttons and knife handles. As for Huntsman's crucible steel, this was an early technological innovation giving Sheffield a head start in a most lucrative, if relatively small-scale, manufacture.

### FUSED PLATE

At this point it is useful to examine the nature of fused plate and the essential aspects of its production which was quite simple in principle: a thin rectangular sheet of silver was attached firmly to a similar sized but much thicker ingot of copper. The two were heated until they fused; after which the combined block was rolled out into a plated sheet ready for cutting, stamping, shaping and assembling. In practice there were other considerations: the actual purity of each separate metal before fusion and their relative thicknesses, preparation of surfaces, methods of fastening together the silver and copper, critical temperature of the furnace, and handling of the newly fused material. There was also the vital question of the fineness of the rollers in producing a smooth plated finish.

R. M. Hirst believed that the ideal quality of silver was a little higher than the 92.5 per cent purity of standard (sterling) silver and that copper needed to be hardened by the addition of 20 per cent of brass.<sup>8</sup> The thickness of the silver in relation to its backing could vary according to the amount of shaping envisaged, but he suggested that five pennyweights to one pound (1:64) was an absolute minimum to prevent the copper

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<sup>6</sup> Boulton Archives (Birmingham Assay Office) Box Assay Office 1 *Committee on Petitions relat<sup>d</sup> to Assaying Plate* 24 Feb 1773, Gilbert Dixon's testimony.\*

<sup>7</sup> 1773 Joint Act with Birmingham. The strategy of the petition and costs of the legislation were shared.

<sup>8</sup> Robert Michael Hirst: *A Short Account of the Founders of the Silver and Plated Establishments in Sheffield* (manuscript in the Bradbury Collection no. 299) 1820-32

showing through.<sup>9</sup> Plating could be even thinner. In a letter of 1791, John Read, the Sheffield refiner, asked John Lucas of Birmingham to quote him prices of plated sheet ranging from three pennyweights to forty to the pound (c1:100 to 1:8).<sup>10</sup> One would normally expect rather more than the minimum, yet only very occasionally Hirst's stated maximum of 1:1.<sup>11</sup> Once the two metals had been matched for size, the silver perhaps one sixteenth to half an inch thick, the copper one to one and a half inches and both about two and a half inches broad, with length dependent on the size of the proposed article, careful preparation was paramount. Those surfaces to be fused were planed until totally flat and completely free from all blemishes and then roughened by filing. Then the two metals were hammered together with some force. To assist the intended fusing process, a second copper ingot with its adjacent surface coated with chalk or borax and water ("whitening") to keep it separate completed a kind of sandwich with the silver centrally placed. The three pieces were tightly bound with iron wire and heated in a furnace.<sup>12</sup> Each melting point is quite different - 960°C for silver and 1080°C for copper - but their fusing temperature is much lower at 780°C.<sup>13</sup> Hence using charcoal or coke it was relatively easier to fuse than to cast the metals. Even so, the ensemble had to be carefully watched through a small spy-hole in the furnace until the silver showed signs of "weeping" at the edges at which point it had to be quickly and carefully withdrawn. If the silver were allowed to melt it would run off and the plating process would be spoilt; and pressure from the extracting tongs at fusion heat could cause a similar occurrence.<sup>14</sup>

A successfully plated ingot was allowed to cool and then cleaned with fine sand and water in preparation for rolling. Hirst writes of cast iron being used for that purpose, but, to produce a finely smoothed plated sheet, polished crucible steel rolls were the

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<sup>9</sup> ibid f3 This ratio assumes the normal practice of using troy weights for the silver (20 pennyweights to the ounce and 12 ounces to the pound) and avoirdupois for the copper (16 ounces to the pound) .

<sup>10</sup> SSC 29 24 Nov 1791\*

<sup>11</sup> R.M. Hirst op cit f3.

<sup>12</sup> Sometimes cast iron plates were used as additional outer layers.

<sup>13</sup> For the eutectic temperature here noted I am indebted to Gordon Crosskey whose researches will be published in a forthcoming book, *Old Sheffield Plate: the History of the Eighteenth Century Plated Trade*. Other items above and below which emanate from his researches are marked with \*.

<sup>14</sup> R.M. Hirst op cit f4ff

superior and essential material. In fact without the application of Huntsman's innovation it would have been almost impossible to roll fused plate to the requisite standard for larger wares. The technique of rolling was to make the minimum number of passes needed to achieve the thinness of sheet appropriate for cutting, stamping and handicrafting.<sup>15</sup> Successive passes, although appearing to give greater control in reduction, work-hardened the plate and led to cracking unless annealing was carried out.<sup>16</sup> Power needed for such heavy rolling could only be provided by horse- or water-driven machinery, so it is not surprising that in the early 1760's Tudor & Co. had a horse-mill off Norfolk Street and John Hoyland & Co. and Joseph Hancock built plate rolling mills at Cooper Wheel on the Sheaf and at Old Park on the Don respectively.<sup>17</sup> Some contemporary platers, having fused their silver and copper themselves, paid the mill proprietors to roll out their plated sheet.<sup>18</sup>

#### SILVERPLATERS AND SILVERSMITHS

Pioneer Thomas Boulsover had no such advantage, yet by limiting himself to simpler artefacts he could make use of the available technology - small ingots, hand rolling (or hammering), hand stamping and simple soldering - and take advantage of a ready market. We must remember that he did not have the benefit of Huntsman's steel for rolls, dies and stamps. It is also quite possible that he did not have the necessary skills to extend his repertoire beyond smallwares. Whatever the situation, Hirst's assertion that Boulsover's invention was the basis of a large and flourishing business is well supported by the evidence of his projects undertaken and property purchases made.

<sup>15</sup> Details of these activities are described in an eyewitness account of work at Younge, Greaves & Hoyland's in N. Scarfe: *Innocent Espionage: The la Rochefoucauld Brothers' Tour of England in 1785* (Woodbridge) 1995 p53. R.M. Hirst op cit p10 discussed the various solders and their uses.

<sup>16</sup> The sheet was heated to dull red heat (450-500<sup>o</sup>), held at that temperature for two hours, and allowed to cool very gradually in the furnace before being rolled again.\* Annealing softened the metal.

<sup>17</sup> Fairbank FB27 f126 (1764) & FB28 ff36 (1764) & 146 (1765); Guildhall Library, London, Sun Fire Office Records MS 11936/282/426675. For the water-powered sites see D. Crossley op cit.

<sup>18</sup> Fenton, Creswick & Co. used Joseph Hancock (and then Ebenezer Hancock) to roll their silver and fused plate from 1783 to 1804 (Bradbury 247 & 248). A smaller company, Goodman & Co., were still hand rolling in 1799 (Extract from the diary of Thomas Philip, 3rd Lord Grantham, 27 July 1799 cited in Robin Gard ed: *The Observant Traveller* (London) 1989 p73 and in the Appendix). It is likely that Goodman & Co's artefacts were relatively small.

Once the discovery became public knowledge, other craftsmen, no doubt, experimented with the techniques of plating. A deposition of a London silversmith at the Parliamentary Committee concerning the Sheffield and Birmingham Assay Offices in 1773 refers back to the time of his apprenticeship in Sheffield when his master "committed a Fraud upon the publick - which Fraud was, he plated the Knives hafts and sold them for Silver - the Consequences of which was a general Stagnation of Trade in that Business".<sup>19</sup> The testator, William Abdy, gained his Freedom of the Company of Cutlers in 1747, so that the plating by his master, one J. Osborne, must have taken place by that year at the latest.<sup>20</sup> By 1749 (the year of Abdy's departure for London, allegedly caused by the master's dishonesty) he thought that there were four cutlers in Sheffield in the solid silverware trade making "nothing but slight Silver Knife Handles".<sup>21</sup> This being the case, it seems reasonable to suppose that they and/or others, besides Osborne, were making fused plate. Abdy's assertion concerning the setback to the silver trade (and, by implication, to plating), if true, may help explain why there appears to be a hiatus between Boulsover's successful entrepreneurship and the emergence of Joseph Hancock, "Founder of the Plated Business in Sheffield" and "first to commence a manufactory of these goods".<sup>22</sup>

Hancock is elsewhere claimed to have been the second person of note in the plating trade and a rival to Boulsover.<sup>23</sup> Hirst suggests that the former's early essays were with snuff boxes made from a hard coal ornamented with silver and fused plate. Subsequently Hancock manufactured plated saucepans, coffee pots, candlesticks and other larger items.<sup>24</sup> He was first in respect of widening the trade from "accessories" - buttons, buckles, knife handles and so on - to larger and more valuable hollow-ware artefacts. The starting date of his activities was probably about 1750, but this is not firm.<sup>25</sup> A saucepan marked "Joseph Hancock" and dated at around 1755 is extant, and

<sup>19</sup> Boulton Archives op cit. The fraud was discovered in Leipzig.

<sup>20</sup> R.E. Leader: *History of the Cutlers' Company* (Sheffield) 1906 Vol. 2 p106

<sup>21</sup> Boulton Archives op cit and Gilbert Dixon's deposition that in the early 1740's only knife handles were made of silver (18 Feb 1773)

<sup>22</sup> Obituary *Sheffield Register* 2 Dec 1791. Hancock was eighty.

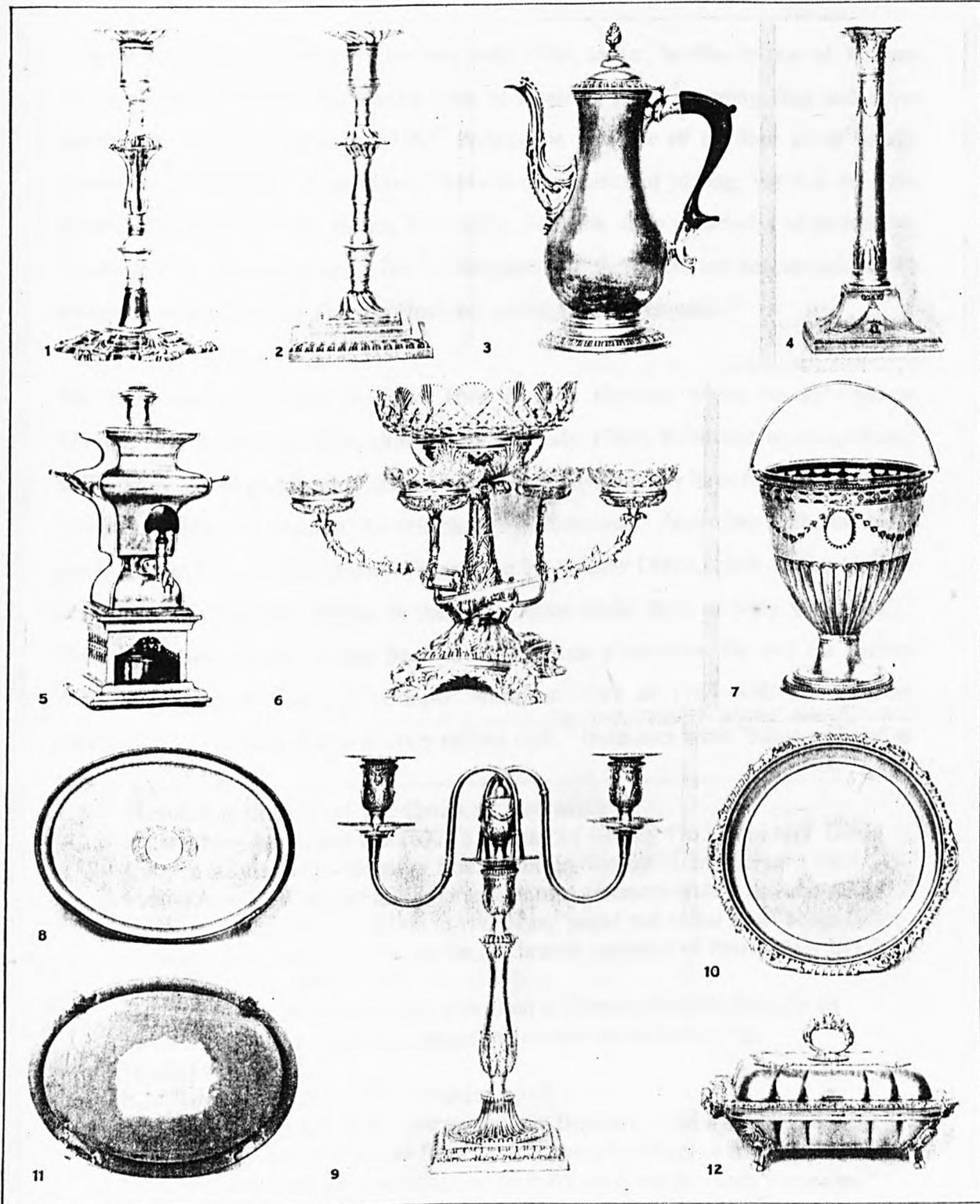
<sup>23</sup> R.M. Hirst op cit f24 and Francis Bradbury in the *Encyclopaedia Britannica* (1950 edition) under "Sheffield Plate".

<sup>24</sup> *ibid.*

<sup>25</sup> An inventory of Cannon Hall's kitchen equipment taken in 1750 includes "one saucepan silvered", probably an interior-plated pan of the kind produced by

Fig. 4.1 Reproduced from Encyclopaedia Britannica 1950

## SHEFFIELD PLATE



## SHEFFIELD PLATE OF THE 18TH AND EARLY 19TH CENTURIES

1. Shell pattern candlestick by Joseph Hancock, 1755
2. Gadroon pattern candlestick by Thomas Law, 1765
3. Coffee pot by Tudor and Leader, 1760
4. Adam candlestick by M. Fenton & Co., late 18th century
5. Russian samovar made in 1820
6. Epergne with five crystal glasses by T. & J. Creswick, 1818
7. Pierced sugar basket with blue glass lining by J. Hoyland & Co., late 18th century
8. & 11. Obverse and reverse of soldered-in, heavily plated shield for engraving, by Nathaniel Smith & Co., 1768
9. Candelabrum by John Winter, 1772
10. Salver by Roberts, Cadman & Co., 1810, with rubbed-in silver shield
12. Entrée dish and warmer with oak leaf shell and gadroon mount by Watson & Bradbury, 1812

he was still making snuff boxes in 1762.<sup>26</sup> An interested visitor during the previous year wrote about a "principal person concerned in a new manufacture of fineering silver upon copper, which succeeds very well". This was possibly Hancock, but, if so, only confirms that he was soundly established by 1761, nothing more.<sup>27</sup>

One of Hancock's contemporaries was John Hirst, cutler, brother-in-law of William Fairbank who estimated the slating costs of a casting shop, stamping shop and silver smithy for Hirst in February 1754.<sup>28</sup> Perhaps he was one of the four silver handle makers mentioned by Abdy above. There is no mention of plating, yet that does not preclude the activity - the means were there. Fairbank drew up articles of partnership for John Hirst & Co. around 1761.<sup>29</sup> Unfortunately, the others are not named. Hirst's daughter, Mary, married Thomas Hoyland, cutler, later silver cutler.<sup>30</sup>

The third man mentioned by R.M. Hirst is John Hoyland whom he describes as Thomas Boulsover's traveller, although by the early 1760's Boulsover was established at Whiteley Wood and forging and rolling steel.<sup>31</sup> Hoyland may have been persuaded to "embark on his own account" by this change of direction.<sup>32</sup> According to the evidence given to the 1773 Parliamentary Committee by Gilbert Dixon, clerk to the Cutlers' Company, Hoyland had "begun in the plate button trade thirty or forty years ago".<sup>33</sup> The implication is that he had been more than just a traveller. He and his partner William Middleton took over Cooper Wheel in 1763 or 1764 with the apparent intention of developing it into a silver rolling mill.<sup>34</sup> Both men were "buton makers" at

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Hancock at this period (G. Crosskey: forthcoming)

<sup>26</sup> F. Bradbury op cit and LD 1577 f5 (a letter of 19 July 1762 from Mrs. David Cooper in London to her sister Mrs. Elliott in Sheffield). In February 1764 Hancock and Co. signed a Memorandum of Agreement with Jean Baptiste de Gournay to receive instruction in varnishing paper and metal snuff boxes "after the manner of Monsieur Martin the celebrated varnisher of Paris" (MD 1837).

<sup>27</sup> MD 1869 f56ff (letter nine)

<sup>28</sup> The techniques of stamping are described in Thomas Philip's diary op cit.

<sup>29</sup> Fairbank AB4 f51 Adjacent entries in the accounts start in 1761.

<sup>30</sup> WRRD CM 382 425

<sup>31</sup> R.M. Hirst op cit f24 and D. Crossley op cit p72

<sup>32</sup> R.M. Hirst op cit f24. There are stories that Boulsover had a button mill near the Old Forge and that power from the Forge water-wheel or from Fulwood Corn Mill was used for polishing. No primary evidence for such stories has been found.

<sup>33</sup> Boulton Archive op cit (18 Feb 1773)

their new 1766 lease of Cooper Wheel and "newly erected mill now used for planishing"<sup>35</sup> They had taken two additional partners, John Trevers Younge and William Staniforth, linen drapers, for this lease. The fact that the drapers were named first suggests that they may have been the bigger shareholders and probably financiers of the venture.<sup>36</sup> Its success is reflected in a general enlargement of the rolling mill and dam, the building of an upper and lower refinery, and eventual operation of six pairs of rollers.<sup>37</sup>

Fourth in the hierarchy of "earliest adventurers" listed by R.M. Hirst was the partnership of Tudor, Sherburn and Leader. Hirst believed that Sherburn set up and financed the enterprise. There then arise problems with the sequence of events beforehand. The Hatfields state that, when recruited by Sherburn, Tudor was a button chaser with Younge and Hoyland.<sup>38</sup> They, however appear to have been partners only from the mid-1760's, whereas the Tudor & Co's articles of partnership date from 1762.<sup>39</sup> Tudor almost certainly came to Sheffield in 1757 or earlier as he married Elizabeth Dodworth in January 1758 at St. Peter's, (now the cathedral).<sup>40</sup> His London apprentice background as a chaser is noted by William Abdy of London in the depositions to the Parliamentary Committee of 1773 and by Hirst much later.<sup>41</sup> For whom did Tudor work at the time of his marriage and subsequently? The young lady in question was Thomas Boulsover's wife's niece. He could have worked for Boulsover; Tudor's partnership certainly later occupied and developed his uncle's premises.<sup>42</sup> Thomas

<sup>34</sup> First mention in the Sheffield Upper Rate Book 1764 f29; Fairbank FB29 f76  
The two men already appear to be partners in an assignment to them of Pinson  
Croft Lane property in March 1763 (CB 181 [68] and WRRD AY 552 713).

<sup>35</sup> S379 f48

<sup>36</sup> One of William Abdy's implied criticisms of the Sheffield silver trade is the  
preponderance of men with unrelated (hence presumed inferior) experience  
who are involved. Coincidentally John Hoyland is described as a former  
linendraper, as well as former buttonmaker, in an indenture relating to his sons  
after his death (WRRD ER 134 181) 1804. Gilbert Dixon confirms him as a  
former mercer in the Parliamentary Committee depositions 18 Feb 1773.

<sup>37</sup> D. Crossley op cit p109.

<sup>38</sup> J. and J. Hatfield op cit p99

<sup>39</sup> *Sheffield Public Advertizer* 4/11 May 1762\*

<sup>40</sup> IGI microfiche. Leader married into the Newbould family in 1766 (IGI  
microfiche).

<sup>41</sup> Boulton Archives op cit and R.M. Hirst op cit p28

<sup>42</sup> ACM S158\*

Leader was also London apprenticed - as a snuff-box and watch and instrument case or etwee (ie étui) maker.<sup>43</sup> Not surprisingly, therefore, neither man is included in the lists of apprentices held at Goldsmiths' Hall.

During the later 1760's several more partnerships confirm previous hints that platers were also producing solid silver wares. They were graduating, so to speak, from imitative fused plate to the quality product itself, yet operating and using developing skills on both materials concurrently. George Woodhead and Daniel Holy were silversmiths and silverplaters; Richard Morton, elsewhere plater, and William Clayton were silversmiths; and Joseph Hancock and sons, formerly platers, called themselves silversmiths and cutlers.<sup>44</sup> This joint plated and solid artefact production is emphasised over and over again in the depositions to the Parliamentary Committee of 1773 concerning the proposed Assay Office. "Not one Man [is] in the solid way only" confirmed Gilbert Dixon. The quantity of silver artefacts must have been increasing rapidly at this time, and problems of not having a local Assay were becoming a growing hindrance to the industry. R.M. Hirst names nine other "all respectable firms within the first twenty years of the business - at one time contemporary with each other and with the [others] before mentioned . . .".<sup>45</sup> Even if only some were producing a monthly average of nearly 1000 ounces of solid silverware as manufactured by Winter, Parsons & Hall in the early 1770's, the total must have been considerable.<sup>46</sup> Mr. Cox quoted the carrying costs and insurance to and from London per *hundredweight* of silver.<sup>47</sup>

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<sup>43</sup> R.M. Hirst op cit p28

<sup>44</sup> Partnership agreements - MD 5241, TC 833 & MD 5737(2) and PC 736. It is to be noted that partnership classifications sometimes differed from personal ones; for example, George Woodhead was a merchant and later "Esquire".

<sup>45</sup> Hirst op cit p28 The firms are: Winter, Parsons & Hall; Hawksley, Ashforth & Ellis; Fenton Creswick & Co; Law & Sons; N. Smith, Knowles & Creswick; Roberts, Eyre & Beldon; Eadon, Wever & Co; Toffield & Co, and Baxter & Co. Morton, Settles & Co. appears to be a later version of Morton & Clayton above. Hirst's "first twenty years" are probably counted from Hancock's time, ie c1750.

<sup>46</sup> John Parsons's deposition to the Parliamentary Committee 18 Feb 1773. In solid silver his firm made only candlesticks; their mean weight was 25 (troy) oz per pair. 1000 oz represented some forty pairs of candlesticks.

<sup>47</sup> Cox's evidence followed shortly after that of Parsons. The cost was over £3 per cwt.

A prevalence of partnerships in the local trade is noted by E.J. Law, who draws a sharp contrast with London silversmiths who were principally single operators or part of a family business.<sup>48</sup> His explanation seems plausible - in London the silversmiths had their shop windows in the nation's main market and they commonly stamped their own mark on provincial silver items; they could thus avoid the heavy investment essential for larger scale production (with an eye to both metropolitan and overseas market) and cost of transport, insurance and long-term credit. Sheffield manufacturers had all those financial hurdles. Tudor, Sherburn & Leader set up with £3000 in 1762, and Roberts, Cadman & Co. with £2800 in 1786.<sup>49</sup> Partnerships also promoted combinations of craftsmen of different skills: platers, silversmiths, die-cutters, chasers, piercers and so on, as well as travellers and book-keepers. In view of the preponderance of die-stamping in the Sheffield production process, Law stresses the key role of die-sinkers in the success or failure of firms. Of course, such specialisation necessitated more accommodation and more equipment, and hence more capital outlay; so much so that as early as 1754 John Hirst, noted earlier, needed at least three rooms, and a decade later J. Hoyland & Co. had more than a dozen in purpose-built three storey accommodation.<sup>50</sup> Fenton, Creswick & Co. in the 1770's had a "compting house, warehouse, roling chamber, burnishing room, cutting out chamber, bitt platers' room, chasing room and braziers' shop".<sup>51</sup>

With such an illustration of expansion and division of labour, it is salutary to realise that in 1773, when Sheffield and Birmingham jointly petitioned for their own respective Assay Offices, Boulsover's discovery which had launched fused plate and stimulated the silver industry was only about thirty years old. In that hollow-ware was only manufactured from c.1750 by Joseph Hancock the rate of progress is even more astounding. Gilbert Dixon testified that at the time of the petition 468 men worked in these trades. He was unable to differentiate between the rate of increase in solid and

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<sup>48</sup> E.J. Law: *Origins of the Silver Trade in Sheffield* (Typescript) 1991 held by the Sheffield Assay Office.

<sup>49</sup> E.J. Law op cit; Sissons MSS 1. Law notes other partnerships with much greater capital, but these appear to be renewals or upgradings.  
Fairbank FB26 f46 & FB28 f64

<sup>51</sup> Bradbury 246; Roberts, Cadman & Co. in 1787 had a cutting-out room, glass room, braziers' shop, a candlestick room, lamp room, die-cutter's room, stamp shop, boil house (sic), burnishing room, casting shop, counting house and warehouse (E.J Law citing Sissons MSS 146).

plated workers, commenting only "it is the same hands". R.M. Hirst, writing fifty years later emphasised that a skilful workman was equally dextrous in both applications.<sup>52</sup> Employment of women is not mentioned by Dixon, but if later practices applied, they could have added another hundred or so.<sup>53</sup> Hirst describes the tasks "generally done by women in most respectable Manufactories" - boiling, scouring and burnishing "to the lustre of polished silver".

## THE ASSAY OFFICE

Assaying of precious metals is the oldest form of consumer protection. Because gold and silver in particular are easily alloyed with base metals, and a plated item can look exactly like a solid silver one, it is most important for the buyer of an artefact, much of whose inherent value is in the metal, to know what he/she is buying. The assayer scrapes a small sample (or "diet") from an inconspicuous part of the item and subjects it to high temperature tests, results of which reveal its standard.<sup>54</sup> Gold can then be stamped, say, nine or eighteen carat as appropriate and silver with the sterling mark if it achieves ninety-two and a half per cent purity. As an assurance the Assay Office mark and year letter are stamped alongside.<sup>55</sup> There was usually no problem for Sheffield-made goods at the Assay, but they had to be sent to London in an unfinished state for the test and back again for finishing, or, if to be sold in London, finished there.<sup>56</sup> The case made by petitioners that sufficient silverware was being made locally to justify an Assay Office, that two journeys doubled the chances of damage and delay as well as raising costs (via transport and insurance) for provincial markets, and that finishing in the provinces was less expensive than in the capital and hence would reduce prices for London customers, outweighed with the committee accusations in a counter petition from the London silver lobby that the establishment of Sheffield and Birmingham Assay Offices "would open the door to deceit and uncertainty."<sup>57</sup>

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<sup>52</sup> Bradbury Records 299 f15/16

<sup>53</sup> *ibid* 2 & Sissons MSS 96

<sup>54</sup> Hence Sheffield Assay Office's motto *Ex flammae (sic!) veritas*.

<sup>55</sup> The letters of the alphabet for which there is a key have been used many times. To distinguish each series, and hence make the year indisputable, the style of letter and its background shield are varied for each successive alphabet.

<sup>56</sup> Boulton Archives *op cit* John Parsons's testimony. Birmingham commonly sent its silver goods to Chester Assay. The York Assay Office was no longer operative.

<sup>57</sup> *House of Commons Journal* Vol. 34 p154/155. They implied that plated ware

The two towns received Parliamentary approval to set up their own Assays in May 1773. Sheffield was to have a crown as its mark, Birmingham an anchor, to authenticate silver only. The Sheffield Office was set up in Norfolk Street with one Daniel Bradbury from London as its first Assay Master.<sup>58</sup> Thirty "Guardians of the Standard of Wrought Plate" were appointed, including the Marquis of Rockingham, the Earls of Strafford and Effingham, local gentry, merchants and bankers, and nine silversmiths.<sup>59</sup> In the first three years twenty-one firms had silver assayed, although a small number of these, like Nowills, for example, were not primarily silver workers.<sup>60</sup> Candlesticks were a staple product, with salts and knife handles the next most commonly assayed. An occasional coffee pot was checked. Initially, artefacts were in about twenty broad categories, and in general, about five or six lots of silverware per week were assayed up to 1775, although a "lot" could vary enormously in size from a single plate to more than a hundred knife handles. By this same date the range of categories had increased by about half. In early 1776 the number of weekly lots was increased by a factor of three and the broad categories were near to fifty.<sup>61</sup> This rapid rise in the output of silverware may have been a part of the escalating progress of the new manufacture's fortunes which would have continued anyway, but it is hard to resist the conclusion that a bottle-neck caused by the lack of a Sheffield Assay Office was now clearly removed.<sup>62</sup>

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was fraudulent and attempted to denigrate the two towns by the vague blanket phrase of "other frauds and deceits". See also British Museum Additional MSS 27538 f297 (1772).

<sup>58</sup> Daniel Bradbury appears to have been unrelated to the local Bradburys of Gleadless, one of whose branches became involved in the silver and plating trade. See also Assay Office Premises 1774-1802 File F in Sheffield Assay Office Archives.

<sup>59</sup> A tenth silver-related man, Albion Cox, a refiner, appears to have been based in London (Bradbury Records 237 f104ff). He was not the same man as Robert Albion Cox, bullion dealer.

<sup>60</sup> Sheffield Assay Office Archives Rough Day Book 1773-1775 and Plate Books. Nowills (Robert Kippax & Co.) had forty-five silver blades assayed in June 1774.

<sup>61</sup> Candlesticks were still by far the commonest "lot" assayed, but knife handles were quantitatively the commonest.

<sup>62</sup> From 6th February to 6th March 1775 John Winter & Co. had had assayed 105 pairs of candlesticks and a few other items, weighing over 2600 ounces. This compares very favourably with the "up near 1000 ounces per month" cited by a partner in the same firm only two years before (Boulton Archives op cit John Parsons's testimony).



There is further support for this in Fenton, Creswick & Co's accounts.<sup>63</sup> The end of year surplus for their plated and silver business was £4373 in 1773, £4294 the following year, and £4497 in 1775. Then the successive surpluses were respectively £8682, £10,138, £9016, £10,451, £8575, £10,930 and £6966 (1782). The industry's advance is also reflected in property transactions: only a dozen or so Sheffield silversmiths and platers were registered in WRRD Memorials during the 1770's, but over fifty in the 1780's.<sup>64</sup>

## REFINING

The success of local refiner John Read adds more evidence for the growth of the industry.<sup>65</sup> Although initially having set up in Sheffield around 1760 as a reclamer of precious metals from waste and sweepings in the plated and solid trades, during the 1770's and early 1780's he increased his sales of silver, in the process taking over from London bullion merchant Robert Albion Cox as the major supplier to local manufacturers. For example, in 1776 Read purchased over twenty-five tons of sweep from the Royal Mint and established himself in the capital as a major buyer of all types of bullion waste. In 1779 he supplied 20,580 oz of silver to Sheffield firms, in 1781 36,674 oz and in 1783 57,450 oz.<sup>66</sup> He had in his ledgers almost all those recorded in the 1787 Directory as users of silver and others besides. The figures of his sales compared with quantities of silver assayed give one of the few quantitative insights into the plated trade and even then only a very imperfect glance. In 1783, for example, Read sold over 57,000 ounces of silver and there would be almost certainly other, smaller, sellers.<sup>67</sup> In that same year articles weighing 31,133 ounces were assayed. If the average plated ratio were twenty of copper to one of silver (it may well have been greater) and there were no other use for silver other than for assayed and plated ware, then the amount of plated goods manufactured locally must have outnumbered solid items by a factor of at least twenty. Read sold 117 ounces of gold to the buttonmakers

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<sup>63</sup> Bradbury 237

<sup>64</sup> WRRD

<sup>65</sup> Full details of the biography of Read and of the rise and progress of his refining business from c1760 are to be found in R.E. Wilson *Two Hundred Precious Metal Years* (London) 1960 (largely from original archive material in the Sheffield Smelting Company Records [SSC] in Sheffield Archives)

<sup>66</sup> *ibid* p20/21

<sup>67</sup> In 1786, for example, Read supplied Fenton, Creswick & Co. with 3366 oz and others sold them 746 oz. (*ibid* p20)

in 1783, from which R.E. Wilson calculates that about one third of a million gold-coated buttons of one inch diameter could have been made. He declines to estimate the probable number of buttons plated from the residue (after a small solid production) of 5000 ounces of silver Read sold to local buttonmakers in that year.<sup>68</sup> The re-imposition of the 6d per ounce duty on silver in 1784 gave a further boost to the plated trades as the price differential moved further in their favour.

#### PRICES AND COSTS

Confidence among Sheffield's silversmiths and platers at the time of the opening of the Assay Office in 1773 was such that eight of them launched the Silver Platers' Trade Association.<sup>69</sup> Listings of a large range of goods with minimum prices and agreements as to maximum discounts and maximum periods of credit amply illustrate the operation of a cartel. During the eleven years of the Association, members attempted to depress the price of sterling silver taken in exchange for plated goods and raised the discount to twenty-five per cent, apparently to suit the economic climate, finally proposing in 1784 (when the market was improving) to charge net prices unless for ready cash, in which case five per cent only would be allowed. Withdrawal of Younge, Greaves & Hoyland from the price agreement in that year seems to have precipitated the cartel's demise.<sup>70</sup> It is possible that less formal agreements were undertaken subsequently and that adherence to customary practice would keep prices in a broad framework as in the cutlery and edgetool trades. Costs were a different matter. Manufacturing of silver and of plated goods was subject to considerable fluctuations created by the addition of duties - another 6d per ounce was added in 1796 and a further 3d in both 1804 and 1815 - and, particularly, by the effects of war on overseas demand.<sup>71</sup> The chart drawn by A.T. Watson illustrates a wide see-sawing of quantities of silver assayed.<sup>72</sup> The

<sup>68</sup> ibid p22. Examination of the Plate Books at the Sheffield Assay Office reveals that very few silver buttons were assayed.

<sup>69</sup> MD 2086 The members were: Winter, Parsons & Hall; Hancock, Rowbotham & Co; Tudor & Leader; Fenton, Creswick & Co; Hoyland & Co.; Richard Morton & Co; Thomas Law & Co; and Joseph Wilson & Co. The latter's name is torn off the list of signatories, but appears later in 1773. By 1782 there seem to have been seven firms.

<sup>70</sup> The torn page at the end of the Minute Book prevents sight of the closing comment.

<sup>71</sup> Home copper prices also increased sharply at the end of the 1790's leading to a petition from Sheffield requesting reduction or abolition of duties on imported metal (*House of Commons Journal* Vol. 54 p404).

outbreak of the American War of Independence in 1776 led to a near halving of assayed metal by 1778 and a similar halving was precipitated in 1803/04 by the coincidence of duty and fresh outbreak of war in Europe. Long term effects of the American War and subsequent European hostilities are seen in that the 4000lb mark of 1776/77 was not overtaken until 1802/03. On the other hand the end of a war could give a major boost as in 1817/19 when quantities assayed rose by more than fifty per cent to 6214 and 6123lbs, quantities which, apart from the 7051lbs of 1824/25, were not surpassed until the 1850's.

### SIZE AND VALUE OF THE TRADE

The size and value of the trade is difficult to quantify subsequent to Gilbert Dixon's testimony.<sup>73</sup> Besides the main "houses" and others noted in the Directories as silversmiths and platers, E.J. Law found over fifty cutlers registered with the Assay Office for silver knife blades and handles between 1774 and 1793.<sup>74</sup> Foreign visitors to Younge, Greaves & Hoyland in 1785 claimed that 120 people were occupied by them in the production of fused plate, buttons and bigger items.<sup>75</sup> Roberts, Cadman & Co. had at least forty workers in 1803. If the latter firm were more typical in size, the total industry workforce at the time must have exceeded 650.<sup>76</sup> It may well have reached a thousand before 1820. As to the value of the product, John Parsons' testimony indicates that the shop price of a pair of candlesticks of twenty-five ounces was a little more than double the cost of the silver.<sup>77</sup> In 1783 the pro rata shop value of Sheffield assayed goods would amount to about £5000. If the same logic is followed (via the Read silver account noted above) for the perhaps more than twenty-times larger plated sales of the same year retailing at about half the price of solid silver wares the figure of £50,000 comes to mind. This, it must be emphasised, is only a possibility based on flimsy evidence, and the net worth, with transport and insurance costs and commonplace

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<sup>72</sup> A.T. Watson: *The Sheffield Assay Office* (Sheffield) 1889

<sup>73</sup> Boulton Archives op cit

<sup>74</sup> E.J. Law op cit. 16 firms are named in the 1774 Directory, 17 in 1787.

<sup>75</sup> N. Scarfe op cit p53

<sup>76</sup> Gilbert Dixon's testimony that 468 men worked in the silver trades in 1773 coupled with A.T. Watson's chart suggest a pro-rata increase in men to 600/700 by the early 1800's and rather more by 1820. As women dominated the finishing processes, perhaps we should add another fifteen to twenty per cent.

<sup>77</sup> Boulton Archives op cit. The pair sold at about £8 14s. The estimate is made using a basic price of 3s per (troy) ounce for silver.

discounting, could have been twenty per cent less than any gross figure. Even so it was a high value trade and big profits could be made. Thomas Boulsover was able to purchase a small landed estate.<sup>78</sup> John Winter, who died in 1792, left £1000 to his wife Mary and freehold property in the Market Place with an adjoining rolling mill in Mulberry Street, more freehold (over thirteen acres) at Leavy Greave, closes at Crookesmoor, houses in Campo Lane and a property near Manchester.<sup>79</sup> There were also numerous mortgage loans to be repaid to his executors. Henry Tudor, at his death in 1803, owned freehold properties in Bank Street, Figtree Lane, Skargell Croft, Hartshead, Pond Street, Flat street, one and a half acres adjoining Surrey, Sycamore and Arundel Streets, six acres at Gill Carr (Little Sheffield) and an allotment nearby on Sheffield Moor. He also had leasehold of four acres at Little Sheffield and a neighbouring inn, bowling green and gardens totalling about one acre, plus an estate of several hundred acres at Charnock Hall, Eckington.<sup>80</sup> These are just three of the biggest land purchasers. WRRD Memorials also show an ongoing increase in numbers of silver and plated workers in the property market - about two hundred in the first two decades of the nineteenth century.

In conclusion, the silver and fused plate trades had grown from infancy to maturity in the eighty years of this study, and from a workshop-based to a specialised manufacture. In most cases, a moderate division of labour had developed with both men and women working with complementary skills in a sequence of up to a dozen particular rooms. Long before 1820 these trades were, with cutlery and steel, one of the three pre-eminent industries of Sheffield, with local silver and plated ware sold nationwide and exported to much of Europe and across the Atlantic. Both quality and appearance of the artefacts must have complemented the contribution of Huntsman's steel to the reputation of the town as a centre of manufacturing excellence. Furthermore, the respective discoveries in the early 1740's help put the town, chronologically, near the forefront of the eighteenth century technological revolution.

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<sup>78</sup> Whiteley Wood Hall and c100 acres in 1752 (WRRD B 387 129)

<sup>79</sup> Wheat Colln 3024, 3025 & 3026

<sup>80</sup> WRRD GN 483 403 & EO 13 19; MD 5859 & MD 5828 (f10)

## CHAPTER 5 THE COAL INDUSTRY IN SHEFFIELD AND DISTRICT<sup>1</sup>

Armed with the knowledge that iron and steel production and the secondary metal trades were to a large extent directly or indirectly dependent on charcoal in 1740, it is easy to underestimate the importance of the local coal industry. Not only did coal provide heat for a growing housing stock, it also fuelled much of Sheffield's manufacture. Coal was used for firing steel converting furnaces and in cutlers' smithies (although probably in a modified form in the latter case).<sup>2</sup> Brick making, lime burning and glass making (essential building materials), and brewing, baking, soap boiling, hat making, paper making, dyeing and so on all used coal.<sup>3</sup> Over the eighty years after 1740 the population more than quadrupled, and with it, in broad terms, domestic, industrial, commercial and civic building. The introduction of coke for the new crucible steel industry, and its eventually wider application for such diverse products as iron smelting and silver and plated manufacture, added significantly to the market for coal. Home fires, building and industry together created an unprecedented demand for fuel, and in so doing stimulated both ongoing expansion and eventually major technical innovation in local mining.

At the outset of this chapter, it is essential to understand that coal was not (and is not) a

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<sup>1</sup> This chapter draws freely on the work of the following, but on occasions disagrees with their mathematics and/or their interpretations of the archival material: G.G. Hopkinson: *The Development of the South Yorkshire and North Derbyshire Coalfield 1500-1775* JHAS Vol. 7 p295ff; R.M. Cox: *The Development of the Coal Industry in South Yorkshire before 1830* (unpublished MA thesis University of Sheffield 1960); R.A. Mott: "Tramroads of the Eighteenth Century and their Originator: John Curr" in *Transactions of the Newcomen Society* Vol. 42 (1969/70) using mainly ACM. I.R. Medicott: *John Curr and the Development of the Sheffield Collieries 1781- 1805* JHAS Vol. 12 p51ff (1983); P.J. Nunn: *The Management of some South Yorkshire Landed Estates in the 18th and 19th centuries linked with the Central Economic Development of the Area 1700-1850* (unpublished PhD thesis of the University of Sheffield 1985)

<sup>2</sup> An undated letter, but part of a sequence of 1749/50 correspondence (Wharncliffe M118-26), includes the sentence: "At Sheffield they chark all their pittcoals for all the manufactory to bring them to as near a resemblance to charcoal as possible".

<sup>3</sup> J.U. Nef: "Coal Mining and Coal Utilization" in S. Singer et al eds: *A History of Technology - The Industrial Revolution c1750-c1850* (London) 1958. Lime was also used extensively in the reclamation of enclosed acidic waste.

homogeneous raw material. Even within a particular seam there was often variation. A description of the component parts of Wood Pit seam under Sheffield Park in the 1773 Report makes this very clear.<sup>4</sup> The top twelve inches were "splinty" and "used only in the houses being unfit for the Cutlers' use on account of the White Spar contained in it". The next fifteen and a half inches was "Coal pretty fine and that used only by the Cutlers". Then there was a band of five to ten inches which was "carefully thrown back and pillared up in the Waste", leaving the last twenty-one inches of bottom coal "very splinty containing much White Spar and used only in the houses". John Buddle in 1789 confirmed that Park hard coal for the cutlers "was preferable to any other". He also noted that Darnall hard was used by local manufacturers and steel furnaces, implying that it was a good coking coal. This is confirmed in 1817 in an appraisal of the same seam a little further south-east at Handsworth - "The quality of this coal surpasses all the other Beds for the use of Blast and Steel Furnaces and makes the strongest Coke". Conversely, that at Ringinglow was used principally for lime burning.<sup>5</sup> Of course, different types commanded different prices; in 1774 Park pit-head rate for the best was 3s 4d per load compared with 2s for the worst, a premium of sixty-six per cent.<sup>6</sup> Quality and saleability of output were essential determinants of the success or failure of a colliery.

Sheffield lies almost midway between the northerly and southerly ends of the "exposed" coalfield.<sup>7</sup> In and close to the town, two of South Yorkshire's three main seams outcropped or were near to the surface.<sup>8</sup> The thinnest of these, the Alton seam, was worked at Millhouses, Ringinglow (Ecclesall), Upper Hallam, Crookes, Stannington and Loxley.<sup>9</sup> The five-foot Silkstone seam lay under the town and Park, and was held, therefore, principally by the Duke of Norfolk.<sup>10</sup> A little farther away to

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<sup>4</sup> ACM S215

<sup>5</sup> ACM S224, S226

<sup>6</sup> British Museum Addnl MSS 27538 f229

<sup>7</sup> British Association for the Advancement of Science (D.L. Linton ed): *Sheffield and its Region* (Sheffield) 1956 p12ff

<sup>8</sup> From the outcrops most Sheffield coal seams sloped downwards at 5 to 10 degrees towards the north-east or south-east, that is they descended at the rate of about 100-200 yards per mile.

<sup>9</sup> Hopkinson op cit. In parts of Ecclesall the seam was being worked fourteen yards down in 1758.

<sup>10</sup> Wheat Colln 2486 The Silkstone seam near Park furnace was forty-five yards down.

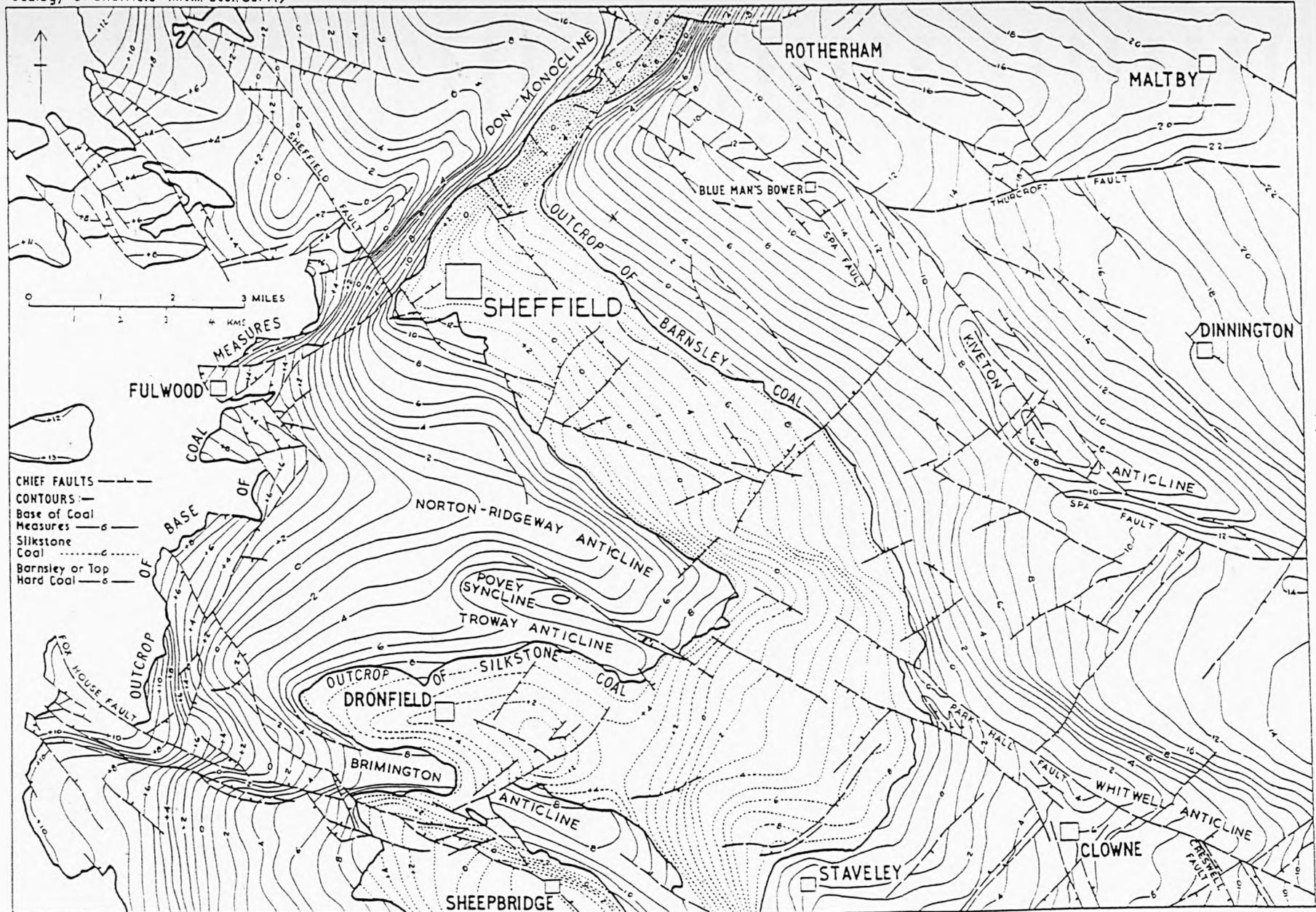


Fig. 5.1

HORIZON - CONTOUR MAP OF COAL MEASURES  
 CONTAINS IN PARTS OF SHEET 63 AND 64

the east lay the nine-foot Barnsley bed. Mines here, some near the Don Navigation, were in different hands, but they provided only potential competition until completion of the Sheffield-Tinsley Canal in 1819 allowed them fuller access.<sup>11</sup> Other beds were available - a four and a half foot seam of "superior coal" (the Attercliffe Bed) 150 to 200 yards below Carbrook, a four foot seam of "inferior coal" (the High Hazels Bed) some 50 yards nearer the surface and a "not saleable" bed above this at 10 to 50 yards deep.<sup>12</sup> And a little to the north there were some sixty feet of coal in seams of two feet or more, plus numerous thinner deposits.<sup>13</sup> The picture that emerges is one of a region with ample reserves and readily accessible sources.

Outcropping of seams enabled some mines to be worked in part, at least, by adit and then by a series of deepening shafts.<sup>14</sup> In general workings were shallow and, until the innovations of John Curr, the distances underground for the movement of men and coal were minimised by sinking more shafts. Cox notes that, as a rule of thumb, eighteen, including the original, were needed for a surface area of eighty acres. The development of a coalfield, however, meant that once easier parts of the coal had been removed mines almost inevitably became deeper and more expensive to expand. Shafts in the Park Colliery in the late eighteenth century were up to 120 yards deep, for example, and others at Attercliffe between 80 and 100.<sup>15</sup> Increasing depth of workings commonly created additional problems of ventilation and flooding, and consequently incurred yet more costs, particularly in water extraction.<sup>16</sup> The cheapest long-term solution to the ingress of water was a sough, a method familiar in lead-mining areas. Leases often had clauses granting liberty to proprietors to make such a drain through

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<sup>11</sup> Hopkinson op cit

<sup>12</sup> Beverley Archives: DDSE (2) 13/38 John Curr's Report 10 Jan 1810 The beds here had an incline of about 10 per cent. There were also inferior beds of ironstone.

<sup>13</sup> D.L. Linton ed op cit

<sup>14</sup> One of the Attercliffe collieries (which later became the Nunnery) could be entered by adit or shaft (Cox op cit)

<sup>15</sup> Cox op cit. The compiler of the 1773 Report estimated that that the medium (ie average) depth over the next twenty-one years in the Park to be fifty fathoms or 100 yards (ACM S215)

<sup>16</sup> None of the viewers' reports mentions any problems with gas, although the *Iris* of 3 Mar 1807 reported "an explosion of inflammable gas" at Park Colliery. Candles were purchased by the workmen from their wages at the same colliery in 1773 (ACM S215) and by John Curr for Attercliffe in 1787 (ACM S201).

the ground of the lessor.<sup>17</sup> And soughs could be quite extensive - one of seven furlongs crossed Attercliffe Common from Darnall Colliery to the River Don, and others of one and a half and two miles drained Park and Manor Collieries respectively into the Sheaf.<sup>18</sup> For mines where the surface terrain was unsuitable or where workings had continued below sough level, the use of a steam engine became an accepted solution, although the 1737 Norfolk lease of Park Colliery permitted the use of a water-wheel for that purpose.<sup>19</sup> A steam engine was a major capital investment - that at Dore House was valued at £1400 in 1800 - and could be of disproportionate cost to a small enterprise.<sup>20</sup> Nor was there any guarantee that it would be a success. At Park Furnace in 1785 a 45 inch engine and two 15 inch pumps failed to extract sufficient water for the shaft of a small colliery to be sunk more than twenty-two yards of the fifty needed to reach the seam. A second, 29 inch, engine was added to enable the shaft to be completed. As the lease allowed only two acres of coal per annum to be extracted "and Lord Surry would allow no more on account of hurting his colliery", it was almost inevitable that the mine became unviable.<sup>21</sup> At Attercliffe Colliery in 1789 John Stephenson advised that a new engine and shaft to enable the undertaking to operate at all would cost in the region of £3000 and would be unlikely to pay for itself. On the other hand, as observed above, the general trend was for underground workings to increase in both depth and extent.

Expansion of coal production, at least to 1751 (and thereafter for some years for those mines not near enough to the Don Navigation to benefit), was due much more to increasing local demand than to any technological improvements.<sup>22</sup> Coal was essentially a commodity which was much too expensive to transport far other than by water. Hence collieries were constructed on those parts of the coalfield close to towns and to large industrial users. Landowners with substantial coal-bearing property were likely to be in a monopolistic position in their own immediate locality or in direct

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<sup>17</sup> eg Tibbitts Colln 804 (1754)

<sup>18</sup> Cox op cit citing J. Farey: *General View of the Agriculture and Minerals of Derbyshire* (London) 1811 Vol.1 p328; ACM S215 and S222

<sup>19</sup> MD 1387/1388 and see below. In a deeper mine with a sough the engine of whatever kind would only need to raise water to sough level.

<sup>20</sup> Cox op cit and MD 1736

<sup>21</sup> Wheat Colln 2486 The second engine raised the water 16 yards into the "suff"

<sup>22</sup> Cox op cit

competition only with near neighbours. It was such competition for Sheffield customers which provoked a hint of bitterness in the 1773 Report stating that the Darnall Colliery of Messrs Clay & Co., two miles east of the town, made use of a Turnpike to which they did not contribute, whereas Park Colliery bore the full expense of its lengthening road.<sup>23</sup>

#### PARK COLLIERY

The Duke of Norfolk's ownership of large tracts of the township was most advantageous for the estate and the exploitation of its mineral wealth. For example, coal lay under 270 acres of the Park.<sup>24</sup> Few problems were likely to arise with rival freeholders or with wayleaves, and the Lord of the Manor was in a position of controlling supply in a period of rising demand. Even if the collieries were let out, high rentals would reflect that monopoly. In 1737 John Bowden took a twenty-one year lease of Sheffield Park Colliery at £400 per annum plus one fifth of the value of all coal extracted over and above the point at which one fifth of the total value exceeded the rental, that is when the total sold passed the £2000 mark.<sup>25</sup> Hopkinson notes that in the last six years of that term the average excess was over £220.<sup>26</sup> At a time when the total income from the Hallamshire estate was in the region of £6300 to £6600, this one colliery brought in nearly ten per cent of it. In general, others were much smaller.<sup>27</sup> Bowden chose not to renew his lease in 1758, perhaps preferring to concentrate on his activities at Pond Forge which he had worked from 1751 and on his other mining interests a little farther away.<sup>28</sup> Whatever the reason, it appears that no new tenant was forthcoming. Such an important source of revenue could not be neglected and both Park and Manor collieries were taken into direct management by the estate, with compensation for lost investment to Bowden.<sup>29</sup>

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<sup>23</sup> ACM S215

<sup>24</sup> *ibid*

<sup>25</sup> MD 1387/1388 There were also clauses concerning the filling in of used pits and the supply of free coal (twenty wain-loads) to the tenants of Sheffield Corn mills.

<sup>26</sup> Hopkinson *op cit*

<sup>27</sup> ACM S158; S378 f133 John Fenton's 1750 lease of the mines of Gleadless Moor and Woodthorpe Common was at £10 per annum.

<sup>28</sup> ACM S378 f161 21 year lease running from Lady day 1751, but dated 1 May 1754. Nunn *op cit* p240

<sup>29</sup> Medlicott *op cit*. The repayment was £194. Nunn concurs with Medlicott that the consequences of not operating the colliery would have been very damaging

In the meantime, Walter Osborne, Joseph Clay and Jonathan Smith had taken a twelve year lease of a five acre parcel at Darnall from John Hirst of Rotherham to dig pits and extract coal from 1754.<sup>30</sup> Hopkinson notes a partnership between Osborne, Clay and Joseph Swift in 1760 to exploit what appears to be a nearby colliery formerly in the possession of Swift's father-in-law, Joseph Alsbrooke. Osborne subsequently leased more closes in the vicinity for further coal extraction.<sup>31</sup> The importance of this colliery lay in its threat to the potential monopoly of the Norfolk estate. In 1762 the Duke took legal advice as to whether as Lord of the Manor he could prevent coal traffic from Darnall coming to Sheffield over Attercliffe Common. He was unsuccessful, and Osborne & Co. were supplying half the town's domestic needs of fuel by the early 1770's.<sup>32</sup>

Profitable operation of Sheffield Park Colliery must have seemed a possibility to Messrs George Townsend and Mark Furniss who took on the lease in 1765 at £1000 per annum. The estate had the advantage of a substantial income and of being able to let someone else take on the problems and risks of direct management.<sup>33</sup> It did retain a right to "view" the working for long-term efficiency and to suggest improvements in working practices.<sup>34</sup> For example, in a 1773 appraisal it was proposed that four pits instead of five should be used (with a twenty per cent saving of labour and horses), that larger gins and bigger corves would be more efficient, and that a wooden waggon-way would reduce the transport costs of coal from pit-head to town. This construction (estimated at £2000) together with coal stage cost £3280 and was in operation in 1774.<sup>35</sup> Extra levies of nearly 10d per ton on all tonnage above 3800 were made and a

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to the local economy, and not least to the growing number of householders.

<sup>30</sup> YWD 923 (second packet) The lease was renewed for 42 years in 1766.

<sup>31</sup> Fairbank FB 49 p1 (1776) and see also TC 804 and 805.

<sup>32</sup> Hopkinson op cit. The company were also sending coal down the Don Navigation. In spite of the competition Park Colliery sales increased from 5494 tons in 1761 to 6094 tons in 1762 (Medlicott op cit citing ACM S195B); see also ACM S215

<sup>33</sup> Medlicott op cit

<sup>34</sup> The viewer, an experienced colliery engineer or manager, had the task of ensuring that the long-term interests of the landowner were observed. He was there to prevent wasteful work practices for quick profits which would cause a premature closure of the colliery and reduce the potential revenue.

<sup>35</sup> ACM S215 New 16 peck (1.25 cwts) corves instead of 10 peck (0.78 cwts) were proposed. The waggon ways with beech and oak rails would run for one and three-quarter miles; the saving would be 60 per cent ie from 2s 6d to 1s per

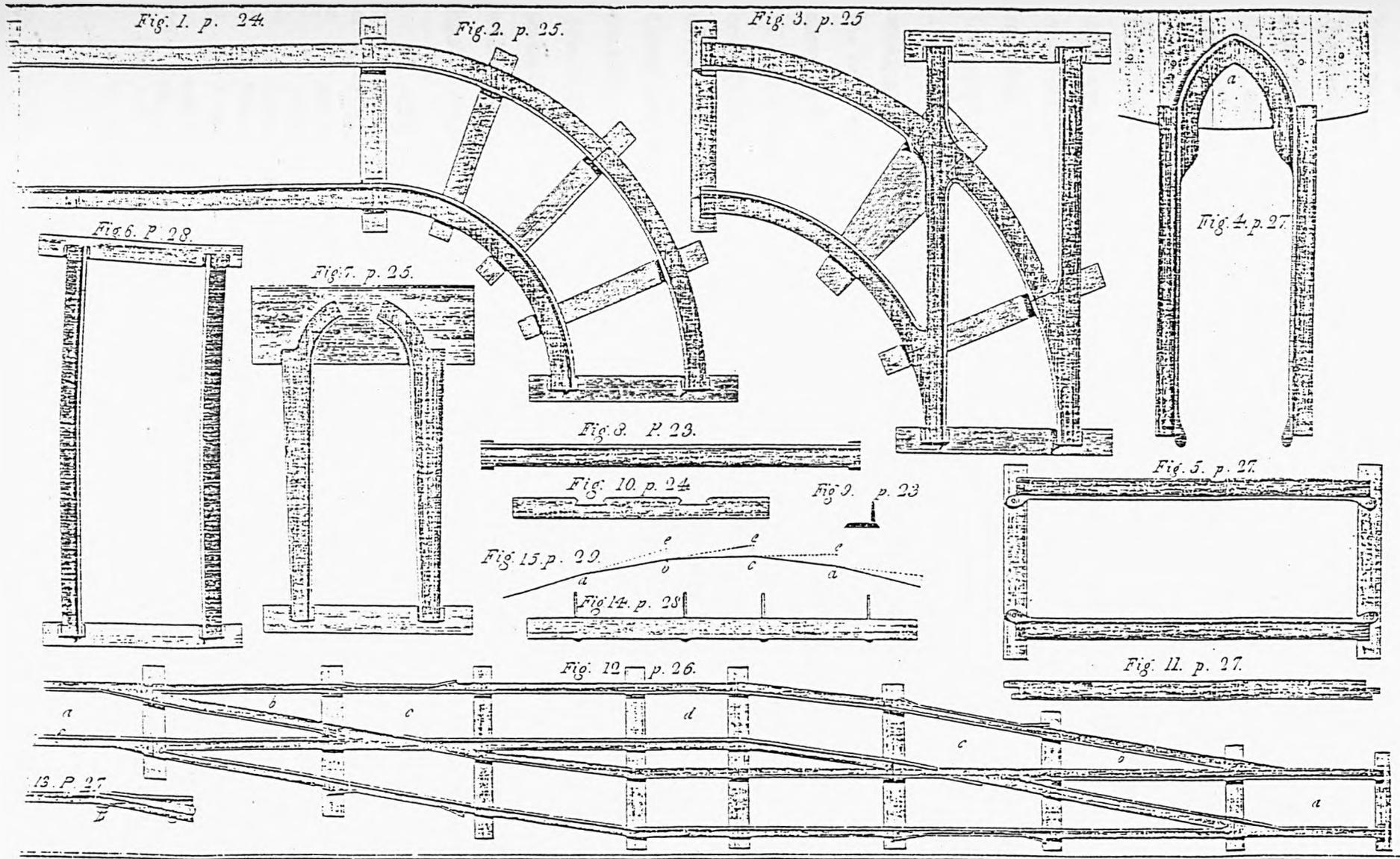
rather punitive 44 shillings for every 38 tons over the estimated (and unlikely) 22,800 maximum imposed.<sup>36</sup> Not surprisingly, Townsend and Furniss ran into difficulties. They were in deficit by 1778 at Park Colliery and by 1781 at Gleadless. The viewers' report detailed their problems at Park, many of which are common to extractive industry. The lessees incurred rising costs, not least from water, as headings ran further from the town and deeper underground, and as geological faults were encountered. Costs of transporting coal from face to customer inevitably increased with distance, and the proportion of small coal to hard rose from 5:3 in 1774 to 3:1 in 1779.<sup>37</sup> In summary, profits gained were not sufficient to justify the capital investment. When Townsend and Furniss surrendered their lease early in 1781, and no other would-be tenants were forthcoming, the estate again took over day to day operations.<sup>38</sup>

### JOHN CURR AND NEW TECHNOLOGIES

Park and Manor collieries needed the kind of investment which lessees were in no position to provide. In the period 1781/1784 £4700 was spent on Wood Pits at Park, and John Curr, a former viewer, appears to have been given a relatively free hand to introduce his innovations. However, he, in turn, was subject to the viewing of others as he took personal responsibility for sinking new pits, for ventilation and drainage, haulage, miners, accounts and the overall management of Sheffield Collieries.<sup>39</sup>

If developments in mining had been evolutionary hitherto, Curr provided a range of new technologies, particularly in winding and haulage, which were widely adopted. It has been claimed that in the last two decades of the eighteenth century Sheffield was in the forefront nationally in this respect.<sup>40</sup> Yet Mott offers a word of caution. He observes that in 1787 only one pit was innovatively equipped and then only partially.<sup>41</sup>

- 
- load (42.5 cwts).
- <sup>36</sup> 38 tons equalled one "Ten(n)" (Mott op cit or his publisher miscalculated 38 x 600 as 19,800).
- <sup>37</sup> ACM S217
- <sup>38</sup> see Footnote 29
- <sup>39</sup> Medlicott op cit
- <sup>40</sup> *ibid*
- <sup>41</sup> Mott op cit. ACM S223 John Buddle's Report on Sheffield Park and Attercliffe Collieries 1787. The relevant question posed is: "You are required to give your opinion on the scheme of hurrying the coals which Mr. Curr has lately introduced at one of the Pits". There is a reference to the "Scheme of drawing 2 corves abreast" being one of a number of projected designs. Yet in another part



*Designed by Tho. Hornes, Engineer*

Fig. 5.2 John Curr's Iron Rails (from *The Coal Viewer* 1797)

The key element in the advance was a new improved waggon or "corf". Instead of an iron and wickerwork "kibble" holding about one and a quarter hundredweights and dragged on a form of sledge from face to shaft, Curr installed iron-framed, wooden planked corves with four wheels designed to take a five or six hundredweight load. These corves ran on underground waggon-ways made of cast iron in the form of inner-flanged rails. Charles Hatchett noted in 1796: "The loaded corves are brought from the places that are worked for coal (and which are from the bottom of the shaft from 1 mile & ¼ to 1 & ½ mile distant) . . . Although each corf weighs about 250 (ie 2.50) cwt and when loaded contains between 5 and 6 cwt of coals one Horse is able to draw without difficulty 10 to 14 loaded corves at each time, whereas before the Iron rail was used only two corves could be drawn at once".<sup>42</sup> This innovation was integrated with the winding process, an advanced version of which was approved in 1787 and probably installed soon after.<sup>43</sup> To prevent corves spinning on the rope, striking the side of the shaft or colliding with each other as they passed (one going up, the other down) Curr devised vertical "conductors" within which the frame or cage carrying the corves moved. In April 1789 John Stephenson was impressed by the speed of Curr's "drawing machines" at Attercliffe Colliery and "by so great a quantity of coals [being raised] in to small a time". By the year of Hatchett's visit to Sheffield corves were raised in pairs abreast and emptied automatically into waiting carts.<sup>44</sup> Complementary patented inventions were double ropes to take the extra (more than double) weight, and flat ropes to reduce imbalance between the full and empty spindle when cages were respectively at the top and bottom of the shaft. They hauled six or seven times the weight of common round rope.<sup>45</sup> Besides these were inclined planes on which full corves moving downwards pulled up empties, and the invention of the brass bush to simplify the solution to corf axle and socket wear.<sup>46</sup> Curr was also an engine

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of the report re: proposed collieries at Crookes Croft and the Ponds "fitting up the conductors in the shaft" is part of the anticipated expenditure.

<sup>42</sup> C. Hatchett: *Diary* p70/71 cited by Mott

<sup>43</sup> see notes above (ACM S223) and text. It seems likely that single corves were successfully raised with conductors first, and probably prior to this date.

<sup>44</sup> Mott op cit. Curr called the system his "conductors" and "tiplers" (ACM S214)

<sup>45</sup> Patents in 1792 and 1798. F. Bland: "John Curr, originator of iron tram roads" *Transns. of the Newcomen Society* Vol. XI (1931/32) p121 notes that Curr took out six rope-making patents between 1805 and 1812, and that a ropewalk was in the grounds of his house, "Belle Vue", in the Park (cited by Mott); ACM S214.

<sup>46</sup> ACM S214 In his listing of his innovations and patents Curr claims that he has never charged royalties to the Norfolk Estate.

builder. He was responsible for the construction of a steam engine at Attercliffe colliery in 1790. It was soon after this that he gained permission from the Duke's Steward, Vincent Eyre, to establish at his own expense a foundry "for Rail Roads and Engines".<sup>47</sup>

#### EXPANSION OF THE DUKE'S COLLIERIES

Curr had visions for two new collieries at Crookes Croft and the Ponds, both close to the town. John Buddle appraised the proposals favourably for the estate in 1787.<sup>48</sup> The Crookes Croft project, with its seam fifty-two yards down, would last for about fifteen years at seven acres per year and cost £8190. Ponds Colliery was shallower at thirty yards, and at seven acres per annum would have a longer life - about twenty-seven years - and cost £4500. In both cases a water-wheel would be used to raise the coal and a fire engine would extract water. At Ponds a 500 yard navigation underground would bring corves to the shaft bottom. "No other method can be adopted with propriety" stated Buddle. He also suggested a brick-lined tunnel nine feet wide and eight feet high and gave full details of the boats. A dozen wheeled corves would fit side by side in each and be loaded and unloaded by crane.<sup>49</sup> It seemed that this colliery would keep Sheffield at the forefront of technological change.

The Ponds Colliery project began in 1788 when the Duke's agent bought up premises for demolition purposes.<sup>50</sup> It appears to have been operational in 1789, and a plan of the following year shows the Colliery Steam Engine at Pond Hill.<sup>51</sup> However, no evidence has yet emerged showing that in fact an underground waterway was used. This colliery was a large producer, allegedly equalling both the Park and Attercliffe Collieries, each at some 150 tons per day at the end of the century.<sup>52</sup> The latter had been a joint venture between the eleventh Duke and Vincent Eyre. Launched at the

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<sup>47</sup> ACM S224

<sup>48</sup> ACM S223

<sup>49</sup> The boats would be 39 feet long, 4ft 2in wide and 1ft 10in deep. Made of Red Wood Fir (sic), the bottoms would be 2ins thick and the sides 1.5ins.

<sup>50</sup> ACM S158 LD 1788 f4 and S158 M 1789 f40

<sup>51</sup> Medicott; ACM SheS 1627L; the first coals appear to have been used at the end of March 1790 (ACM S199)

<sup>52</sup> MD 1746 cited by Cox op cit. There is no date, but it is likely to be c1800. Darnall Colliery produced 80 tons per day and Gleadless 10. Some of these figures will be challenged later in the chapter.

high cost of £13,822, Attercliffe Colliery covered about ninety acres with its main seam dipping at a twelve per cent incline to more than 100 yards down.<sup>53</sup> This appears to be the same as Attercliffe Common Colliery which John Stephenson all but condemned in April 1789 because of its fault and water problems.<sup>54</sup> He felt that it must be abandoned or receive a new shaft and engine, the cost of which would probably not be recovered unless there were a rise in the price of coal. However, it was still producing in 1795 when John Curr advised the Norfolk Estate not to buy the adjacent Darnall Colliery of Messrs Clay & Co. (formerly Osborne's) which was near the end of its useful life.<sup>55</sup> A potentially serious problem was one of a greater water influx once the abandoned colliery stopped pumping. In his opinion a new engine and shaft close to the boundary at sixty-three yards depth would be a better use of money. Against his advice the Estate purchased the Darnall mine and its equipment for £8500 in 1798 together with the mineral rights of the adjacent High Hazels development which was in its earliest stages.<sup>56</sup>

This transaction had unforeseen repercussions because of a small (sixteen acre) freehold colliery at Darnall partially separating the Duke's and former Clay's holdings in a form of wedge at the shallow (south-western) end.<sup>57</sup> Its owner, Thomas Staniforth, a Liverpool merchant, and a relative of the Sheffield family, had added a series of parcels to his holding to the north-east of Darnall town between 1778 and 1781.<sup>58</sup> Having been advised to work the coal himself, rather than accept a generous offer from Clay & Co., he began what must have been a modest operation probably in the later 1780's.<sup>59</sup> After the Norfolk Estate's acquisition of the Darnall and High Hazels Collieries, Staniforth refused to allow an inspection of his workings to verify the width of barrier coal between his and his neighbour's on either side. It was not until the following year that a breach was discovered at the deep end of his seam adjoining High

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<sup>53</sup> Medlicott op cit; ACM S224, S274 and SheD 777L

<sup>54</sup> ACM S224; a Fairbank map (ACM SheD 777L) implies that there had been an earlier colliery at Attercliffe, possibly before 1763.

<sup>55</sup> ACM S225

<sup>56</sup> Medlicott op cit; ACM S225 and S274

<sup>57</sup> see ACM S274/plan (1801) The accompanying documentation uses "Deakin" or "Deakin & Co.", partners of Clay. The latter was dead by the time of the case (1801).

<sup>58</sup> WRRD CF 720 915, CF 725 920 and CL 29 32

<sup>59</sup> ACM S274

North

The inclination or dip of the Coal is from West to East and it dips twelve parts in 100

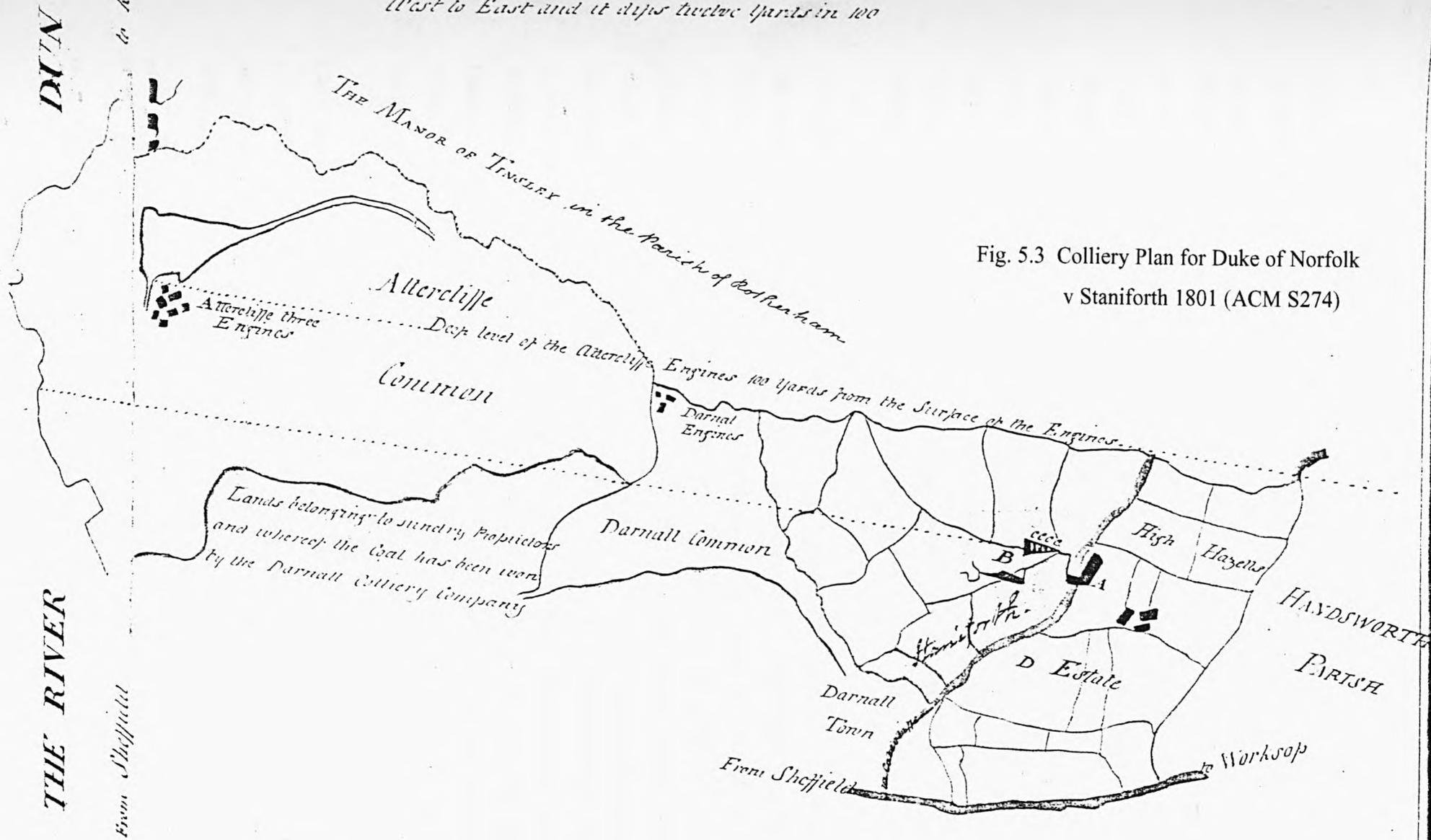


Fig. 5.3 Colliery Plan for Duke of Norfolk v Staniforth 1801 (ACM S274)

dotted line represents the Brook which divides the Parishes of Rotherham and Sheffield -  
The Galcliffe Road divides the parishes of Rotherham and Handsworth -

Hazels allowing water to flow through. Subsequently, several more breeches were found at the deep end of the boundary with Darnall Colliery. According to the Duke's counsel, at the case which came to arbitration in 1801, these breeches were deliberate to place the onus of pumping on those working deeper parts of the seam.<sup>60</sup> His accusation was a serious one implying considerable cost in additional pumping resources, possible flooding of the deeper sections, making them unworkable, and threatening severe danger to miners when separating barriers were too thin.<sup>61</sup> In his deposition to the court, William Parkin, a former sinker, spoke of the failure of the Greenland Engine at Darnall some years earlier with a resultant build-up of water which had burst the barrier there and "drowned the lower parts of Attercliffe Colliery". John Curr explained that when this engine had been discontinued a fourth one had been added at Attercliffe to cope with the excess of water.

It may have been the problems above which precipitated the deed, because, in spite of all his inventions, commitment and experience, John Curr was summarily dismissed by his employer in October 1801 after two decades of loyal service. In his letter of protest at such unexpected treatment Curr pointed out all his innovations for the benefit of the collieries. He also strongly criticised the undertaking at Dore House (Handsworth) in which "ten or twelve of the Principal Consumers of Coaks in the neighbourhood of Sheffield projected one of the most improvident Schemes for profit that could occur in a new colliery and unfortunately for themselves and these Collieries [ie those in Sheffield] have persevered in this wild Scheme for seven or eight years. The loss to themselves in Interest and Money sunk has been about £8000 and the loss sustained in being deprived of their consumption, and in keeping down the price of coals has been three times as much to the Duke's Collieries".<sup>62</sup>

Curr appears rather narrow in his viewpoint in blaming only Dore House. Other competitors were operating in the vicinity: in September 1793 John Cawthorne, silversmith, William Clark, grinder, William Newbould, button manufacturer, and William Holdsworth, pewterer, took a three hundred year lease of the top and second

<sup>60</sup>

ibid There was also the question of the unauthorized coal extracted.

<sup>61</sup>

ibid This is one of the relatively few references hitherto discovered concerning danger in the mines.

<sup>62</sup>

ACM S214

beds of coal on two large parcels at Intack (Handsworth) from Samuel Rotherham of Dronfield (63 acres) and James Bowden of Barlborough (75 acres).<sup>63</sup> Newbould's son was still involved to 1829.<sup>64</sup> Also in 1793 John Parkin was assigned a moiety of a leasehold estate at Ballifield including a bed of coal covering some 210 acres by his partners John and Jonathan Hague, merchants, of Walkley.<sup>65</sup> Besides these, the Rev. John Stacey had a colliery which was adjacent to Dore House.<sup>66</sup> All were quite small in comparison to the Norfolk holdings, but collectively they must have had a noticeable impact on supply.

John Curr's dismissal heralded a change of policy. The Duke leased Sheffield and Handsworth Collieries to the son and widow of his late steward, Vincent Eyre, in 1805. There had been consolidation - "Sheffield" included Park, Ponds and Crookes Croft, and "Handsworth" was the development of High Hazels (its freehold now purchased from the Fitzwilliam Estate) together with the Duke's own holdings in the parish of Handsworth.<sup>67</sup> Almost immediately the Eyres assigned the lease, which also included Woodthorpe Colliery, to James Sorby, William Littlewood, John Jeffcock and a Newcastle coal merchant, Charles Nixon. This partnership somehow contrived an agreement which was far too vague and allowed them to abuse their position as tenants to the general detriment of the Norfolk Estate. Plans of past workings were lacking when William Stobart appraised the whole operation in 1817 and he was far from certain where coal had been worked and how much had been extracted.<sup>68</sup> From the Ponds extensive mining had gone under the town (even to Church Burgesses' land at Backlands near Carver and Rockingham Streets)<sup>69</sup> and south-eastward under the Park where the actual workings were "in a fair regular state", but only a few years life remained at the present rate of about eight acres per annum or nearly 65,000 tons.

63

YWD 870

64

WED 13

65

WRRD DN 114 159 A few years later Parkin and Hague were bankrupt, perhaps because of the competition condemned by Curr.

66

ACM S274

67

ACM S226 The Handsworth Colliery also communicated with Darnall and Attercliffe. There were "fire engines" at Attercliffe and High Hazels.

68

ibid He made an estimate of £943-2-6 owed by the lessees in underpaid royalties.

69

*Iris* 8 Nov 1814 Five acres of coal 17 to 22 yards down; WRRD GO 182 170 (1817) re access to colliery from Rockingham Street.

Stobart condemned the lessees' action in abandoning Crookes Croft after only seven or eight years and allowing it to fill with water, and strongly recommended a new winning there when Sheffield Park mine was exhausted.<sup>70</sup> At Handsworth the lessees were criticized for not working the more difficult seam after encountering a small fault, but preferring to sink a new shaft on the "rise" and risk wasting very valuable coking coal. Average output from eight acres per year was calculated at 43,488 tons. Woodthorpe was much smaller, extracting about three acres and having a life expectancy of only four more years. The coal was that of Manor Bed, inferior to both the Handsworth and Sheffield, but of sufficient value for Stobart to encourage the Duke to seek to extend his colliery under the Parker Estate. The final conclusion was that the next lease (from Lady Day 1820) should be much more strict in its requirements in order to maximize the Duke's advantage.

#### MINERS AND MINING METHODS

Hitherto no mention has been made of miners and their wages, or of the methods of mining as opposed to haulage and winding. In view of the costs involved and large annual output it is easy to overestimate the size of the workforce in any one colliery. At a Tinsley mine in 1740 the annual rent of £10 was based on one man coal getting, with a £5 surcharge for an additional miner and £7-10-0 each for any more than two.<sup>71</sup> When John Bowden left Sheffield Colliery in 1758 one of the Wood Pits kept three miners at work for two more years.<sup>72</sup> At Brammer Pit, one of Walter Osborne's three at Darnall Common in January 1767, ten men and three lads worked a six day week at 1s 2d per day for labourers, 6d for lads and 1s 6d for others. In April and May 1770 there were thirteen men and five lads. By mid-year 1776 numbers had fallen to nine men and two lads.<sup>73</sup> From evidence below, it is probable that "Brammer" was the leader of a small team group of, perhaps, four or five miners who were additional to those mentioned. At the Park Colliery in 1773 underground workmen were paid in all "one fourth part of what the coals are sold for at the Pit", banksmen received 10s per week and overmen (of whom there was one at each pit) 10s 6d.<sup>74</sup> At the new Attercliffe

<sup>70</sup> Crookes Croft, one of the mines envisaged by John Curr, was sunk shortly before the 1805 lease "at considerable expense" (ACM S226)

<sup>71</sup> Cox op cit

<sup>72</sup> ACM S195B

<sup>73</sup> OR 7 There were four pits by June 1769 and five in June 1776.

<sup>74</sup> ACM S215

Colliery from 1789 horse drivers were paid 1s 4d daily, onsetters (for feying or cleaning the bottom) 2s, wheel attendants from 1s 2d to 2s, and others, unspecified, 1s 9d. And at Thorpe Hesley a sinker in 1790 was paid 2s per day.<sup>75</sup> In comparison, Turnpike labourers received up to 1s 4d in 1773, building craftsmen 2s 3d in 1777 and a slater and his labourer 2s 6d and 2s respectively in 1789.<sup>76</sup>

According to Park Colliery accounts in 1781 three teams of miners operated, each with their own pit - Black's, Eyre's and Newton's. By November 1783 there was another pit, Low Basset, and a fifth, Lindley's, crossed out.<sup>77</sup> In March 1789 five groups were each paid separately, for example John Black & Co. and John Newton & Co., with payment related to headings cut and other development work as well as coal "got". Besides the miners twenty-six more men were employed - hurriers, topmen, blacksmiths, engine men, carpenters and labourers - and two boys for "trapping". In 1790 and 1791 ten to thirteen teams were "getting" at six pits, although some of these may have been at the Ponds.<sup>78</sup> During February of the latter year, there appear to have been seven other teams for "heading and hurrying the slack", perhaps in an attempt to improve this part of the operation to match an increasing mining force.<sup>79</sup> Joint payments and piecework make weekly wage estimates for miners very difficult. We can safely say that they must have earned more than labourers and, at the Duke's collieries, may have worked a five day week. There is little more than that.<sup>80</sup> Total numbers are also a problem, but judging from the teams' weekly payments, there cannot have been more than four or five men in each, and less in some. This being so, it seems that about fifty workers altogether were employed in 1789 in the whole Park Colliery, rising to perhaps eighty or ninety over the next two years. The figures were probably not dissimilar in 1798.<sup>81</sup> In near parallel manner on the Barnsley seam, Earl Fitzwilliam employed 79 men, a recent advance from 45, at his four collieries (Elsecar old and new, Lawwood and

75

ACM S202 and S203

76

Tibbitts Colln 452; Fairbank BB59 f112 &amp; BB75 f126

77

78

ACM S198

79

In ACM S199 there is an account for coal for the steam engine from March 1790.

80

ACM S199 It seems likely that John Curr's innovations in haulage and winding changed the composition of the workforce.

81

All estimates of output are calculated at five days per week production (ACM S198/S199). This may, of course, allow for non-productive days worked.

81

ACM S200

Westwood) in 1795, with a steep increase to 197 colliers at five in 1819.<sup>82</sup> Comparable examples further afield are difficult to find: common small outcrop pits in Lancashire probably had only a handful each of hewers in the mid-eighteenth century, contrasting with typical workforces of upwards of 250 in Tyneside and Wearside a few decades earlier and again in 1830. For all British coal mines in 1850 the average was probably no more than eighty.<sup>83</sup>

How long mine employees worked is again a difficult question to answer. Twelve hours per day for six days per week was the norm for employees elsewhere in industry, but piece rate workers had some flexibility.<sup>84</sup> On the other hand, because mining, hauling, winding and so on were essentially joint activities, there must have been some conventions or regulations. Both six and possibly five day working have been noted above. It is also very likely that seasonal and cyclical peaks and troughs in demand influenced weekly output. As early as 1729 there is mention of night work at Sheffield Colliery, but not regularly every week. Judging by the small quantities (twenty to twenty-five per cent of usual weekly production) stockpiling for winter seems a preferable option.<sup>85</sup>

Mining methods are only indirectly described in the primary material. In 1754 at Attercliffe, Joseph Swift agreed to leave "sufficient Posts and Pillars for the Support of the Coal Works".<sup>86</sup> At the Manor Colliery in 1773 calculations of solid (cubic) yards of coal per acre were based on a 99 per cent extraction rate.<sup>87</sup> At Park and at Handsworth in 1817 90 per cent was the approved rate.<sup>88</sup> The description of Wood Pit seam in the

<sup>82</sup> G. Mee: *Aristocratic Enterprise; the Fitzwilliam Industrial Undertakings 1795-1857* (Glasgow) 1975 pp23/24. Brampton and Haugh had been added, with Westwood closed by 1819.

<sup>83</sup> M. Berg: "Factories, workshops and industrial organisation" in R. Floud & D. McCloskey eds: *The Economic History of Britain since 1700* (Cambridge) 1994 Vol. I p140

<sup>84</sup> see Chapter 2

<sup>85</sup> ACM S192 It is quite possible that night work was carried on only a few days per week, so making the comparison less valid. No other reference to "nights" has been found.

<sup>86</sup> TC 805

<sup>87</sup> ACM S215 end. The figures are: total coal 5111 solid yards per acre, "supposed to be left in pillars" 51, remainder 5060.

<sup>88</sup> ACM S226

Park in 1773 notes that a non-coal band between the fine and bottom coal was "carefully thrown back and pillared up in the waste".<sup>89</sup> Hopkinson states that for the most part this narrow work had superseded the bord and pillar method. In summary, the former was operated as follows: first, from the bottom of the shaft, a bord or level was cut across the grain of the coal. From this, at intervals of thirty yards, roads were driven at right angles into the coal, and at an agreed distance a link (parallel to the level) joined the roads forming a series of rectangles. Coal was then worked in short faces leaving behind a goaf or gob into which the stone was thrown, as above.<sup>90</sup> Examples of remaining "old hollows", after the settling of the ground above, are delineated in a plan accompanying the documents for the Norfolk Estate's case at Darnall against Thomas Staniforth in 1801.<sup>91</sup> That narrow work was not universal in our area is exemplified by recent civil engineering excavation in the Ponds vicinity where bord and pillar remains were discovered under the then main Polytechnic building and Ponds Forge Swimming Complex. Such practice made good sense for shallow workings under mill ponds, industrial structures and town buildings where subsidence was to be avoided.<sup>92</sup>

## COAL OUTPUT

Finally, it would be useful to attempt an estimate of coal production from the collieries discussed, and in particular to try to gauge the increase in that production over the eight decades of this study. Ashton and Sykes quote a fourfold increase nationally in the course of the eighteenth century from some two and a half to about ten million tons per annum, but acknowledge that this is no more than enlightened guess-work.<sup>93</sup> For Sheffield there are numerous output statistics, but they are largely in the form of a weekly or monthly number of loads or corves, terms for which Mott has derived modern equivalents from 1773, but which are very doubtful for the period around 1740 as we may not be comparing like with like.<sup>94</sup> However, the £400 basic rental paid by

<sup>89</sup>

ACM S215

<sup>90</sup>

Hopkinson op cit From the end of June 1792 "Short work" is noted in Sheffield Colliery Disbursements (ACM S199) for the first time. Could this be a variation?

<sup>91</sup>

ACM S274

<sup>92</sup>

Similar pillars were found by the failed Budge open cast operation at Tinsley.

<sup>93</sup>

T.S. Ashton and J. Sykes: *The Coal Industry of the Eighteenth Century*

<sup>94</sup>

(Manchester) 2nd edn 1964 Ch 1.

Mott op cit

Bowden for twenty-one years from 1737 for Sheffield Colliery can be compared with an actual rent averaging over £620 in the last six years of the lease and with the £1000 of Townsend and Furniss from 1765. Given that the latter rental was too high in view of the proprietors' struggle, it could be argued that output, having increased by about fifty per cent under Bowden, more than doubled over the three decades after the late 1730's.

From the 1760's estimates become a little easier. During the first four years' "in hand" operation of Park Colliery after Bowden, that is from 1758 to 1762, the Wood Pits produced about 12,000 corves per month.<sup>95</sup> From Mott's calculations a standard corf carried sixteen pecks or four bushels of coal weighing 240 pounds or two long hundredweights.<sup>96</sup> The annual amount derived is therefore approximately 15,000 tons.<sup>97</sup> In 1765 the Townsend and Furniss lease was based on a supposed annual 600 tenn (22,800 ton) target which was never exceeded during their tenancy, and probably never reached.<sup>98</sup> Even during John Curr's reign in the last twenty years of the century the average was only 18,227 tons per annum, with 23,351 tons in 1800/01.<sup>99</sup> A backward projection from all material noted so far hints (but no more than that) that annual output at Park in the early part of Bowden's lease was perhaps 8000 to 9000 tons.<sup>100</sup> From this very tentative derivation the increase in output over sixty years at Sheffield Park Colliery was some two and a half times. This colliery for much of the period was by far the biggest, yet demand was such that Manor, Darnall and others found a ready market, particularly for domestic use. The 1790's saw a surge in the opening of new collieries at Attercliffe, Intake, Handsworth and the Ponds - sufficient to depress the profitability of coal by creating an excess of supply. Attercliffe alone was producing over 44,000 tons in 1800/1801 and all the Norfolk collieries together possibly in excess of 100,000 tons.<sup>101</sup> If we return to the pre-Bowden estimate above for a time when Park

95

ACM S195B

96

Using figures from ACM S215 and S219. A standard hundredweight was 112 pounds avoirdupois.

97

Considering subsequent statistics, this appears a far more realistic estimate than Medlicott's 6000 tons.

98

Townsend & Furniss never paid the surcharge (ACM S158).

99

Medlicott, from ACM S196 and S200 (weekly accounts)

100

Weekly output in 1736, the year before Bowden's lease began, was 800 to 1200 loads ie c50,000 loads per annum (ACM S195A), clearly not the same units as in footnote 35 relating to 1774.

was the main and only large producer, the conclusion must be that for the Duke's estate alone the increase in output of coal to the end of the century (much of it in the last decade) was in the order of tenfold.<sup>102</sup> Then we must add the essentially smaller contributions of the privately run concerns of Thomas Staniforth at Darnall, of the Newbould Partnership at Intake, of the Dore House group at Handsworth and so on. The quadrupling of the national figures over the whole century (as suggested by Ashton and Sykes) pales somewhat in comparison. Growth, however, continued. By the time of William Stobart's report of 1817 estimated annual output for Park was over 64,000 tons based on the eight acres per annum worked "of late years". For Handsworth (the development from High Hazels) a similar calculation suggested in excess of 43,000. Woodthorpe was much smaller and at three acres per annum from a narrower seam was producing 12,000 to 13,000 tons.<sup>103</sup> Even so, the trend to greater production is clear. Furthermore, with the Norfolk Estate having bought up Darnall/High Hazels and then Dore House, there had been a re-strengthening of the Lord of the Manor's monopoly, albeit as a lessor of collieries.

In 1819 the Sheffield Canal commenced operations, once more threatening to alter the balance of power in coal supply via cheap transport. It also opened up a potentially huge range of high-quality and domestic fuel for a rapidly expanding industrial town.<sup>104</sup>

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<sup>101</sup>

Medlicott op cit has 99,840. MD 1746 nd, but c1800, giving daily outputs suggests about 130,000 tons; as it clearly overstates for Park (c55%) and understates a little for Attercliffe (c12%) it may well be on the high side.

<sup>102</sup>

By this time the Duke had bought Darnall Colliery and the adjoining High

<sup>103</sup>

Hazels.

<sup>104</sup>

ACM S226

G. Mee op cit pp24/25

## CHAPTER 6 THE REGIONAL IRON INDUSTRY

The first part of this chapter draws on the work of G.G. Hopkinson, but challenges his view that the charcoal iron industry of the region was in steep decline.<sup>1</sup> Later, technological and other changes led to a total break-up of the monopoly control of local iron manufacture and to its development, largely away from water-power, into a series of varied enterprises, many of which were in the urban area. However, initially we must go back much earlier than 1740 in order to understand the background to the revolution in this industry.

Sheffield ". . . is now exceedingly large, populous and flourishing, having the greatest Trade for Iron ware of any Town in this Country". Thus spoke the Reverend Thomas Cox in 1720.<sup>2</sup> Six years later the Company of Cutlers estimated that some 20,000 men were working in the secondary metal trades in Hallamshire, rather fewer than supposed by Cox, but still a very large number considering that the total population of Sheffield parish in 1736 was only in the region of 14,000.<sup>3</sup> For the area to be so heavily committed there needed to be a large-scale demand for the products and a ready supply of iron at competitively low prices.<sup>4</sup>

### HISTORICAL PERSPECTIVE

Historically, the regional iron industry had developed on the outcropping ironstone strata which stretched in a broadly North-South line from near Silkstone to beyond Chesterfield. Iron mines, blast furnaces, forges and slitting mills held in tenure from various Lords of the Manor, principally the Duke of Norfolk in South Yorkshire, were vertically integrated in the hands of monopolistic partnerships.<sup>5</sup> There had been ample

1

G.G. Hopkinson: "The Charcoal Iron Industry in the Sheffield Region 1500-1775" (*THunterAS* Vol 8 p122) 1961

2

Cox: *Magna Britannica* (London) 1720 p507

3

Gosling's Plan of Sheffield

4

Makers of nails and of many types of hardware had no need of, or preference for, the more expensive Swedish and Russian bar imported in increasing quantities for conversion to steel for the cutlery trade during the course of the eighteenth century.

5

A. Raistrick and E. Allen: "The South Yorkshire Ironmasters 1690-1750" *Economic History Review* IX 1939. The monopoly in the local iron industry contrasts with the relative freedom of entry into steel conversion with easy access to imported bar.

suitably managed woodland for a constant supply of charcoal and abundant water-power for the different works. G.G. Hopkinson takes a distinctly Ashtonian point of view when he speaks of extensive depletion of woods during the period 1625 to 1700 leading to a loss of, perhaps, a thousand acres at Wharncliffe Chase alone.<sup>6</sup> He goes on to argue that during the earlier eighteenth century this continuing diminution coincided with a rising demand for timber for river piling and other engineering uses as in the extension of the Don Navigation, for the construction of Newcastle railways at local collieries and for building more water-powered sites, as well as some export of timber for similar purposes outside the region.<sup>7</sup> Such loss of charcoal sources may have been responsible for the closure or conversion of Wadsley Furnace, Norton Forge and Sheffield Forge by 1700 together with other more peripheral works at Foxbrooke, Kirkby, Clipstone and Bank between 1740 and 1775.<sup>8</sup> On the other hand, at the end of 1716 Messrs Shore and Cotton, reacting to high prices of iron (up by £2 per ton from an average of £15 for bar iron and £16 15s for rod since 1702), "were thereby encouraged to set up their Ironworks".<sup>9</sup> Other forges were also active at Mousehole and Wortley, the former of which suffered severely in the depression of 1736/37, but recovered to a 60 ton output in 1750. Wortley continued to operate successfully between 1717 and 1750, more than doubling its forging totals over the period from 160 to 350 tons per annum.<sup>10</sup> Intermittent rises in the cost of cordwood and fall in the price

<sup>6</sup> T.S. Ashton: *Iron and Steel in the Industrial Revolution* (Manchester) 3rd edn 1963

<sup>7</sup> Hopkinson op cit: Copley & Marriott had contracted for 1500 cords of timber from the Duke of Norfolk's woods c1660 for the Sheffield ironworks; John Fell II contracted for 800 cords in 1727. Similarly at Wortley Forge there was a fall of fifty per cent in cordwood purchased between 1683 and 1706 (800 to 400 cords). Conversely, the Spencer Accounts show that Chapel Furnace was purchasing more cordwood over the period 1720/30: 940 cords (avg 1717/20) to a high of 1570 (1730) (H.G. Baker see below)

<sup>8</sup> Contrary to Hopkinson's claim, Wadsley Forge continued to operate under the Fell Partnership, then Clay and finally Swallow to the end of the eighteenth century (see D. Crossley ed: *Water Power on the Sheffield Rivers* (Sheffield) 1989 p8).

<sup>9</sup> British Museum Addnl MSS 27538 f311. H.G. Baker (Index of Iron and Steel Records in Sheffield Archives) is sceptical of this monopoly breaking alliance as the Cottons were already involved in the major partnerships. However, William Cotton and Samuel Shore were together at Rockley in 1728.

<sup>10</sup> In 1717 Mousehole forged 80 tons and Wortley 160 tons of iron (E.W. Hulme: "Statistical History of the Iron Trade of England and Wales 1717-1750" *Transactions of the Newcomen Society* Vol. 9 pp12-35). Mousehole forged no iron in 1736.

of iron give contradictory signals until we consider the impact of imported bar - two thirds of the total consumed in England in 1720, 1737 and 1750 noted by early sources. Professor Harris is more conservative, suggesting at least half, although he later cites Hyde's figures which broadly concur with contemporary statistics.<sup>11</sup>

Harris also indicates a steady rise in home pig output to about 28,000 tons (c1750) from some 23,000 tons in 1720 and via a fall to perhaps 16,000 in the later 1730's.<sup>12</sup> He refers to Flinn's discovery of numerous new, larger, furnaces and forges replacing the old, and a net gain of about 10,000 tons per annum by the mid-eighteenth century.<sup>13</sup> From this newer appraisal of the national industry questions arise concerning the validity of G.G. Hopkinson's picture of decline.<sup>14</sup> Was the Sheffield and district typical of the present orthodoxy of rising output in spite of diminishing charcoal resources? Or was the area one which might support Ashton's pessimistic viewpoint.

#### OUTPUT OF THE FELL PARTNERSHIP

Some loss of capacity in the late seventeenth century has been noted above, but the Fell Partnership retained its furnace at Chapeltown together with its major forges at Attercliffe and Wadsley and a small one at Roche Abbey plus the slitting mill at Rotherham which was gradually superseded by Attercliffe Slitting Mill from 1749.<sup>15</sup> Figures for iron sold from the forges between 1700 and 1765 give little support to Hopkinson in the long term, although from the mid-1720's to mid-1740's Wadsley's would appear to sustain his argument.<sup>16</sup> For this forge there were some extreme annual

<sup>11</sup> J.R. Harris: *The British Iron Industry 1700-1850* (London) 1988 p26ff; David Macpherson: *Annals of Commerce* (London) 1805 Vol III p114; *House of Commons Journal* Vol 22 p 772 and Vol 25 p1096; J.R. Harris op cit pp26 & 48; C.K. Hyde: *Technological Change and the British Iron Industry 1700-1870* (Princeton) 1977

<sup>12</sup> Hyde op cit pp219-220 and P. Riden: "Output of the British Iron Industry before 1870" *Econ Hist Review* 2nd series XXX 1977

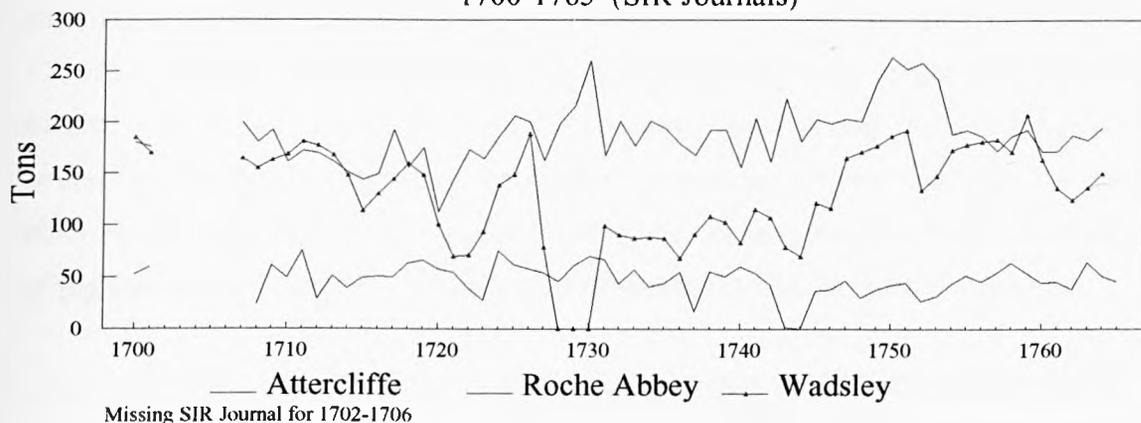
<sup>13</sup> Harris op cit p22; M.W. Flinn: "The Growth of the English Iron Industry 1660-1760" *Econ Hist Review* 2nd series XI 1958. In the century to 1760 Flinn counted forty-three new furnaces and twenty-nine new forges.

<sup>14</sup> G.G. Hopkinson op cit

<sup>15</sup> Attercliffe Slitting Mill, built on the site of an earlier wheel, appears to have come into full production in 1749 (Crossley et al op cit p9; SIR 9 pt6 f44). Rotherham Mill's output fell, but it continued to slit iron up to the mid 1750's (eg SIR 10 f199)

<sup>16</sup> It has not been possible hitherto to find consistent output figures for pig iron, so

Fig. 6.1 Sales of Forge Iron From Attercliffe, Wadsley & Roche Abbey Forges 1700-1765 (SIR Journals)



variations, particularly between 1719 and 1727. Then sales data are lacking over the period 1728 to 1731, which suggests that Wadsley was not operational. From 1732 to the mid-1740's sales varied around 100 tons before rising to 164 tons in 1748 and 191 in 1751/52. They remained above the 150 ton level, apart from three years (1752-54 and 1763), until the end of the Journal in 1764/65, and exceeded 200 tons in 1760.<sup>17</sup> At Attercliffe the 1700 total was 180 tons. High points were reached approaching 200 tons sold in 1707 and 1717, a sharp fall to 112 tons followed in 1720, but then a recovery to over 200 by mid-decade. Thereafter sales varied erratically, but never rising above 225 tons or falling below the 150 ton level until 1750. From 1750/51 to 1753/54 sales were just above and below 250 tons. They subsequently declined to 170 tons in 1760/61, but recovered to 194 in 1764/65. Roche Abbey Forge was a much smaller producer. Its sales were as low as 24 tons in 1707/08 and as high as 75 tons three years later, but appear to be broadly consistent within those two limits.<sup>18</sup>

For the early eighteenth century Harris implies that some 95 per cent of pig nationally

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the sales quantities for forge iron are quoted to indicate the trends. This has the distinct advantage of illustrating varying strength of demand for the product. The annual totals in the earlier years are accumulated in six separate sections from the end of December to the end of December following. Thereafter practice changes to four, three or two sections. One set of accounts gives iron sold from Midsummer to Lady Day, effectively compelling Midsummer to Midsummer (or Lady Day to Lady Day) annual totals. The slitting mills' sales are similarly affected (SIR 2 to 11). There is a missing volume for 1702/06 between SIR 2 and 3). See the graphs for sales.

<sup>17</sup>

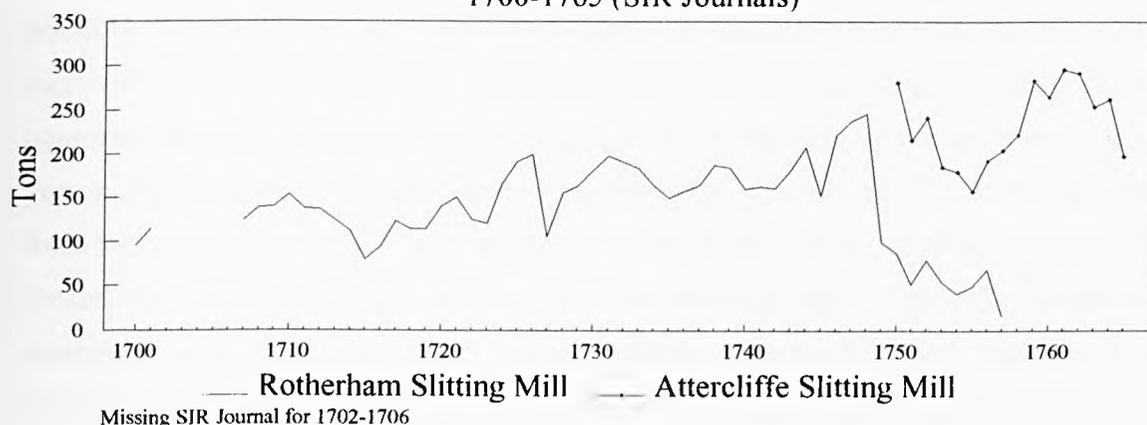
SIR 11

<sup>18</sup>

Most sales varied more closely around 50 tons.

was forged into bar, except in wartime when more cast-iron was used for guns and shot. He cites Hyde's suggestion that up to 20 per cent of iron may have been cast by 1750.<sup>19</sup> Even if the Sheffield area were atypical with unchanging proportions of cast to forged, both Attercliffe and Roche Abbey Forges regularly, and Wadsley long-term, belie the claim that the charcoal iron industry was in any way running down. On the other hand, if a lower percentage of the whole were being converted to bar, the output of pig was rising. There was certainly no downward trend of the Ashton orthodoxy.

Fig. 6.2 Fell Partnership Sales of Rod Iron from Rotherham and Attercliffe 1700-1765 (SIR Journals)



Slitting mills sales support the long-term movement of forge iron, and suggest that a continually growing proportion of the latter was slit, sometimes more than half for the "nayle trade".<sup>20</sup> At Rotherham in 1700 96 tons were sold, rising to 150 in 1710/1711 and above 175 in 1725 and then varying around that level to the 1740's. In 1744/1745 the tonnage topped the 200 mark and continued to a peak of 246 in 1748 before plunging in terminal decline to 100 in 1749/1750 and to below 50 in 1754/1755. Attercliffe Slitting Mill took over much of the work from 1749, selling 218 tons between the midsummers of 1749 and 1750. The 1751/1752 figure was 241 tons; then sales fell steadily to 157 tons in 1754/1755, but recovered to 265 tons in 1759/1760 and 295 in 1760/61. The end of Journal account (1764/1765) was for 196 tons. From the early 1750's Attercliffe Mill had been used to cut small, separately accounted, amounts of iron (probably imported) and of steel; additional quantities under this heading grew

<sup>19</sup> J.R. Harris op cit pp48/49

<sup>20</sup> 1707 82 tons out of c124 were so noted (SIR 3). More commonly about 25/30 per cent was the norm. This trade was part of the vertical integration of the business.

slowly below the 100 ton level, but surged to 237 tons in 1764/1765.<sup>21</sup>

#### EROSION OF THE MONOPOLY

The quantities of forge iron discussed above cannot be considered in isolation. The period 1700-1765 coincided with a rapidly growing import trade in Baltic bar for conversion into steel to satisfy demand for raw materials for cutlery and edge-tool manufacture. In 1702 Hull imported over 2000 tons, some of which was transported to Sheffield for that purpose.<sup>22</sup> In 1717/1718, when the Baltic was closed to English ships, the local cutlery trade was badly affected, indicating a growing dependence.<sup>23</sup> By 1737 possibly 700 to 800 tons of bar was coming to the district.<sup>24</sup> Steel must have eroded some of the traditional market for local iron, and thus restricted sales. Richard Dalton's comment to Walter Edge, a Hull Merchant, in 1743 that "Mr. Fell cannot encourage you in the Pig Iron Trade having a prodigious large quantity now by him produced from works of his own in this Neighbourhood where he can be supplied with greater Quantities than he can consume", does not give an impression of supply difficulties. American iron was another potential problem which provoked petition and counter-petition from Sheffield.<sup>25</sup> Arguments over whether it was a nearer substitute for Swedish or English seem to not to have been understood by Parliament.<sup>26</sup> Whatever the case, import duty was removed from American pig in 1750 and from bar in 1757.<sup>27</sup> Their impact on Sheffield was probably minimal. As Harris points out, total American iron imports were never more than ten per cent of Swedish.<sup>28</sup> As the bar, imported or forged here, was inferior for steelmaking, there was little attraction.

Besides the growing effect of steel on their markets, the Fell Partnership works must

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<sup>21</sup> There is no indication as to the source of the iron in this separate account, but it may well be imported metal. The steel seems likely to be their own converted from imported bar. The early weights cut are for steel only; from c 1760 the heading is "Iron and Steel Cutt". The weights are therefore not comparable.

<sup>22</sup> The Fell Partnership already had a "Steele Trade" (SIR 2).

<sup>23</sup> E.W. Hulme op cit

<sup>24</sup> See Chapter 3 and Gordon Jackson: *Hull in the Eighteenth Century* (Oxford) 1972 Appendix 2.

<sup>25</sup> *House of Commons Journal* Vol 25 pp1018/19

<sup>26</sup> C.R. Andrews: *The Story of Wortley Forge* 2nd Edn (Nottingham) 1956

<sup>27</sup> *House of Commons Journal* Vol 27 p864. Bar had been admitted free of duty to the Port of London from 1750; in 1757 it was duty-free in all ports.

<sup>28</sup> J.R. Harris op cit p28

have been in direct competition from mid-eighteenth century with those of the Walkers, the first major challengers to the South Yorkshire iron monopoly. They were at Masbrough, at Holmes (from 1758) and at Thrybergh (from 1763), all peripheral to the Sheffield area yet strategically placed beside the Don Navigation. Here may be the reason for the closure of the older locations. Quantities of cast iron produced cannot be directly compared with sales of forge iron, but the almost monotonous rise of output in the charcoal iron period is clear evidence that local smelting was prospering.<sup>29</sup> The Walkers made about five tons of iron at Grenoside in 1742 rising to 39 tons in 1745. From their new start at Masbrough in 1746 production rose from c63 tons to c318 tons in eight years, at around which quantity it remained up to the rebuilding of the blast furnace at Masbrough in 1758, possibly for coke firing. Thereafter, the total "cast" increased from c433 tons in 1760 to 622 tons in 1766, to more than 700 in 1776 and to over 800 tons in a sequence of four years ending in 1783 after which no more output information for iron is given. The qualification in annual reports from 1776 is that the amounts noted are "exclusive of guns". No weights for these are mentioned, but debentures for guns received from Samuel Walker and Sons indicate 450 tons in 1776 rising to a peak of 1220 tons in 1781.<sup>30</sup>

Around mid-century there occurred a sharp expansion of secondary capacity with the building of new slitting mills at Attercliffe (above, 1747) and Brightside (1753), and a rolling mill at Owlerton (by 1753).<sup>31</sup> Only the first of these three was operated by the Fell partnership, the others by John Booth, who, with William Binks and William Hartop, was to expand the Brightside site into a major works and develop Park Furnace for coke pig and cast iron, further evidence of the loss of monopoly of the old partnerships. This additional rolling and slitting, however, must be seen in the light of expanding steel making. Attercliffe Mill cut both local iron and local steel made from imported bar, although Booth, Binks and Hartop, ironmasters, may well have processed mainly iron at Brightside and Owlerton.<sup>32</sup> At Whiteley Wood Thomas Boulsover rolled steel for saws and fenders from 1762, and Kenyons, at Middlewood from c1763 and at

<sup>29</sup> A.H. John ed: *The Walker Family 1741-1893* (London) 1951. The information appears in the form of summarised annual reports. The term "castings" seems to be used for pig iron, as it is the gross amount annually produced.

<sup>30</sup> Figures cited by H.G. Baker op cit

<sup>31</sup> D. Crossley op cit pp19 & 21

<sup>32</sup> They had a steel furnace at Darnall in 1780 (WRRD CG 573 747)

an improved Pond Forge from 1765/1766 (with their subsequent respective developments), probably forged, rolled and slit both materials.<sup>33</sup>

### COKE FIRING

Such increases in capacity are often associated with the emancipation of at least part of the forging process from charcoal.<sup>34</sup> The actual timing of the changeover to coke in the smelting of iron is often conjectural for a particular region. Harris cites Hyde's argument that inelastic supplies of charcoal led to rising prices which in turn raised furnace costs. These, far more than any desire for technological change, gave an advantage of up to £2 per ton of coke pig.<sup>35</sup> If the Sheffield region's charcoal resources were as limited as Hopkinson proposes, it might be expected that early rebuilding of furnaces and/or forges for coke would take place. Examination of the Staveley Iron Records reveals that charcoal was the sole fuel for all three Fell forges and (with a brief exception) for Chapel Furnace to the end of the last Journal in 1765. For the campaign 4th November 1761 to 18th April 1762, the Furnace bought in 231 dozens of coal of which 141 were "coaked". One pound cash was allowed to the ironmaster "for blowing with coaks".<sup>36</sup> H.G. Baker regards this campaign as a failed experiment with coke firing, since it was shorter than normal and the post-production repair costs were very high (c£220).<sup>37</sup> But Chapel Furnace had the usual amount of charcoal prepared, so that coke seems likely to have been used intermittently or as a supplement. As to "repairs", the sum quoted included £20 for Mrs. Fell and more than £75 for charcoal laid in for the next period, as well as the usual restoration of hearth and interior. Apart from this temporary deviation towards coke, charcoal was the norm.<sup>38</sup> Costs of cordwood, payments to colliers and to leaders, and names of various woodlands exploited are set out in full detail in the annual accounts.<sup>39</sup>

<sup>33</sup> D. Crossley op cit pp2 & 113. For example, there is reference to an Iron Forge at Pond Forge in 1805 (ACM S431).

<sup>34</sup> J.R.Harris op cit p38 Coal in the chafery stage was common by 1760.

<sup>35</sup> *ibid* p34

<sup>36</sup> SIR 11 f168 & f197

<sup>37</sup> H.G. Baker op cit. The total production was 350 tons, the same as in 1764/65, but less than in 1760/61 (424 tons) and in 1763/64 (446 tons). £30 worth of pitt coal was left in stock in 1761, but there is no mention of coke.

<sup>38</sup> Attercliffe Forge wanted a charcoal finer in 1803 (*Iris* 24 Nov) and two or three the following year (*ibid* 31 May 1804)

<sup>39</sup> eg SIR 10 ff530,534, SIR 11 f319

An "Iron Foundry or Building for melting and casting iron" at Webster Field (adjoining West Bar) sold to Joseph Parkin, cutler, and Joseph Dearden of Ecclesfield, yeoman, in 1753 may have been a coke user.<sup>40</sup> Two years later it was purchased by John Fell, Joseph Clay, Thomas Cotton and Joseph Broadbent, no doubt as an extension of their existing iron business. Hyde has already been noted as estimating that some twenty per cent of all home iron was being cast by this period, rising (according to Harris) to around forty per cent by 1815. Harris also refers to the trend towards a separation of furnace and foundry, of which this is clearly an example.<sup>41</sup> In contrast to the proliferation of urban steelmaking sites by the mid-1770's, there appear to have been few town-based foundries besides the above. There were just two anvil foundries - one at the bottom of Sheffield Moor in the ownership of Samuel Alsop and the other in Holy Croft (sic) run by John Bullock.<sup>42</sup> During the 1780's there is evidence for the existence of another foundry - quite central, in or near Paradise Square, operated by James Smith, John Stacey & Co. This latter partnership included, until 1793, Thomas Chambers who already prior to that date had joint ventures with George Newton, his future partner at Thorncliffe.<sup>43</sup> The 1780's also saw the construction of the integrated near-town Park Iron Works between the River Don and Park Hill. Booth, Binks and Hartop had a coal mine, blast furnace, foundry and forge producing (by 1790) a wide variety of cast and wrought iron goods.<sup>44</sup> No evidence has been found to show that Cort's puddling innovation was in use, but it is hard to imagine that it was not adopted. Total output from the coke-fired furnace was 853 tons in 1796, which

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<sup>40</sup> WRRD AH 432 572 Part of the same close is mentioned in an earlier WRRD Memorial, AD 705 906 (Nov 1751), but only "buildings" are described, built by William Bingley, filesmith, and Thomas and William Holden, carpenters. It was subsequently sold by Clay and Cotton to Thomas Appleby, house carpenter, and Edward Scholefield, schoolmaster, (later described as founders) in 1786 (MD 3301/02).

<sup>41</sup> Harris op cit p49 and pp57/58

<sup>42</sup> Directory 1774 John Bramah, iron founder, of Foundry Street is also listed. As this street was off West Bar he may then have been proprietor of Clay & Co's foundry. No other references to this man have emerged.

<sup>43</sup> ACM S383 (106); Directory 1787; *Iris* 22 Feb 1799 At his death the *Iris* advertised to be let "extensive warehouses, workshops and foundry"; MD 5259.

<sup>44</sup> An item in the *Register* of 18 June 1790 advertised cast forge hammers and anvils and common goods in a range of casting bases - loam, dry sand, flasks etc, and wrought iron boilers and chains. There was also offered the boring of steam engine cylinders and pump barrels. The furnace "begun to blow" in Feb 1786 (Wheat 2486).

gives an indication of a scale of production akin to that of the Walkers of a decade earlier, and well ahead of the charcoal blast furnaces of a few years previously.<sup>45</sup> A second furnace was added, probably between 1805 and 1808, leading to an annual output of over 2000 tons by 1823.<sup>46</sup>

Robinson's 1797 Directory indicates two new foundries, the first in Sheffield Park belonging to John Curr, the Duke of Norfolk's colliery manager. In 1790/1791 he asked permission to construct "at my expense . . . a foundry for Rail Roads and Engines". Curr took a ninety-nine year lease in 1803 of a one acre parcel in the Park with the foundry buildings.<sup>47</sup> After an apparently unsuccessful attempt to sell the works in 1806, he was still proprietor in Wardle and Bentham's Directory of 1814/1815, but had retired to the continent for the sake of his health before 1820 when his house and foundry were put up for sale.<sup>48</sup> The second belonged to Messrs Longden, Chambers & Newton at Furnace Hill, within five minutes' walk of the Market Place. Thomas Chambers and George Newton were already in possession of the land in 1792, but neither at that time nor two years later is there any reference to a foundry, which suggests construction in the mid-1790's.<sup>49</sup> The lately named Phoenix Foundry was a "recent purchase" of Robert Chambers and Joshua Gregory in 1802, and Gregory, John Barlow and James Chambers were co-partners there in 1808 and in 1812, at which last date an engine house and boring mill were noted.<sup>50</sup> Two years afterwards, these works still belonged to Barlow & Co., but in two more years were in the hands of Henry Longden and George Walker.<sup>51</sup> Eventually, the firm advertised their cast iron spouts and pipes in the

<sup>45</sup> H. Scrivenor: *History of the Iron Trade* (London) 1841 p97; cp Chapel Furnace 1763/64 campaign (446 tons) and Walkers' output "without guns"; E.W. Hume op cit. Booth, Binks and Hartop were also at Royds Mill from 1782, the Hartops earlier still.

<sup>46</sup> D. Crossley op cit p116

<sup>47</sup> ACM S224 See also Chapter 5

<sup>48</sup> *Iris* 22 May 1806, 4 Jan & 17 Oct 1820 In the 1806 advertisement Curr was stated to be melting 10 to 12 tons of iron per week.

<sup>49</sup> WRRD DL 154 181 and DP 156 211

<sup>50</sup> *Iris* 24 June 1802; WRRD FD 377 527 and FW 102 115 (both mortgages)

<sup>51</sup> Directory 1814/15; WRRD GL 202 204 The contemporary assignment of an adjoining property has its location as "abutting east on the smithys or work-shops of an iron foundry or cupolo" (WRRD GM 114 119) and an adjacent street is named Cupola Street (EX 224 285). It may have been the same Barlow who advertised from premises in the Park in 1819 "Patent Union Kitchen Stoves" for sale (*Iris* 19 Jan).

*Iris*.<sup>52</sup>

Close to the above, the early Webster Field (then Gibraltar) foundry was operated by Appleby, Schofield & Co. according to both the 1787 and 1797 Directories. It was mortgaged for £500 in 1807 by Edward Scholefield and nothing else is known other than it appears to be the Furnace Hill Foundry in the 1814/1815 Directory and E. & J. Scholefield's Gibraltar Foundry in that of 1821. Similarly, Brightside Forge and Park Iron Works belonging to Booth & Co. were still active in 1814/15 and 1821 and Booths had been forging and rolling at Royds Mill for some years prior to the former date.<sup>53</sup> Kenyon, Frith & Woolhouse were at Pond Forge, now with the freehold, and the former Smith, Stacey & Co's Queen's foundry near Paradise Square belonged to Messrs Darwin & Co.<sup>54</sup>

New post-1800 urban works included Spring Gardens Foundry built by Samuel Harmar, Joseph Atkins & John Gray around 1806 in the Wicker.<sup>55</sup> As Samuel Harmar & Son, the firm advertised for two pot moulders in 1807. Harmar purchased the freehold in 1814 and was still proprietor in the 1820's.<sup>56</sup> Altogether seventeen founders are named in the 1821 Directory, a sharp rise from the seven (plus four obvious omissions) of four years previously.<sup>57</sup>

At the end of the period under study the regional partnerships' almost total monopoly

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<sup>52</sup> *Iris* 1 Sept 1818

<sup>53</sup> In 1800 a person was required at Royds Mill for rolling and slitting iron and steel (*Iris* 26 June). A gun borer was needed in 1813 and a master roller a year later (*Iris* 3 Aug 1813 & 28 June 1814)

<sup>54</sup> 1814/15 and 1821 Directories; Kenyon & Co. freehold in WRRD EY 2 2 & ff 1805. Smith, Stacey & Co. had attempted to sell their foundry in 1802 and dissolved their partnership in 1804. John Darwin, one of the partners, seems to have continued (*Iris* 11 Feb 1802 & 26 July 1804).

<sup>55</sup> The partnership was formed in 1805 (PC 818) and dissolved in 1806 (*Iris* 20 Mar). The lease to Harmar of 3 roods 24 perches from the Duke of Norfolk including the foundry was made in 1807 (ACM S383 f303).

<sup>56</sup> WRRD GD 288 310; 1821 Directory

<sup>57</sup> Omitted: Booth & Co at Royds Mill, Kenyon & Co. at the Ponds, Longdens at Furnace Hill and Scholefields at the Gibraltar Works. It is possible that a fifth also was missed. Benjamin & Joseph Burdekin, filesmiths, of Bridgehouses had a foundry with cupola for which they wanted a manager in both 1813 and 1815 (*Iris* 3 Aug 1813 & 11 Apr 1815). No other reference to this activity has been found.

had disappeared. Richard Swallow who took over the former Fell works at Attercliffe, Wadsley and Chapel Furnace had gone bankrupt in 1808. But long before this the Walkers and Booth, Binks & Hartop had made inroads into the market, traceable back to the middle of the eighteenth century. Coke firing of furnace and foundry, and steam driven blast, are best documented for the Walkers - coke was first mentioned as being in use in 1767 and a Boulton and Watt engine was installed in 1781 to provide the blast for three furnaces.<sup>58</sup> Park Furnace used coke from the outset in 1786, but the first steam engines sited there were to extract water from the coalmine.<sup>59</sup> The scale of the developments and use of new technology must have given all of them considerable advantages; in the absence of documentation from Swallow's business to indicate whether or not he made use of coke and steam, it is not possible to assess how great. The expansion of cast iron production from urban foundries was in turn largely facilitated by a greater freedom of entry for proprietors and by availability of scrap. In Sheffield in 1821 no fewer than fourteen ironfounders were established within the built-up area.<sup>60</sup> Furthermore the market had changed. Cast iron was in demand for far more than just kitchen utensils and anvils. It was required for steam engine parts, beams, pipes, rails and engineering and construction components, and, since Smeaton, had begun to replace wood as the traditional material of millwrights.<sup>61</sup>

For the district's position in the hierarchy of British iron production we must rely on the work of Philip Riden and of J.R. Harris.<sup>62</sup> From their findings it appears that South Yorkshire could be counted fifth or sixth in the top half dozen iron making areas throughout the period, but probably not manufacturing more than five per cent of the nation's output until the French and Napoleonic wars.<sup>63</sup> However, major structural changes elsewhere in the industry - the sharp rise of South Wales from the 1790's and of South Staffordshire early in the new century, for example - although not setting

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<sup>58</sup> A.H. John ed op cit; MP 2540M

<sup>59</sup> Wheat Colln 2486

<sup>60</sup> The Walkers had used scrap at least since 1765 (A.H. John ed op cit). Not all was local. Eight casks of scrap iron from Hull awaited collection at Tinsley in December 1801 (*Iris* 10 Dec).

<sup>61</sup> J.R. Harris op cit p57; L. Syson: *The Watermills of Britain* (Newton Abbot) 1980 p73

<sup>62</sup> P. Riden: "Iron and Steel", Chapter 15 in J. Langton & R.J. Morris: *Atlas of Industrializing Britain 1780-1914* (London) 1986 and J.R. Harris op cit p54

<sup>63</sup> Walkers' munitions production then helped raise it nearer to ten per cent.

Sheffield and Rotherham any lower in the hierarchy in post-war years, led to the region's percentage rate of national output suffering a decline to a level rather below that enjoyed three or four decades earlier. Even so, if Park Iron Works was typical of Sheffield's producers, the amount of iron made locally continued to rise.

## CHAPTER 7 COMPLEMENTARY AND SUPPORTING INDUSTRIES

Although Sheffield specialised in the production of cutlery, steel and silver plate, a whole range of other industries which complemented and supported them were in operation locally. Among these may be noted leather, as vital for bellows, drive-belts and animal harnesses as it was for boots and shoes; paper, an essential wrapping material for finished metal products, most of which were subject to rust or tarnish; buttons with a whole industry of their own before and after Thomas Boulsover's rise to fame as a plated button manufacturer; Britannia Metal, and other non-ferrous metals, used and produced in the area; snuff pulverised, white and red lead manufactured, and optical lenses ground and polished by water power; and textiles, small in quantity, but clearly persistently in demand throughout the period.

### LEATHER

Leather production from the original hide or skin to the finished item was a lengthy and evil-smelling process, and at times very labour intensive and needing considerable skill and patience.<sup>1</sup> After the removal of unwanted hooves and other parts, hides were washed and, if formerly cured, rehydrated. Sprinkling with urine or soaking in a lime suspension speeded up the putrefaction process which preceded "unhairing" and "fleshing" (removing hair from one side of the skin and flesh from the other) over a "beam" or frame. Several more washing and varied soaking sequences followed, interspersed with "scudding" (scraping with a blunt scudding knife and slate) and other treatments, before the partially finished product was "laid away" in a tanning pit to soak for a year or more between layers of oak bark.<sup>2</sup> Subsequently, further processes, including currying, softened or toughened the leather for its intended use.<sup>3</sup> From

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<sup>1</sup> Full details of the traditional methods can be found in: R. Thompson: "Leather manufacture in the post medieval period with special reference to Northamptonshire" in *Post Medieval Archaeology* Vol 15 1981 pp161ff; J.M. Bestall & D.V. Fowkes eds *Chesterfield Wills & Inventories 1521-1603* (Derbyshire Record Society) 1977 Intro to Vol. I by D. Hey; L.A. Clarkson: *The Pre-industrial Economy in England 1500- 1750* (London) 1971 pp77ff; and R. Reed: *Ancient Skins, Parchments and Leathers* (London) 1972 pp47ff.

<sup>2</sup> Oak bark for tanners was a by-product of the domestic timber trade. In Spring, bark was levered off in large plates usually after an oak was felled, and then dried in sun and wind and stacked. See P. Allen: *Estate Woodland Management in Derbyshire and South Yorkshire* (MA Dissertation, University of Sheffield) 1994 p61

documentation it is clear that ample space was needed for the soaking pits, the drying areas, barkhouses and the various working beams and frames.<sup>4</sup> All these and the long drawn out manufacturing practices caused large amounts of capital to be tied up in leather production.

Evidence exists for a number of tanneries in and around the town prior to 1740, all rented from the Norfolk Estate. One in Millsands was in the hands of the widow of Joshua Bridges, tanner, and two each in the Ponds area and in Upperthorpe, were held respectively by John Girdom, John Spencer, John Aldam and John Barnard.<sup>5</sup> The Millsands tanyard continued at least to 1762 when John Wait, yeoman, renewed its lease, although the property appears to have been largely superseded by gardens.<sup>6</sup> Three of the other four seem to have survived into the nineteenth century; Spencer's tannery, described as being near Shude Hill, was assigned by 1771 to Thomas Rodgers who contracted a ninety-nine year term in 1790. At his death in 1809 the property was briefly in the hands of his son, John, before being assigned to George Empson who was bankrupt in 1818.<sup>7</sup> The whole passed first into the possession of his creditors and then the Sheffield Gas Light Company.<sup>8</sup> Bark houses and leather and drying chambers are noted in most of the documentation. John Girdom, the successor of Samuel Sanderson at the second, Sheaf/Shear/Shire Bridge, tannery, was lessee in both 1746 and 1767, after which no evidence emerges for the holding.<sup>9</sup> Girdom was dead by 1783.<sup>10</sup> These two tanyards must have been almost adjacent, or possibly on either side of the river. That they were not the same is clear from the dating of the early leases.

<sup>3</sup> For the distinction between currying and tanning see R. Reed op cit.

<sup>4</sup> Most tanyard areas are recorded in WRRD with other land eg Tanyard, bark-houses and closes, Upperthorpe, c10 acres (CA 529 745); Tanyard at Moor-hills, Little Sheffield, 7 acres including 4 closes (CB 401 620). The Shude Hill tanyard, later part of the gasworks, was 3435 square yards (FN 12 15).

<sup>5</sup> ACM S377 f121 (1739), f198 (1746), S378 (13 Nov 1750), S377 f52 (1736/7), f140 (1741) John Spencer was a mercer, the others tanners.

<sup>6</sup> ACM S378 f279 This tanyard may have had a connection with the leather chamber in the house leased by Thomas Buck in 1747 (S378 26 Sept). By the renewal in 1768 the site was occupied by steel furnaces (S379 f232).

<sup>7</sup> ACM S379 f353, S383 f107, WRRD FN 12 15 & GW 278 238

<sup>8</sup> *Iris* 7 July 1818; GCR 1

<sup>9</sup> ACM S377 f198, S379 f 121 Sheaf Bridge is "Hospital Bridge" on the Fairbank town maps of 1771 and 1797; it is "Sheaf Bridge" on the town map of 1808.

<sup>10</sup> WRRD CN 404 535

Both Upperthorpe tanyards were linked for much of the period with the Aldam family, most of whom were noted as tanners.<sup>11</sup> The tradition was so firmly established that one of the family, William, an apparently successful grocer for twenty years with a shop on the corner of Bank Street, reverted to the family business in 1812.<sup>12</sup> The freeholds of the two tanyards were in the possession of John Addy in the early nineteenth century, and subsequently mortgaged to a Manchester merchant in 1814.<sup>13</sup> William Aldam's holding is not clear at this stage, although he was still described up to 1818 as formerly of Sheffield, grocer, and now of Upperthorpe, tanner.<sup>14</sup>

Six other tanneries were established in and around the town, five of them with earliest references in the 1750's and 1760's. For example, at Green Lane, Joseph Wood occupied a tanyard in 1757.<sup>15</sup> By 1768 it shared its site with a steel converting furnace, and was still sharing in 1778.<sup>16</sup> However, mention is made only of houses and furnace in a sale of the property in 1794.<sup>17</sup> At Crookes, William Hoole mortgaged his tanyard in 1759 and again in 1772.<sup>18</sup> It was in the hands of his descendants by 1814.<sup>19</sup> The messuage and tanyard of the Brelsforth family at Moorhills, Little Sheffield, first appear on a lease of 1766.<sup>20</sup> These had not been noted in a deed concerning the same parcel of land in 1753, nor do they appear in references after the sale of the holding to Henry Tudor in 1778.<sup>21</sup> It seems likely, therefore, that this was a relatively short-lived operation. A tanyard listed in the Rate Books for Campo Lane may have been similar. Its first mention is in 1757/1758 and the last a decade later. Possibly Messrs Brewer and Barnsley, juxtaposed on the page, may have been proprietors, but that is very tentative. No corroborative evidence that it even existed has been found. The fifth site

<sup>11</sup> The Norfolk rentals (ACM S158) are not helpful, the term "tanyard" not being used. The Aldams were Quakers.

<sup>12</sup> WRRD DI 566 794, FT 176 184 and FU 92 95

<sup>13</sup> *ibid* EL 419 543, EO 28 38 and GC 265 295ff

<sup>14</sup> *ibid* GR 244 248 (1817) and GU 591 626

<sup>15</sup> *ibid* AN 492 664

<sup>16</sup> *ibid* BI 132 183 & CE 314 400

<sup>17</sup> *ibid* DO 224 290

<sup>18</sup> *ibid* AU 168 229 & BP 100 126

<sup>19</sup> *ibid* GC 111 131

<sup>20</sup> *ibid* BE 581 796 Jonathan Brelsforth was described as a tanner at Little Sheffield in 1733 (WRRD OO 412 599), but no tanyard is itemized in the assignment.

<sup>21</sup> WRRD AG 561 730 and CB 401 620

(with a long history) was at Wardsend where a tanyard had been active prior to 1671.<sup>22</sup> Throughout the period and up to 1843 the property was in the hands of the Rawson family.<sup>23</sup> Thomas Rawson, tanner, appears in several memorials of freehold and leasehold transactions in and around town between 1739 and 1765.<sup>24</sup> His son, also Thomas, turned his energies to building a brewing empire based at Pond Lane near the Leadmill and serving a growing network of tied houses.<sup>25</sup> Sixth and latest - a tanyard at Neepsend - is first mentioned in an indenture of 1785 in which Elizabeth Vickers, widow, is named as occupier.<sup>26</sup> Thomas Vickers, tanner, of Neepsend appears in a conveyance of land elsewhere in 1768, which implies a possible contemporary working of this site.<sup>27</sup> William Vickers purchased the freehold in 1790, mortgaged it in 1814 and, with his son, sold it in 1817, at which time he was described as formerly tanner, but now of Aston, farmer.<sup>28</sup>

In view of the somewhat scattered nature of the evidence and lack of information on the capacity or size of labour force of these tanyards, relatively little more can be said other than that in the course of the eighteenth century the number of sites broadly doubled. On the other hand, at least six had closed before 1820. With a rapidly rising population, demand must have continued to grow in both personal and industrial use, so footwear and leather came from elsewhere - from those areas with a comparative advantage in production, probably Northampton and Stafford.<sup>29</sup> The former was on the main north-south London route, and the latter had easy access to it via Derby. A "cheap Boot & Shoe warehouse" at No. 12 Angel Street in 1800, and another advertised in 1818 in the Fruit Market may well illustrate the competition faced by local producers.<sup>30</sup>

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- <sup>22</sup> D. Crossley ed: *Water Power on the Sheffield Rivers* (Sheffield) 1989 p9  
<sup>23</sup> ACM SD723 Surrender of Lease Both Bark Mill Dam and Tanyard are listed.  
<sup>24</sup> WRRD MM 659 928, OO 266 379, RR 747 1002, TT 206 272, WW 18 30, AG 640 847 & BC 635 824; ACM S379 f253 As with the Aldams (above) the Norfolk rentals give no assistance. Thomas died in 1769 (WRRD BL 129 189).  
<sup>25</sup> Further details of Rawson's Brewery are in Chapters 14 to 16.  
<sup>26</sup> WRRD CQ 535 771  
<sup>27</sup> WRRD BH 574 741 Vickers paid £5 for property at Neepsend to the Norfolk estate in 1770/1771 The rentals, as for the above tenants do not provide more information.  
<sup>28</sup> WRRD DC 535 694, GC 447 ... , GQ 93 70 & GR 245 249  
<sup>29</sup> P.R. Mounfield: "Leather Footwear" in J. Langton & R.J. Morris eds: *Atlas of Industrialising Britain 1780-1914* (Economic History Society, London) 1986 p124  
<sup>30</sup> *Iris* 11 Apl 1800 & 15 Dec 1818

Sheffield leather was in a slow absolute decline which continued through the remainder of the century.<sup>31</sup>

## PAPER

Initial development of paper production was not dissimilar to that of leather. In 1740 only three paper mills are known to have been in existence: one at Totley (Sheaf) dating back to the previous century; another, Wadsley Bridge Paper Mill (Don), established at least thirty years, and a mill at Old Park (Don) first known in 1721.<sup>32</sup> It was probably from one of these three that Richard Dalton purchased the brown paper in which he sent his hardware to Hull.<sup>33</sup> The first newcomer was Brightside Paper Mill (Don), a partial conversion of Parker Wheel in or around 1754 and, from the 1770's, progressively developed by James Creswick into a substantial works with five vats and three water wheels.<sup>34</sup> Some thirty years later a small snuff mill at Storrs Brook, a tributary of the Loxley, was converted for paper making, and in the mid-1790's Whitham grinding wheel (Loxley) became a paper mill. By the time of the next conversions to paper c1814/1815 - Third Coppice grinding wheel (Rivelin) and Owlerton Snuff Mill (Loxley) - both Wadsley Bridge and Old Park had themselves been converted to other uses.<sup>35</sup> Considering the need for clean water in the paper making process it is perhaps not surprising that two of the Don mills had been re-adapted.

More details are known of the Brightside Paper Mill than of any other, because of notices of auctions and sales from 1811. Firstly, the three water wheels together generated a claimed 160 horse power, so this was a substantial site. One drove four paper making "engines"; one was used for machinery "to rasp, grind, and sift Dye Wood" and to roll both paper and mill boards; the third was "latterly used for glazing papers". Stocks of "Allum, Logwood ground and rasped, Hard or Junk Rope, Blue

<sup>31</sup> Directories

<sup>32</sup> D. Crossley op cit and British Addnl MSS 27538 f83. There had been a seventeenth century paper mill at Norton for which information is very sparse (T. Schmoller: *Sheffield Papermakers* [Newcastle-on-Tyne] 1992 p55).

<sup>33</sup> Bagshawe Colln (John Rylands Library, Manchester) 5/4/2 Invoice to Clement Daynes of Hull 6 June 1738 (loose at the end of 5/4/2) and letter 17 Jan 1746/47. Brown, acid-free, paper helped protect metal artefacts from rust.

<sup>34</sup> *Iris* 18 June 1811 and D. Crossley op cit

<sup>35</sup> D. Crossley op cit

Chymic, Bleaching Salt and Whiting" were put up for sale, and later Demy Moulds and Millboard Moulds from the Felt Chamber.<sup>36</sup> In spite of attempts to introduce new uses, the mill was still "in full work" in 1825.<sup>37</sup> Occasional evidence of the market for Brightside's varied product gives further insight. In 1774 local file maker Matthias Spencer used its Broken Rope Paper for wrapping his files, large quantities of which were sent to London; in 1793 four reams of elephant cartridge paper were sold to a snuff mill in Sheffield; and in 1803 proprietor James Creswick advertised in the *Iris* (and almost certainly in other provincial newspapers) that his paper, "formerly supplied by the late Frederick Thorpe to the towns of Nottingham and Leicester for the wrapping and packing hosiery goods", was now available direct from himself for ready money only.<sup>38</sup> Another advertisement (for the sale of the Paper Mill in 1811) referred to both paper and pasteboard stock.<sup>39</sup> By end of the eighteenth century, if not earlier, board was the mounting medium for scissors and buttons and for the essential display of samples of all kinds of cutlery ware and smaller tools.<sup>40</sup>

## BUTTONS

Birmingham and district was the country's major manufacturing centre for smallwares - buttons, buckles, snuff boxes and other "toys", but Sheffield succeeded in maintaining some competition throughout the period 1740 to 1820, particularly with buttons.<sup>41</sup> Best documented of the early makers is Thomas Holy who sold his wares throughout Yorkshire and in neighbouring counties.<sup>42</sup> According to the accounts, most of his sales were below £3, but occasionally rising to £10 and more. At Gainsborough Mart in April 1751 he sold an atypical £30 worth of buttons, and at Boroughbridge Fair two months later an astonishing £130 worth. After his death in 1758 his inventory listed more than a quarter of a million buttons, many of brass, with others of tin, spelter,

<sup>36</sup> *Iris* 18 June 1811, 2 Mar, 20 July & 10 Aug 1813

<sup>37</sup> *ibid* 1 Feb 1825

<sup>38</sup> LD 1925 f99; T. Schmoller *op cit* p18; *Iris* 3 Nov 1803

<sup>39</sup> *Iris* 2 July 1811

<sup>40</sup> MD 5734; *Iris* 31 Mar 1818 (Theft of pattern cards - scissors, knives, razors etc) & 7 Apl 1818 (auction of button boards & cards) This was also the period of room papers and borders advertised in the newspapers eg *Iris* 23 Mar 1813, 24 May 1814 & 2 May 1820. However, no link to any Sheffield production has been established.

<sup>41</sup> Richard Dalton, merchant, had sent Sheffield-made buttons to Hull in the mid-1730's (Bagshawe *op cit* 5/4/2 Invoices and 5/4/1 f168)

<sup>42</sup> MD 5733[14]

pewter, horn, glass and pearl, and a minority lacquered or silvered, the latter probably made of fused plate.<sup>43</sup> The success of contemporary button makers can be measured by their involvement in the property market - Daniel Holy developed at least eight Norfolk leasehold parcels as well as buying and selling freehold and lending money on mortgage, in total nearly twenty transactions.<sup>44</sup> John Brookes purchased houses in Fargate, Balm Green, Hollis Croft and elsewhere; George Greaves had a similar range of holdings mainly in Ecclesall; and Obadiah Raynes bought several houses in New Street and Bullstake. Another dozen or so button makers were parties to deeds recorded in the WRRD Memorials 1735-1755. During the 1760's and 1770's button makers continued as a successful minority with a younger Thomas Holy and Thomas and William Newbould eventually expanding their joint button manufacturing into an international mercantile business, Daniel Holy moving into silverplate and John Hoyland and William Middleton becoming specialist silver rollers.<sup>45</sup> The 1774 Directory lists fourteen names and illustrates a now clear distinction between metal and horn buttonmakers, at the same time introducing the description "vigo button maker".<sup>46</sup> Gales and Martin's Directory of 1787 probably indicates a peak with twenty-three manufacturers in and close to town, of whom thirteen are horn.<sup>47</sup> Only sixteen appear in 1797 including seven horn users. Seven horn button makers are again noted in 1817, with others listed as now specialising in metal, pearl or gilt and plated. The total is twenty. By 1821 the number recorded is only fourteen, suggesting a possible downward trend in the sector at this stage.<sup>48</sup>

<sup>43</sup> MD 5733 [2] Two of the creditors of his estate were Thomas Boulsover and John Hoyland, silver roller (MD 5733[3]). Boulsover is best described as a silverplater, but his fortune was built on sales of buttons.

<sup>44</sup> ACM S377 for Norfolk leases; freeholds include WRRD MM 610 850, NN 349 488, OO 280 401 and AC 654 876.

<sup>45</sup> MD 5737(1), MD 5737(4), MD 5241, MD 3632, ACM S379 (48)

<sup>46</sup> Vigo button makers were horn button makers, but the converse may not always be true. The point is illustrated by the 1787 Directory in which thirteen names are listed under "Horn Button Makers", of which seven are described as "Vigo Button Makers" in the General Index. John Waterhouse is "viga horn button maker" in two Memorials of 1777 and 1781 (WRRD CA 153 208 and CK 106 131)

<sup>47</sup> There were five more at Heeley and Newfield Green,

<sup>48</sup> This is corroborated by the small number of new button makers appearing in WRRD 1810-1820 and by falling numbers in the Parish Registers. On the other hand the 1821 Directory is known to understate some other categories (eg grocers).

As a minority industry, button manufacture could not rival cutlery or silver and fused plate in weight and value of production.<sup>49</sup> On the other hand the quantity, amply illustrated by Thomas Holy's 1758 inventory, must have been multi-million and growing very rapidly. Holy sold only regionally; his grandson sold nationally and internationally. Two letters from Ralph Mather of Manchester to Matthew Boulton in 1792 make this point: "Holy & Newbold (sic) travel in America with their button cards" and (written from Philadelphia) "Mess. Holy & Newbold of Sheffield sell a vast quantity of their manufacture here".<sup>50</sup> The second letter, however, continues, setting the trade in some kind of perspective: "Mess. Watkins of Birmingham deal almost with everyone" (ie redressing the balance with Holy) and then "Sheffield plated goods are much recommended by the exporters of hardware to your predudice (sic)" indicating the latter town's exporting strength in fused plate and emphasising the commercial rivalry with Birmingham in general and Boulton in particular.

#### NON-FERROUS METALS/BRITANNIA METAL

Although brass was the principal raw material for button making in the mid-eighteenth century, no early examples of brass making or founding have been found in Sheffield.<sup>51</sup> No founders appear in the Directories before 1797, and in that year only four are listed.<sup>52</sup> The reason may be a traditional domination of the trade by Birmingham, and possibly the business activity of Henry Pearson of Nottingham, brassfounder, who was well established in Sheffield property by the late 1760's and owned about eighty houses by 1793.<sup>53</sup> In the early nineteenth century several local firms, J. & G. Greaves (Bailey Lane), Bennett & Co. (Gibraltar Street) and Cam & Cutts (Norfolk Street), were mentioned in advertisements in the *Iris*, but very few brass founders or brass workers appear in the WRRD.<sup>54</sup> By the Directory of 1821 the total was eight firms.

<sup>49</sup> There was a degree of overlap, with silver and plated buttons in both categories. The Assay Office Plate Books show very few silver buttons assayed.

<sup>50</sup> Birmingham Assay Office Non Book Items: Letter Box M1 (Ma to Mi) My thanks to Gordon Crosskey for details from these letters.

<sup>51</sup> MD 5733(2) Birmingham dominated the manufactory of brass and copper (H. Hamilton: *The English Brass and Copper Industries to 1800* [London] 1926)

<sup>52</sup> One or two brass inkpot makers appear in the 1774 and 1787 Directories.

<sup>53</sup> WRRD BH 688 884; Bramley 46/48; WYAS Land Tax Assessments

<sup>54</sup> *Iris* 13 Aug 1801, 12 Jan 1804, 17 Oct 1809 & 2 June 1818; WRRD EH 94 110, EP 459 570 & 690 846 & ET 276 352

Pewterers are even less in evidence. The only one found hitherto is William Holdsworth, a one-time partner of William Newbould in a Handsworth coal undertaking in 1793.<sup>55</sup> It may well be that pewter was made and worked locally as "white metal". Whitesmiths are named during the 1740's and 1750's in Sheffield - George Stones, Thomas Kirk and John Bullock - and two or three new ones in each succeeding decade of the century.<sup>56</sup> Ten receive a first mention between 1800 and 1810, suggesting a relatively large advance. However, the link between pewterer and whitesmith is found in the partnership between Holdsworth (above) and Henry Froggatt during the 1790's and after. In 1792 they were called white metal manufacturers, ten years later Britannia metal manufacturers.<sup>57</sup> The significance of the last mentioned description is clearer when it is known that Britannia metal was metallurgically similar to pewter, an alloy of tin with various other metals and with a wide range of possible proportions.<sup>58</sup> Both were used for a variety of household utensils from cups, plates, spoons and candlesticks to chamber pots. The fundamental difference between the two, according to Hatcher and Barker, is that, whereas pewter is cast in moulds and then turned and hammered to its final shape, Britannia metal ("unquestionably a pewter alloy") is "fabricated in an entirely different way, namely by spinning and stamping from sheets of metal".<sup>59</sup> Clearly, interlinking relationships existed within the three trades, but it is not yet possible to say if they were different branches of the same trade. The subject is currently under further investigation.<sup>60</sup>

In its origin, Britannia metal appears to have been a purely Sheffield phenomenon. It is not difficult to associate it, from the point of view of production, with the fused plate industry. The latter had power-rolled thin sheets of plated copper and sterling silver from the mid-1760's, had used the stamping method even earlier, and subsequently adapted spinning for the production of circular artefacts.<sup>61</sup> What is not known is a firm

<sup>55</sup> YWD 870; WRRD DM 473 539

<sup>56</sup> WRRD OO 228 413, AE 52 54 & BF 576 856; CB 181 (105) & CB 1226

<sup>57</sup> WRRD DI 440 624 & 175 243

<sup>58</sup> J. Hatcher and T.C. Barker: *A History of British Pewter* (London) 1974 pp1 & 2. The two standard alloys in Western Europe were "Fine pewter" which was pure tin with a small addition of copper, bismuth or antimony to harden it, and "Lay pewter", 75 to 80% of tin to 25 to 20% of lead.

<sup>59</sup> *ibid*

<sup>60</sup> Dr.E.A. Churchill: (probably) *Britannia Ware: Image and Reality in British and American Society* forthcoming

or even approximate date for the first trials of rolled pewter/Britannia. A secondary source puts what is termed the "discovery" at around 1769 by a Mr. Vickers who purchased the "recept" from a sick man.<sup>62</sup> This traditional story clearly suggests the invention of a different metal prior to the new means of production, largely contradicting the definition above. James Vickers to whom Leader attributes the purchase, although classified as a manufacturer of white metal in 1792 in his first WRRD entry, and therefore possibly at that time processing Britannia metal, was described as a filesmith in a lease of 1784.<sup>63</sup> Apparently at that time he had no connection with the new trade. Dr. Churchill suggests the story of the invention of a new metal and the name "Britannia" were the main elements of a clever marketing strategy to sell attractive-looking artefacts which would hardly have sold quite so successfully had they been known to be made largely of tin.

Specific primary information for the industry from the eighteenth century is very sparse. The only Directory listing is in 1797 for Froggatt, Couldwell & Lean, Britannia Metal goods and silver platers, reinforcing the point already made.<sup>64</sup> It may have been this partnership which advertised for two men in the Britannia metal spoon trade and one in the teapot trade in 1799.<sup>65</sup> A few years earlier, William Fairbank had appraised carpenter work at new three storey premises for Froggatt, Coldwell & Co. (no trade indicated), including a long workshop and stamp shop.<sup>66</sup> These are the only examples with no one classed as a manufacturer or maker in the WRRD until 1802.<sup>67</sup> This being the case, it seems very unlikely that the industry had had three decades of activity by 1800, unless development was very slow indeed. The early nineteenth century is little more enlightening - the *Iris* had three more advertisements for journeymen or apprentices in 1802 to 1804, and George Smith was described as a Britannia metal manufacturer in 1806.<sup>68</sup> Elsewhere in the WRRD in this first decade, Froggatt and

<sup>61</sup> ACM S379 f48, Fairbank FB3 f56; Bradbury Colln 299

<sup>62</sup> C. Dixon: *The Origins of the Principal Trades in Sheffield* (1815) deposited as JC 117 p70.

<sup>63</sup> R.E. Leader: *Sheffield in the Eighteenth Century* (Sheffield) 1901 pp82/83 WRRD DH 662 840; ACM S382 f122r; that it was the same man is shown by WRRD DY 406 510 (1797)

<sup>64</sup> The first two were already named as whitesmiths in 1792 (WRRD DI 440 624).

<sup>65</sup> *Iris* 10 May 1799 & 14 June (teapot line only)

<sup>66</sup> Fairbank BB79 f170 & BB80 f1 Eyre Street buildings (1794).

<sup>67</sup> Henry Froggatt & William Couldwell (WRRD EN 175 243)

Couldwell are variously named as factors, cutlers or merchants, and, in 1810, white metal manufacturers.<sup>69</sup> This last description is used of only one other who was subsequently called Britannia metal maker.<sup>70</sup> Not until the second decade is there a clear indication of growth with more firms in the industry: there were probably five or six in 1810, but ten in 1817 and thirteen in 1821.<sup>71</sup> And at this later stage, like steel and fused plate, some Britannia metal was being rolled by steam power.<sup>72</sup>

Why was there demand for artefacts of this metal? Besides the marketing, Dr. Churchill hypothesises that it was a cheaper substitute for fused plate, itself a lower cost alternative to solid silver: "Its early popularity in England probably derived from its stylistic and technological ties to Sheffield silverplate . . . itself tied closely to the silver industry. The interconnection of these products can be traced through objects, advertisements, stamping moulds, etc. The social status of Britannia clearly benefited from such connections in both Britain and America".<sup>73</sup> As well as having the shape and style of fused plate, it seems that artefacts actually looked the part, an impression strongly supported by a newspaper report of 1818 concerning the theft from Carver Street Chapel vestry of Britannia metal communion vessels "very much resembling silver".<sup>74</sup>

#### SNUFF, WHITE LEAD AND LENSES

Three small industries, unrelated to any of the above or to each other except by their common exploitation of local water power, were snuff production, lead conversion and lens grinding and polishing. The first has a history going back at least to 1749 when a

<sup>68</sup> *Iris* 18 Mar and 26 Aug 1802; 12 July 1804; WRRD EZ 68 116

<sup>69</sup> WRRD FA 351 478 (1807), FE 403 569 (1808), FG 745 997 & FH 9 10 (1809) etc; FN 500 625

<sup>70</sup> Richard Constantine WRRD EQ 690 893 (1804)

<sup>71</sup> Froggatt & Co, Vickers & Sons (*Iris* 13 Jan 1807), Constantine & Co (*Iris* 9 June 1807), Dixon & Smith (*Iris* 24 July 1810 & Fairbank BB93 f22), Longden & Co (*Iris* 20 Aug 1811) and possibly Broadhead, Gurney & Co [bankrupt] (*Iris* 22 Feb 1814); Directories The 1821 edition has been found to underestimate in other trade areas.

<sup>72</sup> *Iris* 14 Oct 1817

<sup>73</sup> E.A. Churchill op cit

<sup>74</sup> *Iris* 24 Mar 1818 An earlier theft of ten Britannia metal teapots from a Meadow Street warehouse appears to give further confirmation (*Iris* 25 Feb 1817)

Norfolk lease permitted George Eddowes to build a snuff mill on the Storrs Brook, a tributary of the Loxley. This mill was used until about 1777 and later converted for paper.<sup>75</sup> A snuff mill at Owlerton dating from c1760 was similarly converted sometime after 1806.<sup>76</sup> Sharrow Mill in Ecclesall began as a cutlers' wheel, probably in the sixteenth century. Already in the tenure of the Wilson family for some twenty-five years, it was rebuilt for snuff production in 1763. Business clearly prospered in the long term as water power was supplemented by steam from 1796.<sup>77</sup> The fourth known mill was in Wisewood at Green Wheel. It appears to date from the late 1770's; its length of service in snuff making has not hitherto been determined.<sup>78</sup> The industry appears unusual in a predominantly metals area, but may have had its initial stimulus from the production of locally made snuff boxes. Richard Dalton listed some on an invoice of 1743, and Joseph Hancock, the principal developer of the uses of fused plate, was active in the early 1760's.<sup>79</sup>

In contrast to snuff making, the manufacture of white and red lead was restricted to a single site, that close to the confluence of Porter and Sheaf, and supplied by both streams, but principally via a long head goit from the latter.<sup>80</sup> Erected adjacent to an old cutlers' wheel in or shortly before 1759 by partners Dennis Browne, James de la Pryme, James Allott, William Cooper and Samuel Turner, the works were progressively developed in succeeding decades, along with a brewery on site. Periodic valuations including stock - nearly £11,000 in 1775 and over £19,000 seven years later - offer clear illustration.<sup>81</sup> This may have been the peak of development; the sale of a share in 1820 put the value of the whole at about £24,000, which, allowing for late eighteenth and early nineteenth century inflation, is probably little advanced in real

<sup>75</sup> D. Crossley op cit p32

<sup>76</sup> *ibid* pp46/47

<sup>77</sup> M.H.F. Chaytor: *The Wilsons of Sharrow* (Sheffield) 1962 p62. This mill has the unique distinction locally of surviving as a commercially active water powered site, although electricity drives most of the machinery. The proprietors are still named Messrs Wilsons.

<sup>78</sup> D. Crossley op cit pp37/38

<sup>79</sup> Bagshawe Colln (John Rylands Library, Manchester) 5/4/2 27 Sept 1743 Loose invoices at rear of book; LD 1577; MD 1837; *Sheffield Register* 2 Dec 1791 Obituary

<sup>80</sup> D. Crossley op cit p111

<sup>81</sup> Wheat Colln 1231 (1775 valuation includes 40 tons of white and 150 of red lead), Fairbank AB 4 xvii (1759), f47 (1761 & 1766), BB 34 f45.

terms.<sup>82</sup> Details of the working of the firm only emerge in a report of 1865 in which the dangers of processing lead are patently obvious.<sup>83</sup> The Lead Mill must have been one of the most hazardous of the town's workplaces. White lead was the base for paint and putty, and the indissolubility of red lead made it ideal for priming and waterproofing purposes. Both materials were in growing demand as building output increased over the course of the eighty years from 1740.

Lens manufacturing seems to have emerged a little later than most of the above industries. Charles Proctor, optician, traditionally the pioneer, was a proprietor of the first steam wheel in 1786 with its one hundred troughs.<sup>84</sup> It seems likely that some of these would have been devoted to lens production.<sup>85</sup> A few years later, in 1794, the same man and partner Thomas Bielby, optician, of Birmingham leased for their own use Rivelin Bridge Wheel, which continued in the family's tenure after Charles Proctor's death in 1809.<sup>86</sup> John Chadburn, another local optician, hired glass-grinding troughs there in 1814.<sup>87</sup> A long Birmingham connection, reinforced by the permanent residence in that town of Proctor's elder son, George, strongly suggests that demand for the product came as much from scientific instrument makers as from local suppliers of spectacles.<sup>88</sup>

## TEXTILES

If leather, paper, and some of the other manufactures already discussed can reasonably

<sup>82</sup> *Iris* 26 Dec 1820 Thirteen x sixty-third parts were valued at c£5000.

<sup>83</sup> Dr. Baker in *Transactions of the National Association for the Promotion of Social Sciences*. In 1865 forty men and twenty women were employed.

<sup>84</sup> See the section on steam power in Chapter 8. Earlier family members had been in the cutlery and plated trades (WRRD BF 155 234 & CB 600 900; WC 1348)

<sup>85</sup> Proctor & Bielby, opticians, Milk Street, are listed in the 1787 Directory, along with a Thomas Wilson of Norfolk Street.

<sup>86</sup> WRRD FK 268 333 Proctor's two sons also inherited the north side of a scythe wheel at Wisewood, but it is not certain that any glass work was being undertaken there.

<sup>87</sup> D. Crossley op cit p65

<sup>88</sup> WRRD FG 590 814 (1809) and GR 117 123 (1817) By 1821 there were five firms in Sheffield described as opticians. Of these only John Chadburn is known to have ground his own lenses. There is not much evidence of instrument makers locally, although Holy, Newbould, Morton, Warris, Settle & Wilson began a fourteen year copartnership to make optical instruments in 1788 (MD 5737 [2]).

be counted as complementary to the major Sheffield trades, it is rather more difficult to explain the existence of a small, but persistent textile industry, other than by the fact that the town was on the southern fringe of the West Riding and, therefore, historically linked to that region's traditional staple.<sup>89</sup> Conversely, the most remarkable enterprise of the textile sector in Sheffield was a silk mill (later converted into a cotton mill) built from 1760 by William Bower.<sup>90</sup> The building was five stories high and had a frontage of almost fifty yards, and by 1774 contained machinery which operated over two and a half thousand "swifts" (silk reels) and as many spindles. It had a workforce of eighty, mainly women and children.<sup>91</sup> Bower was bankrupt in 1769, but it seems that the mill was not advertised for sale for five more years.<sup>92</sup> Joseph Wells and James Rickards, silk merchants, of London were the purchasers.<sup>93</sup> By 1789, the date of a sixty-three year Norfolk lease to Wells, Heathfield & Co., the premises had been converted into a cotton mill.<sup>94</sup> Its water wheel had been supplemented by a steam engine in 1791, a year before the first of two major fires.<sup>95</sup> A second mill, with steam engine, was built in 1805 on the site of Kelham Wheel, but it was the bigger mill which was seriously damaged in 1810 and later largely demolished.<sup>96</sup> It may have been the fire which precipitated the collapse of the firm whose proprietors assigned it to the bankers Walkers, Eyre & Stanley in 1815.<sup>97</sup> By this time the larger structure, now rebuilt and "fire proof", was described as of six stories when the whole was sold by auction. Both mills had recent Boulton & Watt engines.<sup>98</sup> The second mill then reverted to grinding, whereas its larger neighbour eventually became the workhouse.<sup>99</sup>

<sup>89</sup> In 1736 a lease of Wicker Tilt noted that the site had previously contained a dyehouse and tenter garden (ACM S377 f48 front)

<sup>90</sup> D. Crossley op cit p14; Fairbank AB4 f11 (plan account 1760); FB 17 f98; ACM S378 April 1763, the lease back-dated to 1760; FB 18 f61 (1761)

<sup>91</sup> British Museum Addnl MSS 27538 f223 (printed sale notice 1774); in the words of Arthur Young: *A Six Months Tour through the North of England* (1770), the work force was 152, "chiefly women and children".

<sup>92</sup> *ibid* and *Public Advertiser* 8/15 Jan 1774 According to the latter, over £7000 had been expended on it.

<sup>93</sup> ACM S380 f67

<sup>94</sup> WRRD EX 201 261

<sup>95</sup> *Register* 6 May 1791; D. Crossley op cit p14. The rebuilt mill was insured for £8200 (Guildhall Library, London, catalogue, but not clearly referenced to a "Sun" volume.)

<sup>96</sup> D. Crossley op cit p14; WRRD GB 681 767 (1812)

<sup>97</sup> WRRD GH 263 294

<sup>98</sup> *Iris* 21 Feb 1815

<sup>99</sup> D. Crossley op cit p14

In clear distinction from the owners of such a large enterprise, there existed a scattering of weavers in Sheffield and district noted in WRRD and in the Parish Registers over the eighty years from 1740.<sup>100</sup> There were nearly as many dyers, but fewer jersey and wool combers.<sup>101</sup> Out of this minority textile tradition emerged a small carpet industry in the later eighteenth century. Foremost among the manufacturers was Joseph Wildsmith of Colson Croft, almost certainly the descendant of a weaver of the same name from the same part of town.<sup>102</sup> At one time he was co-partner with Daniel Holy and other silverplaters in the manufacture of carpets and hair seating.<sup>103</sup> But it is not merely his association with successful entrepreneurs which is evidence of Wildsmith's pre-eminence in his field; at his retirement sale details of his business indicate that the manufactory had been established for forty years, had Scotch, Venetian and Brussels looms, and was powered by a steam engine, all in working order.<sup>104</sup> W. & J. Taylor, who took over the concern in 1806, announced in their newspaper advertisement that they also intended to carry on from the late Abraham Hirst the carding of hatters' wool.<sup>105</sup> Other local workers in related fields were woollen manufacturers Hoyland, Mitchell, Mower et al who insured £400 worth of utensils and stock in 1778, worsted spinners Senior, Creswick & Naylor whose partnership was dissolved in 1811, and Joseph Raynor, classified as a cotton spinner, who two years later patented improved machinery for roving and spinning cotton, flax, silk and wool.<sup>106</sup>

Whatever rating may be put upon Sheffield's lesser industries in terms of relative importance, collectively they must have employed a significant minority of men and

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<sup>100</sup> Small-scale is deduced as none appears to hold property with workshops. However, all must have been sufficiently affluent to appear in property transactions.

<sup>101</sup> There was also a worsted manufactory in 1804 (*Iris* 5 July 1804). The partners were a woolcomber, an engineer and two cutlers. No fullers have been found from any source, yet the fulling mill at Walk Mill on the Don was mentioned as a separate unit up to the late 1780's (D. Crossley op cit p17).

<sup>102</sup> ACM S377 f47; S380 f5

<sup>103</sup> MD 5255/5256 (1792) & dissolution MD 5267 (1797) A Wakefield wool stapler, Henry Bulcock, was also in the co-partnership.

<sup>104</sup> *Iris* 16 Aug 1804 The business was offered for sale again in 1806 (WC 3278 [16]) In the handbill the steam engine is described as being in a wooden frame and constructed by John Curr of Sheffield Park.

<sup>105</sup> *Iris* 9 Oct 1806

<sup>106</sup> Sun Fire Insurance 11936 Vol 262 no. 394112 (Guildhall Archives, London); *Iris* 15 Oct 1811 & 9 Feb 1813

women. It would be tempting to suggest that such manufacture helped smooth the cyclical variation in the volume of trade in the major industries, largely dependent as they were on foreign markets. However, complementary or supplementary to the main trades, these smaller sectors were broadly subject to the same economic factors, whether it be directly or indirectly. There is no evidence from the newspapers or elsewhere that any one trade was able to ignore wars and recessions.<sup>107</sup>

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<sup>107</sup> *Register* 16 May 1789; *Iris* 4 April and 13 Nov 1800; MD 1738 Bundle 2 f11 (1801)

## CHAPTER 8 WATER POWER AND STEAM<sup>1</sup>

"There can be few districts in Britain where rivers have been so intensively used for power as in and around Sheffield. On almost 30 miles of five streams and their tributaries there are upwards of 115 places where mills have stood, some employed for corn-milling, paper-making or snuff-grinding, but the great majority used by the metal trades, whose water-wheels drove grindstones, forge hammers, rolling mills and wire-mills. Hence, water-power has formed one of the most important foundations of Sheffield's traditional metal industries".<sup>2</sup> In other parts of the country, some streams may have had more mills to the mile, but Dr. Laxton's intensity criterion puts Sheffield at the forefront with ninety-eight per ten kilometre square.<sup>3</sup> The highest figure for any part of West Yorkshire's textile area was thirty-four. It could be added that, without the harnessing of such numerous sources of power, the Sheffield district would have been most unlikely ever to have achieved its eventual position of pre-eminence in any metal manufactures. Water power, and later water power and steam together, became in every sense of the expression the driving force of the local industrial revolution.

Key advantages to the area through the productivity of its water driven works are well illustrated by a diary entry of 1793 by Rev. William Bagshawe after a visit to Smithywood Tilt at Norton on the River Sheaf. "Mr. B[iggi]n can there make at his forge with two men about twelve to fifteen dozen of scythes in the course of a day. At a common smithy two men can only make about half a dozen scythes a day, i.e. prepare them for the grindstone."<sup>4</sup> The benefits in all operations were so enormous that

<sup>1</sup> The material on water power is based largely on D. Crossley ed: *Water Power on the Sheffield Rivers* (Sheffield) 1989 (in which I was a collaborator) and covers the same sites:- on the Don below Oughtibridge as far as Brightside Paper Mill and on the Loxley, Rivelin, Porter and Sheaf and their tributaries. I have also drawn on the early part of my own MA dissertation: N. Flavell: *A Study of the Water Mills of the River Sheaf downstream of Abbeydale Hamlet* (University of Sheffield) 1984.

<sup>2</sup> D. Crossley op cit p v

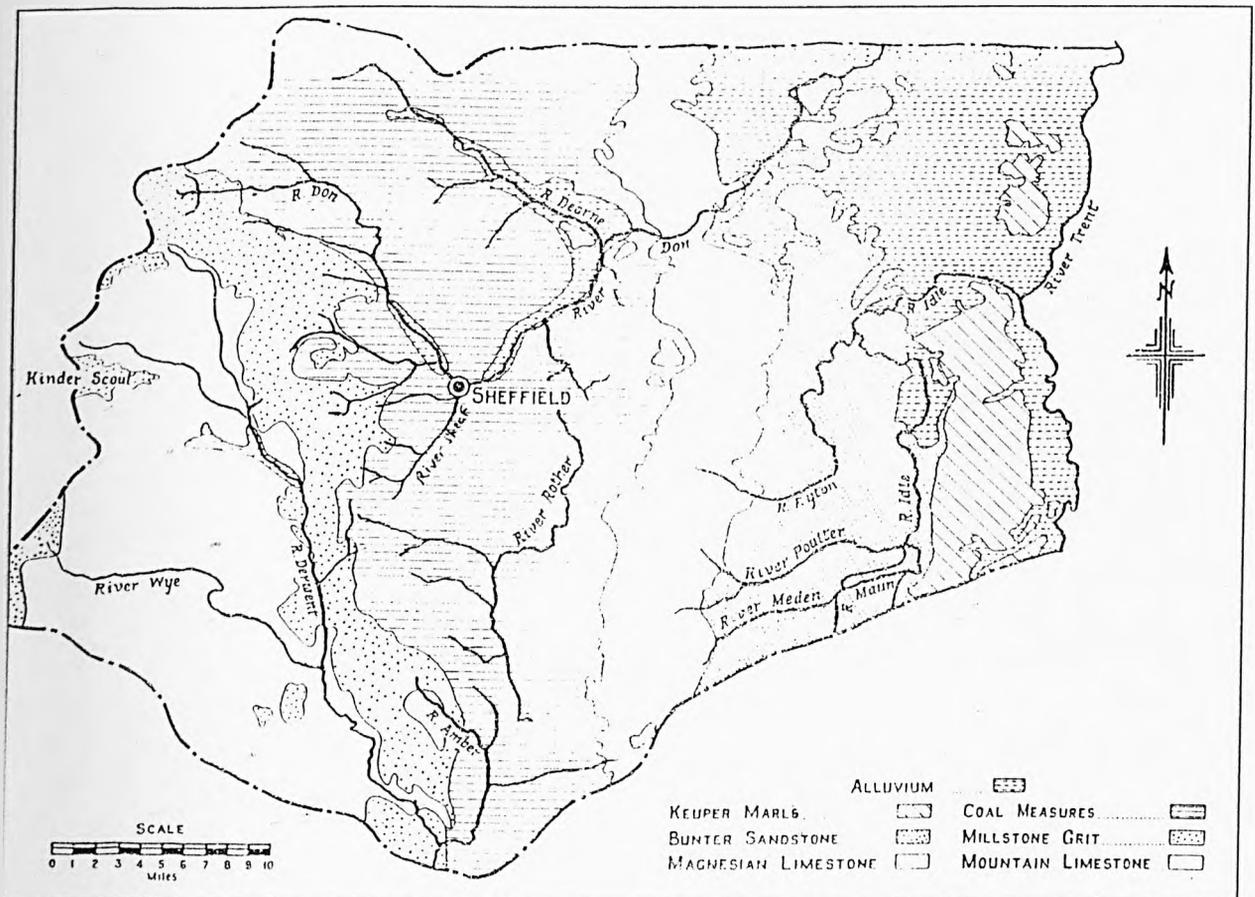
<sup>3</sup> P. Laxton: "Wind and Water Power" in J. Langton and R.J. Morris eds: *Atlas of Industrialising Britain 1780-1914* (Economic History Society et al, London) 1986 pp69ff). A nearer rival to Sheffield was the Stroud district of Gloucestershire, an important centre of the West of England cloth industry. My estimate based on a map in J. Tann: *Gloucestershire Woollen Mills* (Newton Abbott) 1967 p47 suggests c85 sites per 10 x 10km.

<sup>4</sup> Cited in H. Armitage: *Chantry Land* (Sheffield) 1981 p77

the proliferation of water power on local streams becomes much more understandable. Nor were lesser individuals excluded from direct gains. Single grinding troughs, for example, were available to rent, even for a day or half a day per week on some sites. Parker Wheel (Don) seems to have been allocated by the Norfolk estate specifically for this purpose during the first half of the eighteenth century, and numerous examples of divided sites and sub-letting have been found on all the streams.<sup>6</sup> It was, therefore, possible for grinders, cutlers and others to take their first small entrepreneurial steps.

### TOPOGRAPHY AND GEOLOGY

Fig. 8.1 Sheffield and its Region (from D.L. Linton 1956)

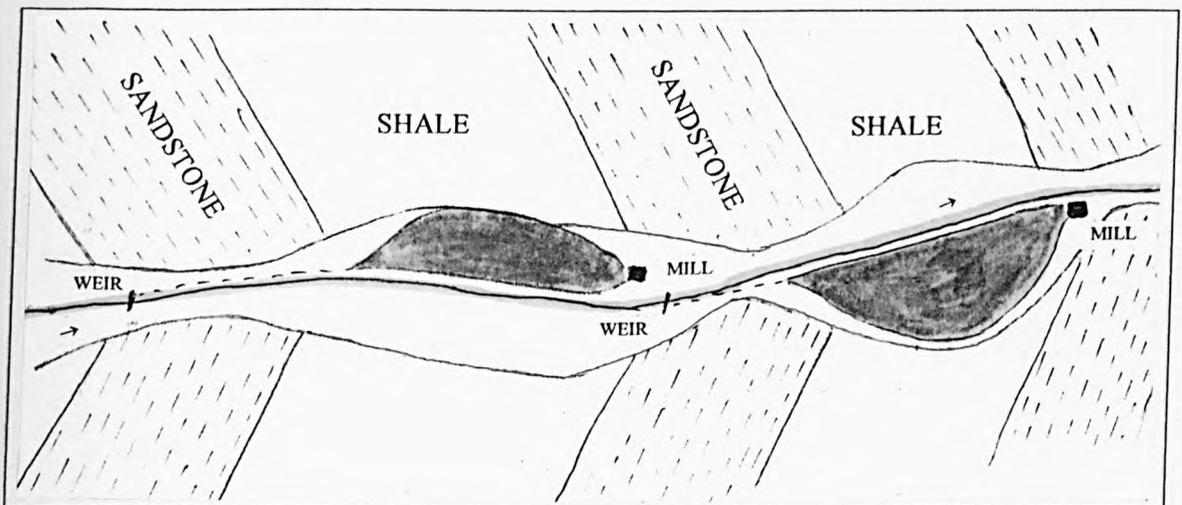


The rivers - Don, Loxley, Rivelin, Porter and Sheaf - and their principal tributaries rise for the most part on the peat covered Millstone Grit of the Pennine slopes to the west

<sup>6</sup> ACM S158 series; D. Crossley op cit p ix. In 1768 Joseph Wilson of Sharrow allowed Matthew Booth and Thomas Rodgers to have two troughs each at 1s 9d per trough at his wheel on the Porter "as long as there was water to spare". He would give a week's notice to leave when water was scarce (NRA 250 Deeds).

of Sheffield. Then they flow almost exclusively over the Coal Measures till their waters merge in or near the town centre before heading north-eastwards towards Rotherham and Doncaster. The moorland peat is most significant for the water supply. Falling rain soaks into it as into a sponge and is released in gentle flow over a long period. Hence some fifty square miles of peat moorland furnish the five streams with a considerable reserve of water which is reliable throughout the year except in conditions of prolonged drought. The sandstones and shales of the Coal Measures covered by a relatively thin layer of soil are not as successful as peat in retaining precipitation. In periods of heavy rain water tends to flow directly into the rivers causing them to flood. However, the rock is aquiferous and, again with exception of times of drought, at least another fifty square miles supplement the flow via little springs and streams, the result of seepage at outcrops and upward pressure in gullies.<sup>7</sup>

Fig. 8.2 Sandstone and shale outcrops simplified.



In addition to these advantages of a good water supply, the deltaic geology of the coal measures in Sheffield's river valleys creates frequent natural locations for water powered sites. On all but the Don, numerous examples occur of the characteristic herring-bone pattern of alternately outcropping sandstone and shale across the stream.<sup>8</sup> The results are twofold - firstly the gradient of the river is usually steeper and its flow faster over the sandstone, and secondly valley profiles are markedly influenced by the

<sup>7</sup> N. Flavell op cit p2ff.

<sup>8</sup> Geological Survey on 6 inch OS Map 1955



underlying rock. The steeper sandstone river valley is narrow, whereas the shallower shale counterpart is wide. The wide valley provides an appropriate site for a by-pass dam, and a goit taken from a weir constructed at the top of the sandstone band above it facilitates a rapid build up of a head of water.<sup>9</sup> The mill is positioned below the dam where the valley narrows (the outcropping of the next sandstone band) and the tail water is efficiently evacuated by the steeper flow of the stream with reduced likelihood of backwatering. If the gradient is sufficiently steep, mills can be placed in close proximity to each other, major limiting factors being (a) sufficient head being built up to provide power, (b) adequate space for a suitably sized dam, and (c) enough fall between the tail goit of one mill and the high water level of the next dam below.<sup>10</sup> In theoretical terms a twelve foot head is possible every 400 yards (and four heads to the mile) if a river has a gradient of one in one hundred.<sup>11</sup> In reality the gradient varies, rivers meander and the topography is such that there are not in corollary suitable sites for dams every quarter of a mile. However, apart from the Don, Sheffield rivers have a steeper incline than the illustrative one above and were thus enabled overall to reach or exceed the hypothetical average of four sites per mile. Both Loxley and Sheaf in fact matched that figure, with the Porter at five to the mile and the Rivelin six. The more gently falling Don with only three per mile lowered the average for the whole area again to approximately four, but still a very intensive usage.<sup>12</sup>

A potential problem of the Don's more shallow gradient was partially solved in some instances by several works sharing a weir. At Wadsley, for example, Wadsley Bridge Paper Mill (later Tilt), Wadsley Bridge Mill (later Forge) and Wadsley Forge all ran in tandem from the large weir at Niagara.<sup>13</sup> Downstream at Old Park, the Corn Mill (later

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<sup>9</sup> "Dam" is the historic local term invariably used by owners, tenants and surveyors for the pond or reservoir of a water-powered site. The vast majority of dams were of the by-pass type situated at the side of the stream and at times cut into the hillside for greater storage capacity. An angled weir deflected water into the dam via a shuttle and head goit. Only Fulwood Corn Mill (Mayfield Brook, a tributary of the Porter) and Old Forge (upper Porter) had a cross-valley pond or dam.

<sup>10</sup> The raising of the level of Cooper Wheel Dam (Sheaf) in 1755 led to backwatering at Heeley Tilt immediately upstream. A new tail goit for the latter was the agreed solution (ACM S475)

<sup>11</sup> Or four metres head for every 400 metres.

<sup>12</sup> D. Crossley *op cit* figs 5, 27, 59, 81 & 109

<sup>13</sup> *ibid* pp x & 6ff The old Wadsley Furnace had also been on the site (p7).

Club Mill), Paper Mill (which probably became a second Silver Rolling Mill) and Silver Mill shared the weir some 500 yards above the confluence of the River Loxley.<sup>14</sup> Further downstream still, Kelham Wheel (afterwards smaller Cotton Mill), the Silk (later Cotton) Mill and Town Corn Mill jointly used the enormous Kelham weir, one of the largest in the area.<sup>15</sup> Occasional examples of two works sharing can also be found on other streams - at the two Wisewood sites and at Cliff and Low Matlock (Loxley), at Upper and Nether Lescar (Porter) and at Upper and Second Coppice (Rivelin).

#### KEY PERIODS OF EXPANSION

Four works per mile frequencies, of course, illustrate the system at its peak in the last quarter of the eighteenth century. The development of those sites must now be examined to illustrate the pattern of growth, bearing in mind that not all building dates are precisely documented. We rely rather on a broader picture of increase beginning somewhat earlier than the 1740 parameter. Expansion of Sheffield's industry in the eighteenth century is reflected in the rate of building of water powered grinding wheels, tilts, forges and various mills, with a surge of such building in the fifty years or so following 1720. In that period over half the 115 identified sites are first recorded, the large majority being wheels providing continuing additions to grinding capacity.<sup>16</sup> Concurrently, however, a significant number of conversions from grinding and other uses to tilting, forging, slitting and rolling were made. In 1730 only five forges were in operation - the two at Attercliffe, and one each at Wadsley, Mousehole and the Ponds.<sup>17</sup> During the 1730's tilts were constructed at the Ponds and at Brightside, and by 1770 a further dozen forges or tilts had been added - at Middlewood (possibly two in this period), Beeley Wood, Wicker (two) and Owlerton on the Don, at Glass and Birley Meadow on the Loxley, at Walkley Bank on the Rivelin, at Old Forge (and Whiteley Wood Rolling Mill) on the Porter, and at Heeley and in the Ponds on the Sheaf. Such additions effectively trebled the number of sites, if not capacity.<sup>18</sup> Then in the decade

<sup>14</sup> *ibid* pp10 & 11

<sup>15</sup> *ibid* pp14 & 15

<sup>16</sup> 44 cutler wheels, twelve tilts, forges or rolling mills and six others - three paper mills, a silk (later cotton) mill, a silver rolling mill and a corn mill. Using the first known reference as the only criterion currently available, the grinding wheels appear in surprisingly even spread at about ten per decade 1720-1759.

<sup>17</sup> It seems likely that Norton Hammer had already been converted to grinding by 1730.

<sup>18</sup> The figures give a clear response to part of the question raised in D. Crossley op

following 1779 William Dunn noted three new tilts, two new slitting mills and three forges, a supplementary increase of over 40 per cent in numbers, and all additions to or conversions of existing sites.<sup>19</sup> This was by no means the end of the expansion. Smithywood Wheel (Sheaf) became a tilt in or about 1791, Wadsley Bridge Paper Mill and Corn Mill (Don) had become a tilt and a forge respectively by 1806, Clough Wheel (Sheaf) was converted into a forge about 1810, and around the same time Low Matlock and Wisewood (Loxley) were similarly developed.<sup>20</sup> Although the rise in total sites, after Dunn's list, was only a little more than twenty per cent over a thirty year period, water-powered tilting, forging, slitting and rolling began to be supplemented by steam. The engines so devoted before 1820 may well have doubled that percentage rise for new capacity.<sup>21</sup>

William Dunn also commented on a sharp rise in the number of grinders - 250 in the ten year period of his list. As some of the tilts, mills and forges were developments on sites of wheels it may be asked how ongoing expansion of grinding took place alongside the increase in capacity of forging and slitting which at first sight appear to be eroding grinding facilities in certain areas almost as quickly as they were being added elsewhere. A closer examination of the history of some of the individual wheels of three of Sheffield's rivers - Loxley, Rivelin and Porter - provides at least part of the answer. Where numbers of troughs are known at different dates, the changes can be clearly seen, and, as applicable, a comparison made with information provided by the printed 1794 list which has been found to be a reliable bench mark in water power history.<sup>22</sup> On the Loxley, for example, Whitham Wheel increased from 5 to 10 troughs between 1781 and 1792, Olive Wheel from 8 to 25 between 1714 and 1794, Limbrick

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cit (p viii) as to how forging was expanded to match the increase in grinding capacity. For the other part re steel capacity see Chapter 3.

<sup>19</sup> MD 1747 New tilts at Loxley, Little London & Beauchief Abbey (ie Abbeydale); new slitting mills at Owlerton, in the Wicker and the Ponds; and new forges at Nova Scotia, Mousehole and the Ponds.

<sup>20</sup> D. Crossley op cit

<sup>21</sup> See the second part of this chapter and Fairbank NB 29 & 34. Although the Fairbank calculations for respective horsepower of water and steam driven units are for the late 1820's and mid-1830's, the general picture given is for a steam engine to provide up to twice the power of a water wheel at any site where one of each was in use (eg Lead Mill 7½hp water/16hp steam, Pond Mill 11/17 and Sharrow Snuff Mill 8/14½).

<sup>22</sup> D. Crossley op cit p viii.

from 24 to 48 between 1768 and 1794, Owlerton from 18 (3 x 6) to 44 (20 + 24) between 1768 and 1799 and Birley Meadow from 10 to 24 between 1794 and 1801.<sup>23</sup> On the Rivelin, Frank Wheel had a new end in 1756, Swallow increased its troughs from 4 in 1745 to 5 by 1766 and to 13 by 1794, Plonk rose from 4 to 5 between 1759 and 1794 and Nether Cut from 4 to 9 between 1761 and 1794, having been rebuilt in 1777. On the Porter, Holme (Second Endcliffe) Wheel was rebuilt in 1769 and increased its capacity from 4 troughs to 11, Stalker rose from 10 to 15 between 1794 and 1798 and Sylvester, with a new dam in or shortly after 1769, increased its 4 troughs to 20 by 1794. Many others for whom no comparative details are available increased the size of their dam or, in some cases had an additional one excavated. Not all wheels, of course, increased their troughs, but sufficient numbers did so, some very significantly, for Dunn's new grinders (above), and others before and after, to be accommodated.

#### TECHNOLOGICAL PROGRESS

A reason for such quantitative improvements in trough capacity, and hence dramatic effect on output, must have been not only more or bigger dams, but advancing technology, particularly of water wheels. David Crossley describes typical pre-1750 wheels excavated from iron forges and furnaces in other parts of Britain often ten to twelve feet in diameter and one to two feet wide with spokes morticed into the axletree.<sup>24</sup> Such wheels were all wood in construction, and attempts to increase their size (and hence power) were fraught with problems as the extra or bigger holes for the spokes in the wooden axle weakened it, making it even more vulnerable at the position of greatest torque. As a result many millwrights preferred a clasp arm construction, but again that was weakest at the points of contact with the axletree.<sup>25</sup> In spite of such difficulties, a good number of Sheffield water wheels had been considerably enlarged by the mid-1790's. Rivelin Tilt had an eleven feet six inches head and fall and a water wheel six feet ten inches wide; Sylvester Wheel had figures of twelve feet six inches and eight feet respectively. The Cotton Mill had a four feet head and fall and a wheel

<sup>23</sup> The 1794 list may have underestimated the number of troughs in that year.

<sup>24</sup> D. Crossley op cit p xii

<sup>25</sup> L. Syson: *The Watermills of Britain* (Newton Abbot) 1980 p73 The thickness (and hence the strength) of the wooden axle was reduced by squaring its section at the two fastenings to the water wheel. Torque equals the weight of water carried in the buckets multiplied by the diameter of the wheel (p75).

nineteen feet in diameter and twenty-one feet wide.<sup>26</sup> In 1812 the "Old Flour Mill" in the Ponds, apparently abandoned during the 1780's when the lease was not renewed, was appraised by Fairbank. The head and fall and wheel diameter were both eight feet, and the width twelve feet.<sup>27</sup> To achieve such dimensions, local millwrights almost certainly used some cast iron. The major influence here was John Smeaton, from the 1760's. His usage of this metal, first for the axle and then for parts of the wheel, was widely adopted in Britain, yet with some wooden elements retained.<sup>28</sup> Smeaton had drawn up plans for the Duke of Norfolk's mill at Canklow, near Rotherham, in 1766 to 1767, so his technology would be familiar in the region.<sup>29</sup> Walkers of Rotherham had a "new cast-metal spur wheel" in 1782, and a new cast iron wheel at 'Thribro' Forge a decade later.<sup>30</sup> Nothing firm, however, has yet emerged for Sheffield.

In the absence of archaeological or documentary evidence as to the exact nature of the constituent parts of eighteenth century Sheffield water wheels, the few detailed Sun Fire Insurance valuations may give some limited insight.<sup>31</sup> For example, utensils, water wheel and "going gear" at Leather Wheel (Porter), built c1754, were insured for £10 only in 1783. Two comparable sets of equipment at the Rolling Mill (formerly Cooper Wheel), upgraded in 1765, were each put at £50 in 1777, the same as the buildings which housed them. The two Clough Wheels (ie the buildings), rebuilt in the 1760's, were insured together for £300 in December 1779, and their water wheels with "going gears" for £100 each.<sup>32</sup> Implications are that the latter were so superior to that at Leather as to be not only bigger, but of different quality. The principle applies also to bearings, running gear, belting and other moving parts.<sup>33</sup> In this regard, it is reasonable

<sup>26</sup> Fairbank NB 3 (c.1795) The wheel diameter is not stated for the first two.

<sup>27</sup> Fairbank NB 15

<sup>28</sup> L. Syson op cit p73 John Smeaton was awarded the Copley medal in 1759 for his paper presented to the Royal Society; D. Crossley op cit p xii.

<sup>29</sup> C.A. Ball: *Millwrights in Sheffield and South Yorkshire 1550-1900* (MA thesis University of Sheffield 1992) Chapter 5.

<sup>30</sup> ibid

<sup>31</sup> Some Sun entries give insured sums for parts of industrial properties without noting details. For example, a house and two snuff mills at "Sparrow (ie Sharrow) Moore" were insured for £980 in 1785 (Sun Fire Office Records, Guildhall Library, London 11936/328/503233).

<sup>32</sup> Sun Fire Office 11936/255/380989 (Rolling Mill), 271/407367 (Clough Wheel) & 301/456449 (Leather Wheel); D.Crossley op cit pp74, 109 & 110

<sup>33</sup> Unlike corn mills, grinding, forging and rolling mills did not need to transmit power through ninety degrees.

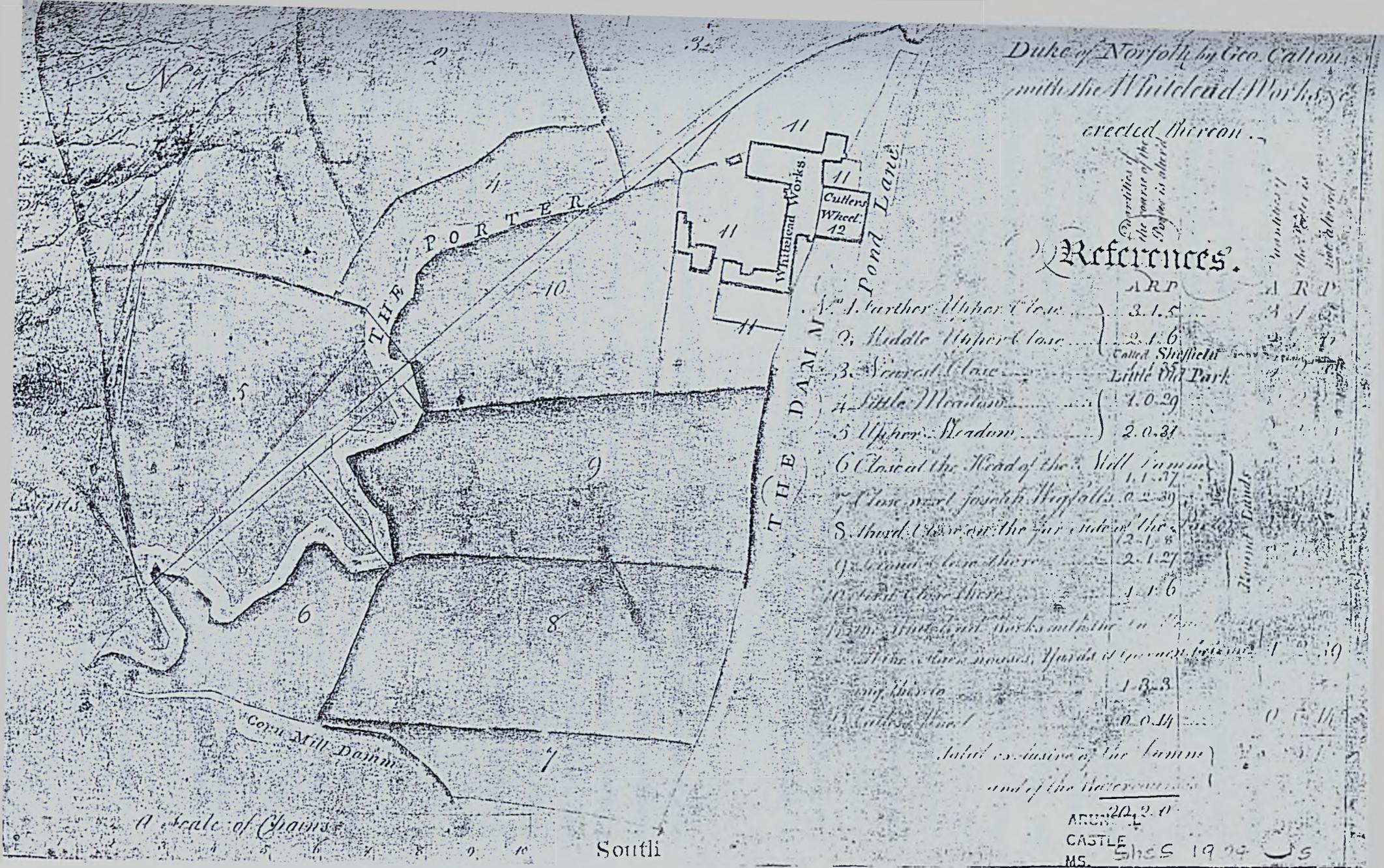


Fig. 8.4 River Straightening near the White Lead Works (SheS 1924S c1775)

to suppose that the Silk Mill, having had more than £12,000 spent on it between construction in the early 1760's and sale in 1774, would have the most modern wheel and "going gear" technology.

Besides increases in reservoir capacity and improvements to water wheels, other elements of technological or related change also made their contribution to output. Both Porter and Sheaf were straightened in their lower reaches to improve flow, and numerous goits throughout the system were widened or otherwise upgraded.<sup>34</sup> During the course of the eighteenth century a number of sites, particularly on the Rivelin, had their water wheel foot set lower than the stream to increase head and fall, and hence power delivered. Evacuation of tail-water was via a long outflow of more gentle gradient than the stream to join when levels were equated. Sharrow Moor Wheel (later Snuff Mill) on the Porter took this principle to its extreme by culverting the tail-goit under the meandering river in order for it to rejoin the main flow more conveniently on the other bank.<sup>35</sup>

Despite the developments outlined, and allowing for further improving design of sites, water-wheels and other equipment, the capacity of the area's rivers was essentially finite. With its average of four mills to the mile the whole system was distinctly congested by the mid-1770's when virtually every possible location was in use. But industry's demands continued to increase. New grinding, forging, slitting and rolling facilities had to be found, and not least to cover those periods of drought or frost when water powered working became severely reduced or even impossible.<sup>36</sup>

#### THE EMERGENCE OF STEAM

The 1794 list discloses that already rotary steam engines were operative and beginning to fulfil many of these requirements. In fact the list names five such engines although there were at least seven working in and immediately around Sheffield.<sup>37</sup> First by

<sup>34</sup> D. Crossley op cit pp 80-82, 109 & 113-114; Fairbank FB19 f157, FB20 f95, FB29 f148, BB32 f154, BB34 f65, BB37 f133, BB68 f168, BB82 f35, BB85 f16, BB89 f20, BB95 f1 & BB98 f40/45

<sup>35</sup> D. Crossley op cit p xii and 81

<sup>36</sup> It is possible that more horse mills were in use than the single one operated by Messrs Tudor & Leader in the early 1760's (Guildhall Library, London, Sun Fire Office Records MS 11936/282/426675). None have been found.

tradition was that of Proctors (Messrs Bailey, Proctor & Turner *et al*, opticians and manufacturers of lenses) at the foot of Park Hill on the River Sheaf in 1786.<sup>38</sup> The relevant lease is dated 1792, but for 93 rather than the currently usual 63 or 99 years.<sup>39</sup> Assuming a 99 year term backdated by six years we have 1786 as a beginning. No doubt a good number of the 100 troughs and 120 hands would be grinding glass, but the remaining metal grinding capacity of such a steam driven works would have been equivalent to that of several new moderately sized water powered cutler wheels.<sup>40</sup> In total more than 300 steam driven troughs were built between 1786 and 1794.

A rotary engine belonging to Stephen Smith, silver plater, and Christopher Oates, cutler, built on 1600 square yards in the Wicker in or soon after 1787, is not listed.<sup>41</sup> Unfortunately no information has yet been found as to its use, although it was still in operation in 1800 in the hands of Messrs William and Samuel Smith, merchants.<sup>42</sup> Another, the third (listed), was built between 1789, the date of the lease of 3918 square yards at Clayton Dam Fields,<sup>43</sup> and 1791 when two of the original partners withdrew.<sup>44</sup> At this time 23 users of the grinding wheels are named, but no total is given for the number of troughs (of which there were 100 by 1794).<sup>45</sup> The end of the partnership coincided with an advertisement for sale of a cylinder.<sup>46</sup> Was the power inadequate? It

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<sup>37</sup> Messrs Kenyon & Co, Ponds, with 120 troughs and 140 hands, Messrs Bailey & Co's Park Steam Wheel with 100 troughs and 120 hands, Messrs Ward & Ellis's Steam Wheel and tilts, Shalesmoor, with 100 troughs and 95 hands, Mr. Parkin's Steam (Rolling) Mill, Gibraltar, and Mr. Hartop's Steam Corn Mill, Attercliffe, are listed. A steam engine erected by Christopher Oates and Stephen Smith in the Wicker and one at the Cotton Mills of Heathfield & Co are not.

<sup>38</sup> This date is in the 1797 Directory, the Local Register and in numerous histories. The first known local "fire engine" was draining a mine on Attercliffe Common by 1771/72 (Thomas Jefferys's Map).

<sup>39</sup> ACM S383 f156 The steam wheel was already erected at this date.

<sup>40</sup> 1794 Printed List

<sup>41</sup> ACM S383 f33 (a 63 year lease, extended to 90 in 1794) and S158 LD 1787 f14. The first rent for the engine was paid at Lady Day 1788, £6 for the half year. Fairbank appraised the slating of engine and wheelhouse in February 1788 (BB73 f58)

<sup>42</sup> ACM S158 LD 1800 f57

<sup>43</sup> WRRD DB 266 322 Samuel Staniforth, linendraper, to Montague Taylor, bricklayer, Joseph Ward, steel refiner, John and Samuel Ellis, filesmiths, and John Bown (Bradford) engineer.

<sup>44</sup> WRRD DF 538 687 (Taylor) & DF 540 689 (Bown).

<sup>45</sup> 1794 Printed List

<sup>46</sup> Register 10th June 1791 The cylinder was 35.5 inches by 7 feet 8 inches.

seems very likely, for by March 1792 this site had two steam engines, one for grinding cutlery ware, the other for tilting steel.<sup>47</sup> Surviving partners, Ward and Ellis were in financial difficulties in 1803 when one part of the works was sold to Joseph Bailey *et al* with the tilt and one of the engines.<sup>48</sup> The original steam driven grinding wheel above must have been retained or disposed of separately, because it was eventually put up for auction with ninety-seven troughs in 1815.<sup>49</sup> No further trace of it has been found in WRRD. In 1810 and 1812 the steam tilt was first offered for sale and then auctioned.<sup>50</sup> In its place, new owners Younge and Deakin, button manufacturers and silver platers, built a plated copper rolling mill of which they remained proprietors till their bankruptcy in 1817.<sup>51</sup> A twenty horsepower engine driving seven pairs of rollers for plated copper, brass and Britannia metal is described in an auction notice in the *Iris*.<sup>52</sup> James Dixon and Thomas Smith, Britannia metal manufacturers, became successors in 1819.<sup>53</sup>

Messrs Heathfield & Co. of the Cotton Mills advertised for "an experienced Steam engine Manager" in the *Sheffield Register* of the 6th May 1791. Although they were not listed, it seems likely that they were operating with steam in 1794. By the time of Heathfields' financial difficulties in 1812 there were two engines, one in each of the two cotton mills, and newly erected engine houses in 1815 when the premises were assigned to Walkers, Eyre and Stanley, the firm's creditors.<sup>54</sup> The subsequent auction advertisement describes two Boulton & Watt engines of eighty-six and twenty horsepower respectively.<sup>55</sup> Also in 1791 (and listed in 1794) William, John and George Hartop ironmasters and copartners of Brightside took out a lease of Washford Meadow "on part of which a Corn Mill to be worked by a Steam Engine is now erecting".<sup>56</sup> Ten years later the premises were assigned to William Spooner and Joseph Deakin gents who immediately advertised the corn mill to let with its 45 inch diameter cylinder.<sup>57</sup>

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47 WRRD DH 580 733 & DL 206 244, and confirmed in the 1794 Printed List.

48 WRRD EP 109 155

49 *Iris* 28 Feb 1815

50 *Iris* 30 Oct 1810 & 21 July 1812; WRRD FW 236 218

51 WRRD GS 247 257 & GZ 22 31

52 *Iris* 21 Oct 1817

53 WRRD HA 611 616 This site appears to be the later named Cornish Place.

54 WRRD GB 681 767 & GH 263 294

55 *Iris* 21 Feb 1815 The former is noted as two years old, the latter six months.

56 WRRD EG 492 631

The mill with thirty-eight horsepower engine and ten pairs of assorted stones was offered for sale in 1817.<sup>58</sup>

The remaining two listed engines were at Gibraltar and the Ponds. The former was first noted in the sale of a moiety of steel furnaces, slitting mill, tilting and other mills to John Parkin, steel caster, by John Hague of Walkley in 1793.<sup>59</sup> In the 1794 Printed List it is called a "Steam Mill". Later that year Parkin's moiety was assigned to creditors who in 1796 had the premises auctioned including a newly erected rolling mill.<sup>60</sup> In 1803 the mill building was assigned as a circus or riding school. It did not revert to its former use, becoming a Lancasterian school by 1815.<sup>61</sup> The Ponds engine is mentioned in an auction of Jonathan Bamforth's share in the forge complex (1796), and then with greater detail in the Norfolk sale of the whole site to Philip Frith, George Woolhouse and John Kenyon in 1805 when a slitting mill was being steam driven.<sup>62</sup> A Fairbank plan of the same year confirms the location of the engine near to the lower forge and the concurrent operation of three water wheels.<sup>63</sup> A later appraisal (1813) by the same surveyor attributed to the steam engine of that period "double power", a firm indication of a Watt patent. It appears very likely, for reasons given below, that this description does not refer to the 1790's unit. Fairbank also gave the following details: a forty-four and a half inch cylinder, an eight foot stroke and sixteen strokes per minute. It used twenty tons of coal in a seventy-two hour working week.<sup>64</sup> The works continued with water and steam power (eventually in the hands of Marsh Brothers) until the coming of the Midland railway.

Relatively little is known of the design or construction of the eighteenth century engines described. We learn of the size of cylinder used or the horsepower in some

<sup>57</sup> *Iris* 28th May 1801; WRRD EG 493 632/633

<sup>58</sup> *Iris* 25 Feb 1817

<sup>59</sup> WRRD DN 114 159 The site had furnaces but no steam engine in March 1792 (DK 527 667).

<sup>60</sup> WRRD DN 724 898, *Courant* 16th August 1796. The rolling mill was 96 by 60 feet and offered with a 16 pot cast steel foundry and a 7 ton capacity cupola furnace.

<sup>61</sup> WRRD GF 38 44

<sup>62</sup> *Courant* 2 November 1796; WRRD EY 2 2 ff

<sup>63</sup> ACM SheS 1936

<sup>64</sup> *Encyclopaedia Britannica* (1950 edn) Watt Patent 1782; Fairbank CP4 f92 160 corves, each 2½cwt, at 9d per corve

cases, but not a great deal more. Only one engineer is named - John Bown (sic) of Bradford who was a partner of Ward and Ellis in the early years of the Shalesmoor grinding wheel.<sup>65</sup> It seems quite probable that no engines were built under Boulton and Watt's licence by the time of the 1794 Printed List as John Shearwood, a Sheffield attorney, in a letter of that year stated that to the best of his knowledge the only persons "in this part of the country" with such a licence were Messrs Walkers of Rotherham. However, one of Shearwood's clients (unnamed) was clearly expressing interest.<sup>66</sup> Some Boulton and Watt engines were certainly built later as already seen.

Soon after publication of the Printed List, and probably during 1795, steam power was added at the Rolling Mill, formerly Cooper Wheel, on the Sheaf.<sup>67</sup> This was the first known local use of steam for the processing of silver and fused plate. The following year, references to running costs of a new engine to supplement water power begin to appear in extant Sharrow Snuff Mill (River Porter) accounts.<sup>68</sup> Built by Smith, Stacey & Co. of Sheffield for £387-7-7, the unit had a boiler weighing nearly two tons.<sup>69</sup> No mention is made of its patent. Further details of repairs and replacements are in the accounts - to restore the "engeon back broke" in 1806 and 1808, and to change the boiler in 1815. Fairbank made a valuation of the whole in 1819, perhaps leading to a review, as a larger, completely new, steam engine made at Park Foundry was installed in its place within two years.<sup>70</sup> These mid-1790's innovations seem to mark the end of new sources of rotary power before the turn of the century. Steam had now been applied to all of Sheffield's traditional or adopted types of water powered activity other than paper making.

In the early years of the nineteenth century, the best documented new steam works is Soho Grinding Wheel for which a ledger and a rent book survive, as well as information in Fairbank Building Books.<sup>71</sup> The three storey wheel, variously described

<sup>65</sup> WRRD DF 538 687 and DF 540 689

<sup>66</sup> MD 3985 (63) Nothing has been found hitherto in the Boulton Archives in Birmingham to contradict Shearwood's view.

<sup>67</sup> Fairbank NB 3 Extra dam capacity was added in 1795 (BB80 f80 & ACM S1922S).

<sup>68</sup> M.H.F. Chaytor: *The Wilsons of Sharrow* (Sheffield) 1962 p62

<sup>69</sup> *ibid* (calculated from its scrap value.) According to the 1797 Directory, Smith, Stacey & Co. were at Paradise Square.

<sup>70</sup> FB152 ff82/83; M.H.F. Chaytor *op cit* p63

as being in Coulson Crofts and Bridge Street, was built in 1802 and 1803 by its eight proprietors. The building had 16 rooms, 76 troughs and 31 over-bands in 1806. It provided power for 11 scale grinders as well as for more conventional blade grinding. The half yearly rent amounted to more than £400 in that year and nearly £600 in 1807. In 1809 James Montgomery printed "Articles for the Government of the Proprietors of the Soho Engines", reiterating details of the original deed including proprietorship by the holding of £50 shares which were saleable, but only in whole shares. Preference of use was to be given to shareholders' workmen.<sup>72</sup> By the end of the rent book (1815) rents were being collected quarterly and there is clear evidence of intermittent working by tenants as the trade depression inhibited local manufacture.<sup>73</sup>

The name of the undertaking hints strongly at a Boulton & Watt connection which is fully corroborated by a letter of 1802 from Thomas Dunn to his father William who was working away from home at the time.<sup>74</sup> It makes abundantly clear the reason for the continued new application of steam power to the local trades: "Grinding room is so scarce that there are about 200 grinders which can not get a trough in the Corporation, a new Steam Engine is subscribed for and land bought in the Crofts for it. It is to be a 40 In Boulton's double powered one to carry two hundred hands. £5000 was subscribed for it in an hour. .".

Considerably smaller was the engine "in full working state" offered at auction with the Coulson Croft carpet works of Mr. Joseph Wildsmith when old age forced him into retirement in 1804.<sup>75</sup> Two years later, after Wildsmith's death, the six horse power steam engine, erected by John Curr and set on a wooden frame, along with other

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<sup>71</sup> MD 711 (ledger 1802-1813) & MD 712 (rent book 1806-1815); BB84 f35 & BB85 f1. Steam power was considered at the Walk Mill (Don) in 1802 when William Dunn prepared an estimate for an engine to reduce dependence on water (MD 1738 f154), but in the subsequent mortgages and Norfolk sale only water power is mentioned.

<sup>72</sup> SCL Local Pamphlets 211 No. 8, and evidence for the development of firms larger than those associated with traditional "little mesters".

<sup>73</sup> *Iris* 2 Mar 1813, 21 Mar 1815 & 1 Oct 1816

<sup>74</sup> MD 1738 Bundle 2 f151 Further support is a vaguely worded advertisement of 1811 for "a steady man to work and manage a Bolton (sic) Patent Engine in Coulston Croft" which seems to refer to Soho (*Iris* 12 Mar).

<sup>75</sup> *Iris* 16 Aug 1804 The proprietor was "advanced in years and declining business".

machinery, looms and so on, was again put up for auction.<sup>76</sup> Joseph Wildsmith, carpet weaver, had taken out a number of Norfolk leases in that area in the 1780's and 1790's and the family had held property there since at least 1738.<sup>77</sup> Unfortunately no other details have been found for the engine. If it was transportable, or at least easily moveable, as the wooden frame suggests, that is good reason for there being no mention of an engine house or other fixture in subsequent WRRD registrations of the properties. However, the same engine, it appears, was still "in full employ" in 1809 when the carpet manufactory was offered for rent and the engine for sale.<sup>78</sup> In the same neighbourhood, John and Josiah Gallimore, screw and hinge makers and with a new co-partnership, had an engine house in September 1806 which they appear not to have had a year previously.<sup>79</sup> The screw mill and "powerful steam engine" were put up for sale or let in 1809. At the time, eleven tenants were using power.<sup>80</sup> This property, let to Messrs Whitham, Hattersley & Moake, suffered a fire in 1810. Still with steam engine and engine house it was sold on in 1815 to George Whitham and George Hattersley, filemakers.<sup>81</sup> They were still the owners at least to 1818.<sup>82</sup>

Four more engines appear in the records close together from 1811.<sup>83</sup> From associated earlier Memorials it seems unlikely that any were more than two or three years old. Booth & Co. had their Park Works valued for rating purposes in June of that year. Some details of a new steam engine are given: a twenty-eight inch diameter cylinder and six foot stroke acting sixteen times per minute, but it is not clear if this is of rotary action.<sup>84</sup> In August 1812 Messrs Gregory, Barlow and Chambers, ironfounders, of

<sup>76</sup> WC 3278 (16) A printed poster advertising the auction 27th February to 1st March. John Curr was an engineer and former viewer of the Duke's colliery in the Park.

<sup>77</sup> ACM S382 f24 with messuages and workshops, 1780; S382 f90 1781; S383 f140 1792; S377 f47 1738 (an "at will" lease to Joseph Wildsmith, weaver).

<sup>78</sup> *Iris* 11 April 1809

<sup>79</sup> WRRD FG 185 275, EX 127 178 (The buildings in this memorial are rather vague)

<sup>80</sup> *Iris* 23 May 1809

<sup>81</sup> *Iris* 27 Feb 1810; WRRD GD 680 773 & 682 775

<sup>82</sup> WRRD GW 98 80

<sup>83</sup> On 15 June 1813 (*Iris*) John Wood of the Park advertised the sale of a 4 hp steam engine on the Boulton & Watt principle. There is no indication of its origins or use.

<sup>84</sup> Fairbank BB97 f1 A valuation earlier the same year (BB95 f28) describes the existing 30 hp engine as having a "metal beam".

Furnace Hill and Snow Hill mortgaged a foundry, warehouses, workshops, an engine house and boring mill. By 1815 what had now become the Phoenix Foundry had changed hands and the steam engine was driving a grinding wheel as it was the following year when a mortgage was registered.<sup>85</sup> It was still with the same proprietors, Henry Longden and Co, in 1822.<sup>86</sup> In April 1813 George Hodgson (Little Sheffield), merchant, mortgaged to Parker, Shores and Blakelock 3603 square yards near Bennett Wheel and "a building now used for the tilting and rolling of iron and steel" along with steam engine and engine house.<sup>87</sup> Its location strongly suggests that here was the forerunner of the Vulcan Works.<sup>88</sup> The fourth of this later group of steam engined sites, in the Nursery and abutting Johnson and Stanley Streets, was leased for 800 years by Charles Brookfield in 1814 to Michael Hesling, engineer (only the third such specialist to be mentioned in all the data), who assigned it (possibly a sub-lease) in October of that same year complete with engine to William Clarke, builder. The steam engine was described as driving a "Cutlers' Grinding Wheel".<sup>89</sup> Hesling, still the main lessee, made another assignment (possibly a mortgage) in May 1815 to Samuel Petty of Beeston near Leeds, baker, and just twelve months later Clarke, apparently now the occupier, mortgaged his tenure to bankers Walkers, Eyre and Stanley.<sup>90</sup> Clarke was bankrupt in 1818, but no reference to the steam wheel has been found.<sup>91</sup> The *Iris* sale advertisement of late 1815 had noted forty-two troughs driven by a ten horsepower engine, and referred to a "steam engine manufactory".<sup>92</sup> No more evidence about this has emerged.

Another bankruptcy and *Iris* publicity of the period create a similar puzzle. James Chambers, a former partner at Furnace Hill Foundry, had as part of his assets a two and a half horsepower engine and grinding equipment, wheels, troughs etc, used by himself apparently on his premises in Hollis Croft. The engine is further described as having

<sup>85</sup> WRRD FW 102 115, GB 685 772, GL 202 204

<sup>86</sup> Directory

<sup>87</sup> WRRD FY 75 93 The lease of 1810 (FS 690 742) mentions no buildings.

<sup>88</sup> Crossley op cit p86.

<sup>89</sup> WRRD GD 126 122 and GE 540 619

<sup>90</sup> *ibid* GL 196 199

<sup>91</sup> *Iris* 17 Mar 1818

<sup>92</sup> *ibid* 12 Dec 1815 This reference and those to Smith, Stacey & Co (p154) and to John Curr as the builder of Wildsmith's carpet works' engine are the only three hitherto discovered of Sheffield-based engine construction. Curr had his own new foundry in the Park in 1797 (Directory).

been made by Peel, Williams & Co of Manchester "on Boulton & Watt's most improved principle", and the boiler capable of operating up to six horsepower.<sup>93</sup> It may be only a coincidence that a new steam corn mill built around 1817 adjoining Shude Hill near to the River Sheaf also had a Peel, Williams engine.<sup>94</sup> No mention of it was made in the purchase and mortgage of the premises in April 1817 by William Bellamy, miller, but at the beginning of January 1818 and in May of the same year the site had both engine and engine house. The mill, abutting north on the old tanyard and hence on the proposed new Gasworks, may have been destined for demolition.<sup>95</sup> More questions surround the engine, machinery, engine house and steel manufactory of George Edwards built in or soon after 1815. Edwards leased land from Thomas Holy near the junction of Steam Street and Bower Street, with an option to purchase. An 1818 mortgage of the property, confirming that all the building had been done by the lessee, also describes him as a steel manufacturer and now of London.<sup>96</sup> Edwards does not appear among Sheffield steelmakers in the 1817 Directory, or in any subsequent document. However, a bankruptcy notice for a merchant of the same name in 1816, although possibly anachronistic, may explain his non-appearance in the Directory and the move from town.<sup>97</sup>

The last new steam engine in operation before 1820 was at Union Grinding Wheel in Colson Crofts. Shares of £25 in a proposed wheel with a forty horsepower engine were already partly subscribed in December 1818.<sup>98</sup> Ten per cent calls were made during 1819, and final building work carried out towards the end of that year.<sup>99</sup> A little too late to qualify was Grimesthorpe Wheel which, in January 1820, still required £2000 for completion via an extra share issue. It had a twenty-six horsepower engine. New grinding facilities were clearly still in urgent demand.

Sheffield's rotary steam capacity of some twenty engines by 1820 had evolved, albeit quite irregularly, over three decades or so. This process can in no way be described as a

<sup>93</sup> ibid 12 Dec 1815

<sup>94</sup> ibid 10 Feb 1818

<sup>95</sup> WRRD GS 484 467 & GU 318 343

<sup>96</sup> ibid GE 457 519 & GW 433 391; MD 5742 (8)

<sup>97</sup> *Iris* 23 Jan 1816

<sup>98</sup> ibid 29 Dec 1819 £1400 had been raised by this date.

<sup>99</sup> ibid 17 Aug 1819

startling take-over from water power, almost all of which was still retained, but rather a gradual, yet significant, supplement to the over-stretched riverside sites in most aspects of local usage.<sup>100</sup> It is of further significance that only five of the new engines were at water powered locations.<sup>101</sup> Most of the remainder were in or close to the town. As for use, three-quarters of them drove wheels, tilts and slitting or rolling mills. Only a quarter were for other purposes, one for snuff and two each for corn milling and textiles. The latter were unusual for a metals town, yet the businesses, though of a minority nature, were of long standing.<sup>102</sup> The Sheffield region's industries had been powered to an increasing degree by its streams during much of the eighteenth century, encouraging advances in productivity which gave town and district such a competitive advantage, especially in the metals trades and at both national and international level. From 1786 water supplemented by steam prolonged the benefits so successfully that Hallamshire was enabled fully to establish and maintain complete dominance of cutlery and edge-tool production, to move towards that position in steel, and to enjoy front rank status in the manufacture of artefacts of silver and fused plate. Only after 1820, beginning with abandonment of the Bennett site, did steam begin to replace the traditional water wheel, by which time the region's reputation was confirmed.<sup>103</sup>

<sup>100</sup> Birmingham (town) had some 40 steam engines in 1815 (M. Berg: *The Age of Manufactures 1700-1820: Industry, Innovation & Work in Britain* [London] 1994 p271). This seems a modest total for a town at the forefront of engine design.

<sup>101</sup> Cotton Mill (Don), Sharrow Snuff Mill & Bennett Wheel (Porter), Rolling Mill (ex Cooper Wheel), Pond Forge & Park Iron works (Sheaf).

<sup>102</sup> The silk mill, converted whilst still water powered to cotton spinning, worked for forty years and more, and the carpet weaver's family for at least sixty.

<sup>103</sup> D. Crossley op cit p86

## CHAPTER 9 MERCHANTS, MANUFACTURERS AND MARKETS

Daniel Defoe reported in 1724/1726: "The Town of Sheffield is very populous and large, the Streets narrow, and the Houses dark and black, occasioned by the continued Smoke of the Forges, which are always at work. . . The Manufacture of Hard Ware, which has been so antient in this Town is not only continued but increased".<sup>1</sup> Sheffield already needed at least a national market for the cutlery goods for which the area was noted, but not yet supreme.<sup>2</sup> The growth in both quantity and quality of the local industry's products was already a clear response to expanding demand emanating from a rising population on the one hand, and from those who enjoyed improving disposable incomes on the other.<sup>3</sup> By the mid-1730's the basic transport infrastructure was in place with long established road links (however imperfect) to the whole of the country and the Don Navigation reaching Aldwarke for conveyance of goods to the Aire and Trent hinterland and, particularly, to Hull and on to the east coast ports, London and overseas.<sup>4</sup> Physical obstacles to trade were not as insurmountable as has sometimes been suggested.<sup>5</sup> The problem for Sheffield and district was, rather, one of access: local manufacturers and traders knew where all the markets were, but Hull and London merchants had a traditional hold on their respective commercial spheres. As long as ports were controlled and markets confined by these merchants there was likely to be a limited rate of autonomous expansion for the Sheffield trades other than in the provinces. Meanwhile, the groundwork of spreading the town's name and reputation to

<sup>1</sup> Daniel Defoe: *A Tour through the Whole Island of Great Britain* (1724/26) cited by D. Hey: *The Fiery Blades of Hallamshire* (Leicester) 1991 p62. See also Rev. Thomas Cox: *Magna Britannica* (London) 1720 p507.

<sup>2</sup> Cutlery was commonly a generic term for "anything that cuts": knives, razors, scissors, tools, shears, sickles, scythes, files and so on (see MD 6626ff170/171)

<sup>3</sup> There were also dangers in such narrow specialisation, as the Cutlers' Company realised, when placing an item in the [*London*] *General Evening Post* in May 1748 to the effect that they actively encouraged "Makers of Guns, Boxes, Seals, Rings, Jimmers, Locks, Toys, Tweezers, Cabinet Furniture, Buttons and Buckles" and in fact only opposed non-Freemen of the Company in matters of specific wares. The article concluded ". . . the Merchants here will use their utmost Endeavors to obtain and promote for them a Trade and Correspondence for the Vending of their several Manufactures". (Quoted by R.E. Leader: *History Of the Cutlers' Company* (Sheffield) 1906 Vol.2 p408. Roy Porter: *English Society in the Eighteenth Century* (London 1982) pp232ff

<sup>4</sup> D. Hey op cit pp9-12

<sup>5</sup> see Chapter 10

most parts of the globe was being efficiently done. Full benefits would accrue later.

The suggestion that local cutlers sat around waiting for "the coming of a casual trader rather than carry their goods, with much labour and expense, to an uncertain market" is not borne out by the facts.<sup>6</sup> Firstly, Sheffield would hardly be flourishing if attitudes were so indifferent. Besides resident merchants there were weekly markets and twice yearly fairs in Sheffield, Barnsley, Rotherham, Doncaster and Chesterfield which linked buyers and sellers, as well as more distant markets at Bawtry and Gainsborough.<sup>7</sup> John Cooper, shearsmith, travelled twice per year to West Chester fair via Hope with waggons loaded with hardware goods in the 1740's, and numerous other contemporaries used the same route to Chapel-en-le-Frith and Manchester.<sup>8</sup> A Sheffield craftsman (unnamed and unclassified) had "just returned from Bristol fair" in February 1741/2 and another is reputed to have gone to London in 1747.<sup>9</sup> An increase in the number of carriers in the 1730's and 1740's is circumstantial evidence of growth of sales as is earlier pressure applied by the Cutlers' Company to extend the Don Navigation to Tinsley.<sup>10</sup>

One of the traders using the Navigation was Richard Dalton, a timber and iron importer, who set up in Sheffield in June 1735, having worked previously at both Hull and Bawtry.<sup>11</sup> Within four months he dispatched to George Maddison of Hull a box of hardware containing about seventy different sets (mainly dozens) of knives, razors and scissors, plus twenty gross or more of buttons of varying kinds with a total value of £9-17-7.<sup>12</sup> A week later Dalton forwarded to John Anthony Crop & Co., merchants, of Amsterdam a catalogue of Sheffield goods in reciprocation for wainscott and a small amount of German steel delivered. Crop declined the offer, but Dalton continued to send small quantities of hardware, from under £10 up to about £40 and usually on

<sup>6</sup> J. Aikin: *A Description of the Country from Thirty to Forty Miles around Manchester* (London) 1795 and others who have repeated the story, as J. Hunter: *Hallamshire* Gatty edn (1869) p172/173.

<sup>7</sup> Bagshawe Colln (John Rylands Library, Manchester) 5/4/1(82), (109), (478), 5/4/2 18 Apl 1741, 5/4/3 27 May 1747; TC 517 (20)

<sup>8</sup> TC 413 (9)

<sup>9</sup> Bagshawe Colln op cit 5/4/2 20 Feb 1741/2 and JC 1117 (51)

<sup>10</sup> D. Hey op cit p162ff

<sup>11</sup> Bagshawe Colln op cit 5/4/1 (10)

<sup>12</sup> *ibid* Invoices at the back of 5/4/2

commission at two or two and a half per cent, to Maddison, Samuel Mowld, Walter Edge and Richard Norcliffe at Hull from 1735 and into the 1740's. It is unlikely that Dalton was a pioneer in trying to sell directly to foreign markets, but it is clear from much of the invoice material that the hardware listed was purchased by him on behalf of Hull merchants. In 1737 he chartered a whole vessel for the first time to bring deals from Norway.<sup>13</sup> However, there is no information in the letters nor any invoices to indicate what was being exported, if anything, by him, and his joint venture to sell direct to Petersburg in 1744 was a disaster.<sup>14</sup> On the other hand Dalton had a wide clientele in the South Yorkshire and North Derbyshire area and here he sold principally timber and iron and steel to the value of more than £650 in his first full year of operation (1736), nearly £1200 in the following year, and rising to an annual average of about £1900 from 1740 to 1747.<sup>15</sup> A list of 265 clients still owing money to his estate was compiled after his death.<sup>16</sup>

However, Dalton was a rarity, in that other contemporary and most subsequent local factors and merchants had been, and usually still were, established manufacturers.<sup>17</sup> There is a contrast here with Leeds where many merchants came into the cloth trade without having been in cloth making.<sup>18</sup> It was the nature of the product as much as the external control of distribution which militated against a purely mercantile group becoming established in Sheffield. Certainly it could be no coincidence that those in primary metals, steelmakers in particular as will become evident, vied with Hull for domination of the cutlery trades' marketing process.

<sup>13</sup> *ibid* 5/4/1 (129) He had attempted to charter the same vessel in January 1735/6.

<sup>14</sup> Dalton, in equal partnership with his cousin John Dawson of Bawtry and Richard Norcliffe, sent a large quantity of hardware valued at £128-2-9 in June 1744. Much of it remained unsold in August 1747 (*ibid* and 5/4/3 end of "Ledger B"). In 1745, in his own words, Dalton had been "conversant with Foreign Affairs upwards of twenty years" (*ibid* 5/4/2 9 Feb 1744/45).

<sup>15</sup> The figures are calculated from Dalton's payments in Bills of Exchange and consignments of lead in lieu of money (from 1741) in each of the calendar years. It is not possible to be precise because the lead is quantified by weight and only an approximate value derived.

<sup>16</sup> Bagshawe Colln op cit 5/4/3 "Ledgers" A & B The total owed was £1698-3-11.

<sup>17</sup> Dalton set himself up as a timber importer/wholesaler, rather than as a factor or merchant. The second grew out of the first.

<sup>18</sup> R.G. Wilson: *Gentleman Merchants: the merchant community in Leeds* (Manchester) 1971 pp9ff

Despite his being atypical, in many ways, apart from not trading by road with more distant areas, Richard Dalton symbolises the Sheffield of his day - importing vital raw materials for building purposes and for the metals industry and sending out manufactures, for which there was a widespread demand, largely via established channels, and trying with only limited success to carve an independent slice of the wider market. It is significant that all Dalton's attempts at this independence were with the Baltic and Europe and not with London, in the main because of the greater mark-up and his North Sea trade experience, but perhaps because he knew of the stranglehold of the London merchants on the capital's trade.<sup>19</sup>

As a centre of conspicuous consumption, London was a major market for Hallamshire wares, and as early as 1712 its wholesale cutlers (including Thomas and John Hollis) had flexed their muscles in demanding that Sheffield factors should sell only to them, with a threat of boycott otherwise - an intimation, it would appear, that local men were already trying to free themselves from the monopoly.<sup>20</sup> Far from being intimidated eight factors counter-accused London of ruining the cutlery trade by depressing prices to the craftsmen because of the large discounts demanded and this was causing them (the factors) to look elsewhere. The brief sequence ends with the London men threatening to turn to Birmingham for supplies.<sup>21</sup>

Samuel Shore junior, the son of one of the group of eight above, had been in the capital in 1736 where he had ordered silk hats which were sent to Sheffield for his wife. Mr. Handley who was to call to settle the account sounds rather like a representative, but whether of family or firm is not clear.<sup>22</sup> Rather more certain and considerably earlier was a younger son of another of the eight factors. William Parkin, son of Thomas, was strategically placed as an ironmonger in London, possibly by the time of the above correspondence, and probably up to 1717.<sup>23</sup> There is evidence that other families also

<sup>19</sup> *ibid* 5/4/2 (7 July 1744) 20% to 25% on goods to Petersburg; 5/4/2 (9 Feb 1744/45)

<sup>20</sup> The two Hollises were sons of Thomas, formerly a Sheffield cutler, who had migrated to London (D. Hey *op cit* p160).

<sup>21</sup> R.E. Leader *op cit* Vol. I pp155/156

<sup>22</sup> LD 1162 (6) It seems reasonable to suppose that he would not have had payment-in-arrears facilities had he not had some personal standing in London.

<sup>23</sup> D. Hey *op cit* p193; William Parkin was a citizen and ironmonger in 1717 (typescript compiled by an unnamed descendant of the Bosvile line from the

used sons to act as agents, but not quite so early. For example, John Cockshutt the younger was London agent for his father and Joseph Broadbent during their partnership, and Broadbent refers to "our ware-house" there in a letter of February 1749/1750.<sup>24</sup> Similarly Thomas Roebuck, merchant, a partner with his father John and brothers Benjamin and Ebenezer from 1750, was based in London soon afterwards.<sup>25</sup>

If the metropolis was the largest home market, opportunities still existed elsewhere with fewer associated difficulties. Thomas Holy, a button-maker and contemporary of Broadbent and Roebuck, travelled round the North Midlands and Yorkshire, selling his wares mainly direct to customers, over 330 of them.<sup>26</sup> When Holy died in 1758, collectively they owed his estate £1394. Unfortunately his extant ledger has just names, and his sales book (1750ff) only a few places, including Newark, Nottingham, Otley, York, Bramham, Bur' Bridge Fair (sic), Hull, Penistone, and Gainsbrough Mart. Holy also sold buttons to "a man from Whiteheaven", but there is nothing to suggest he actually went there. If we add the c£200 worth of buttons left in the button-house, and similar stock valued at £464 in 1773 at his widow's death, to the substantial owings, we gain an impression of a vigorous family business operating within a relatively limited northern provincial framework.<sup>27</sup>

Serving a slightly wider, but almost exclusively northern clientele, the Fell iron and steel partnership was a much larger concern. One of two comparable regional alliances, it had its beginnings in the late seventeenth century under the control of three partners, but by 1743 had become increasingly dominated by the second John Fell who held nine of thirty-two shares in the iron business and six of sixteen in the "Steele Trade".<sup>28</sup> The

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Bosvile Muniments in Rotherham Archives re his lease of Woolley Manor).

Another son, Elizabeth Parkin's father, was based in Bristol.

<sup>24</sup> Wheat Colln 2238 and Wharncliffe Muniments 118

<sup>25</sup> Wheat Colln 1840 and WRRD AO 298 380 (1756)

<sup>26</sup> MD 5733 The biggest regular buyer recorded (£10-£12) was a Mr. Stockdale. "RM" was appended to names to denote a ready money sale.

<sup>27</sup> *ibid* In 1758 there were 1821 gross of buttons, plus a few odd dozens. Holy also owed £794, the largest amount (£177) to Robert Hurst of Cheadle. His widow owed the same man £140 at her death. His father, Daniel, who spelled his surname Hawley or Hauley, also a buttonmaker, appears to have put much of his profits into property (see p130).

<sup>28</sup> Raistrick and Allen: "The South Yorkshire Ironmasters 1690-1750" *Economic History Review* IX (1938/9). SIR 8 eg Section I p75.

vast majority of its output (worth £2300 in the second half of 1736 from Attercliffe alone) was sold in the South Yorkshire area, as may well be expected for such commodities, the biggest two customers by far in the 1730's and 1740's being Joseph Broadbent and John Roebuck. However, small quantities went farther afield westward to Stockport, Manchester, Blackburn, Preston and Kendal, some eastward to Scarborough, Beverley, Gainsborough and Hull, some northward to Pontefract, Wakefield, Huddersfield and Leeds, and some southward to Litfield (sic) and Nottingham.<sup>29</sup> Up to the 1760's the destinations were largely the same with the addition of London. There is no evidence to suggest that the partnership exported its iron or steel overseas other than possibly indirectly via Hull, although it was importing Baltic iron via Messrs Sykes for conversion into steel. Here was a successful firm distributing its manufactures over many decades, but limited in its markets by traditional constraints and by the nature of its product.

In total contrast to Holy's and quite dissimilar to the Fell partnership's were the operations of Elizabeth Parkin and her nephew Walter Osborne (from 1758 Osborne and Gunning, merchants and steelmakers).<sup>30</sup> It is frustrating that the extant business records only begin late in 1757 when it is clear that the firm was importing substantially and directly from Europe and the Baltic and exporting directly, but at a much more modest level, to customers overseas. Parkin's importing of Swedish iron in the 1730's is known from Richard Dalton's letters; yet her account book from the same era is limited only to mortgages, loans and rentals.<sup>31</sup> However, from some of William Fairbank's accounts there is circumstantial evidence that Osborne was at least partly independent of the Hull merchants in corresponding directly in a series of French and German letters from August 1754 and January 1756 with suppliers and customers in Europe.<sup>32</sup> Then in the

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K. Barraclough: *Steelmaking before Bessemer* Vol. I (London) 1984 p69ff.  
 29 SIR 22 f189 & f200 and passim.

30 B.A. Holderness has produced a useful and detailed monograph on this partnership in "A Sheffield Commercial House in the mid-18th Century" in *Business History* 15/1 1973. Osborne & Gunning's partnership is noted in OR 1 f90.

31 Bag Colln op cit 5/4/1 (104) 1736 and OR 1

32 FB 5 and FB 9 indexes. William Fairbank translated from both French and German, but only into French. Hence he answered the German letters in French. It may have been such a German order which permitted an attempted fraud in which plated knife handles were passed off as solid silver in Leipzig c.1750 (Birmingham Assay Office Boulton Archives, Box Assay Office 1, Minutes of the Parliamentary Proceedings re Birmingham and Sheffield's petition for an

three years beginning May 1759 the firm exported twenty-seven casks of local hardware to St. Petersburg at a total cost of £781-6-4 and earning a 15% profit, and in the same period sent over quantities of lead (from the mines of Joseph Clay) plus 350 hogsheads and some 300 half hogsheads of Burton ale! Holderness expresses surprise that the value of the trade was not greater, but accepts that Hull merchants may still have been too powerful.<sup>33</sup> This was the period of the Seven Years War (1756-1763) in which Britain and Russia were on opposite sides, so any trade at all may seem most unusual. Eventually, British ships were seized and their crews interned. It is also a factor that Baltic sales always entailed considerably more risk than the home market and that shipping and related costs added some 30% to the firm's outpayments on goods exported there.<sup>34</sup> As the "Stocktaking Book" of this date includes names of about 350 customers, less than 8% of whom appear foreign, it seems clear that the domestic market was the major element in Osborne's activities.<sup>35</sup> There is, in addition, the point that as long as home sales were buoyant and profitable, there was less incentive to look further. In spite of this, the St. Petersburg trading link must have been perceived as of major importance to Hallamshire because the government's and Rockingham's success in negotiating with the Russians in 1765 was so enthusiastically welcomed by Sheffield traders.<sup>36</sup>

Contemporary with the Fairbank translations were the early activities of the partners (from 1753) William Vollimous, Joseph Wilson, George Greaves and George Woodhead, factors.<sup>37</sup> In the following year they exported Sheffield hardware to James Blackburn and Messrs Major & Co. in Lisbon, and to other clients in Amsterdam and Dantzig.<sup>38</sup> The 1754 gross account, with more than £600 brought forward, for Mr. Gottfried Dullo of the latter city was £1558-12-5. Another brought-forward item, a debt of £165-4-0 (that of Nicholas Timm deceased, a former resident of Kingston, Jamaica) is dated 1749, suggesting an even earlier partnership or possibly individual

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Assay Office, William Abdy's deposition 24th February 1773).

<sup>33</sup> Holderness op cit and OR 3

<sup>34</sup> Although anachronistic, a ship's log of 1800 shows that part of the crew of a Hull ship froze to death in the Baltic (Hull Local History Archives L387.2)

<sup>35</sup> OR 2 f39 to 49

<sup>36</sup> WWM R68 and R59(4); see p39

<sup>37</sup> MD 5238 Deed of Partnership (14 years)

<sup>38</sup> Private archives of Messrs Wilsons of Sharrow Large Ledger No. 2. My thanks to Gordon Crosskey for drawing my attention to this valuable source.

exporting. An accompanying plaintive sentence states: "For these goods as he is dead I am afraid I never shall be paid. J. Wilson".

Matthias Spencer, filesmith, makes a very useful comparison with Parkin & Osborne and with Wilson & Co. Unlike the partnerships and very different from the long-established Parkin manufacturing and merchanting business built up over three generations, Spencer appears to have been a small producer who grew from a one man operation in the 1750's to a successful file maker employing a dozen or so workers up to the mid-1780's after which his workforce declined again to one or two only.<sup>39</sup> From early days he sent consignments of files to London, first by waggon only and from the early 1760's by both waggon and boat (by way of Tinsley and Hull). In twelve months beginning March 1757 Spencer sent twenty-five orders to the capital, compared with eleven locally, four to Derby and one each to Southwell and Uttoxeter. Subsequent destinations included Bawtry (possibly for forwarding), Lincoln, Tuxford, York, Nantwich, Stockport, Manchester, Cromford, Mansfield and Nottingham. It seems very likely that customers there had been sought out by Spencer or by an agent canvassing for custom on his behalf. A similar person was actively solicited via a newspaper advertisement in March 1763 by Robert Dent and Thomas Newbould of the Wicker, anvil-makers, "to travel the Country for orders".<sup>40</sup>

Such a spread of markets is not evident, at least in the 1750's, for Benjamin Huntsman's cast steel. An apocryphal story that he found customers in France whilst the local secondary metalworkers were reluctant to adopt his harder material seems unfounded, the specialised usage of the very small quantities produced being quite limited. Barraclough amply illustrates the flow of foreign visitors, mainly Swedes, during the 1760's, by which time Huntsman had a regular outlet with Matthew Boulton whose particular requirements were mainly rolls and dies.<sup>41</sup> Gabriel Jars, a French visitor to Sheffield in 1765, emphasised the fact that "this type of steel is not in general use; it is only employed for those items requiring a fine polish".<sup>42</sup> Making allowance for such

<sup>39</sup> LD 1925 It is not certain that all his workmen were "in-house".

<sup>40</sup> *Sheffield Public Advertiser* 22 Mar 1763 (York Minster Library)

<sup>41</sup> K. Barraclough Vol. 2 p9ff; PhC 373 (1757ff) Boulton appears to have been a customer prior to that date, ie before his career at Soho from 1762.

<sup>42</sup> K. Barraclough Vol. 2 p14

relatively restricted application, yet accepting that there was international recognition and that Boulton was already established as a user of cast steel, it seems likely that Huntsman's product would have at least the beginnings of the widespread distribution of sales evident in the 1785-1805 Ledger.<sup>43</sup> In the latter, the firm dispatched orders to all parts of the British Isles, including Glasgow, Edinburgh and Dublin, and to France, Austria, Switzerland, Italy, Belgium and the German States. As would be expected, the Sheffield area was the biggest market with nearly 140 different customers; London was second with over seventy, followed by Birmingham with twenty-five and Manchester fourteen.

Hitherto little mention has been made of transatlantic markets, apart from Wilson's Jamaica connection. Hallamshire wares had been exported to the West Indies and America long before 1740, but were almost exclusively under the control of London merchants.<sup>44</sup> By tradition Joseph Broadbent, a Quaker cutler and merchant, and a member of one of Sheffield's most successful families, was the first man to trade directly with America and with Europe around 1750, yet no primary evidence has emerged to confirm the claim.<sup>45</sup> In 1770 Messrs Sarah Broadbent (Joseph's widow) and Thomas Bland, dealers in hardware, lost a package en route for London by "machine". The item in question contained, among other things, letters and invoices, one of which was destined for New York.<sup>46</sup> How much earlier the firm had had dealings with that town is open to conjecture - it may well have been before Joseph Broadbent's death in 1761.

There were certainly direct northern links with America around mid-century; the first extant local newspapers from February 1755 to March 1756 show that ships from Hull were sailing to Jamaica, Boston and Rhode Island, and possibly to North Carolina.<sup>47</sup> On the other hand, the second series of newspapers from 1760 to 1763 has only very occasional mentions of Virginia, Boston and Jamaica, and indicates a continuity while

<sup>43</sup> LD 1612

<sup>44</sup> D. Hey op cit p146. Thomas Fell had been selling Attercliffe metal goods in Jamaica from 1699 to at least 1706 (D. Hey op cit p172 & SIR 16).

<sup>45</sup> *Sheffield Local Register* - entry for 1747; D. Hey op cit p178/179

<sup>46</sup> Wheat Colln 1230(1) Another invoice was destined for Dantzic via Amsterdam.

<sup>47</sup> *Lister's Sheffield Weekly Journal* 18 Feb 1755 and ff (York Minster Library). North Carolina is noted only under the "Imports" heading.

at the same time giving an impression of minimal transatlantic trade to and from Hull in those years.<sup>48</sup>

Other contemporary firms' archives are not helpful. Osborne, for example, had no recorded customers in America, and only a cryptic entry in the Fell Partnership accounts of 1753 - " Mr. Sitwell Baltimore" and a payment for nearly 29 tons of "metal" (?pig iron?) at £5-15-0 for Wadsley Forge - hints at an American connection, but no more than that.<sup>49</sup> The *Sheffield Local Register* reports anxiety in Sheffield concerning the threat to trade of hostilities in British America in 1775, particularly "amongst the several merchants and factors who during the past fifteen years had opened a trade to to Philadelphia, Boston and other places", which suggests some activity since 1760 at least. P.C. Garlick notes that Kenyons' bicentenary pamphlet claims an American connection for the firm circa 1762, and that Leader cites one Jonathan Moore, factor, who had an American partner at the end of the decade and subsequently sent his son to New York.<sup>50</sup> If we add to this Gatty's statement concerning mid-century demand for both domestic metalwares and agricultural tools in North America, we have a hazy picture of Sheffield's transatlantic business.<sup>51</sup> Possibly some trade was in progress via Liverpool. The *Advertiser* carried publicity for an agency there to send goods to North America.<sup>52</sup> This was a way of by-passing both London and Hull. It may be that the dearth of material at this stage reflects the relative unimportance of this aspect of commercial activity, and the town was not among the numerous petitioners who appealed against the Bill to prohibit American trade in November and December 1775.<sup>53</sup>

<sup>48</sup> *Sheffield Public Advertiser* 2/9 Dec 1760, 1 Mar and 5 Apl 1763 (York Minster Library) The series is very intermittent and perhaps may not show the busier shipping periods.

<sup>49</sup> The Sitwell family had a local connection in that Francis Sitwell lived in Bridgehouses and Sheffield during the 1730's (G.R. Sitwell: *The Hurts of Haldworth*) and other members partnered the Parkins as ironmongers in London at the same period (D. Hey op cit p158). SIR 10 f128 The price seems very low compared with "Danks iron" at over £18 per ton, but compares with £5-15-0 per ton paid to Tilwell & Co. (f126) and £6 per ton to Jukes & Co., London, (f141) for "metal".

<sup>50</sup> P.C. Garlick: *The Sheffield Cutlery and Allied Trades and their Markets in the 18th and 19th Centuries* Unpublished MA (Sheffield) 1951 deposited in Sheffield Archives as MD 2109.

<sup>51</sup> A. Gatty: *Sheffield Past and Present* 1873 p152

<sup>52</sup> *Sheffield Advertiser* 10/17 Sept 1768

If this were the case, Sheffield manufacturers in general must have been finding outlets elsewhere. The example of Huntsmans has already been given, and Matthew Fenton & Co. were only dissimilar in the scale of their domestic market. In the eighteen years from 1776 they sold silver and plated goods to customers from Inverness to Exeter, with by far the biggest group, upwards of 200, in London and a significant minority in Dublin.<sup>54</sup> They had a thin scattering of clients in Europe - Amsterdam, Rotterdam, Brussels, Dunkirk, Paris and Hamburg - although trade increased in the later 1780's. This is also the period of the first mention of an American order (£60-6-9) sent to Robert Nicklin of Philadelphia in 1787. From 1776, apart from one year, the annual exchange of Bills (from all sources) for cash at local banks totalled in excess of £2000 and occasionally topped £2500. From this evidence the War of Independence was of little consequence to the firm.<sup>55</sup> Elsewhere in the records, Fenton, Creswick & Co. sent Edward Oakes on numerous "journeys", most without further enlightening detail. In June and July 1774 Oakes went to York twice and to Lincoln, and the following year his fellow-traveller, Joseph Beldon, was in London, Birmingham and Dublin. Meantime, Mr. Fenton himself had been to London, Norfolk and to Holland, and Richard Creswick at the end of 1777 paid commission, probably to Beldon, for "orders taken on the Scarbro Journey". Accordingly, account totals (£4373 in 1773) more than doubled before the end of the decade.<sup>56</sup>

Other firms prospering in the home market were William Dunn & Co., cutlers and japanners, and Nowill & Co, cutlers, although some of their goods may well have gone abroad indirectly, via Robert Hadfield, for example.<sup>57</sup> Dunn had customers in Birmingham and London, as well as in Rotherham, Chesterfield, Pontefract and Barnsley, whereas Nowills seem to have had a wider catchment area including much of the North.<sup>58</sup> Dunn was a great traveller, as his numerous letters from 1784 testify, but

<sup>53</sup> *House of Commons Journal* Vol. 35 Index

<sup>54</sup> Bradbury Records 247 This is a 750 page volume with a huge amount of detail. There is a problem of possible double-counting of some customers. See also Brad R 1 for the Day Book of the same period, and Brad R 240 the Letter Book from 1787.

<sup>55</sup> *ibid* The odd year was 1779 when £1934-11-7 was converted. The highest amounts exchanged were £2615-19-7 (1781) and £2684-7-9 (1783). Many of the Sheffield sales were made on a goods for goods basis.

<sup>56</sup> Bradbury 237 and see Chapter 4 p86.

<sup>57</sup> LD 193 f11ff

more in connection with his engineering career than for the firm.<sup>59</sup> On the other hand Thomas Hague and then Thomas Nowill travelled on business to Birmingham, Bristol and London twice (occasionally three times) per year from 1787 to 1793, and then to Birmingham alone to the end of the century. No other destinations are noted in their accounts.<sup>60</sup>

London has already received frequent mention as a valuable market, so valuable in fact that a number of Sheffield firms made a permanent warehouse there. At the end of 1777 Richard Morton, Thomas Warris *et al*, dealers in hardware and platers insured £800 worth of stock at 18 Newgate Street.<sup>61</sup> Similarly Daniel Holy, plated manufacturer, held £300 worth at 66 Paternoster Row in 1780, and lived in London briefly later in the decade.<sup>62</sup> Fenton, Creswick & Co., as above, had stock insured for £800 at 3 Crane Court, Fleet Street, and William Fox, cutler, £300 worth at the same address the following year.<sup>63</sup> In 1785 Nathaniel Smith, plater, held stock at a warehouse at 119 Fleet Street, and Adam Broomhead with others at 16 Foster Lane.<sup>64</sup> Broomhead, in fact, moved permanently to live close by.<sup>65</sup>

Whilst some restricted their travel to Britain, others went farther afield, particularly to north-east Europe, illustrating a growing confidence in Sheffield's ability to produce at competitive prices what overseas customers wanted. Their enterprise contrasts with the earlier and more limited forays abroad. In 1788, between May and September, Robert Hadfield, merchant, was in Petersburg, Copenhagen, Altona and Hamburg seeking orders for cutlery and hardware. Subsequently, his son Samuel travelled to Lubeck, Nuremberg, Copenhagen and Elsinore and then to Portugal.<sup>66</sup> Huntsmans, of course, were well-established European exporters (see above), as were Fenton, Creswick & Co.

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<sup>58</sup> MD 1737(4) and LD 197ff

<sup>59</sup> MD 1738

<sup>60</sup> LD 192 and LD 216

<sup>61</sup> Sun Insurance Records (Guildhall Library, London) 11936 Vol. 263 no. 394406

<sup>62</sup> Sun *ibid* Vol. 281 no. 424520 and MD 5245

<sup>63</sup> Sun *ibid* Vol. 288 no. 436495 & Vol. 291 no. 439338

<sup>64</sup> Sun *ibid* Vol. 331 no. 509529 & Vol. 333 no. 511206. Smith's utensils and stock was "not exceeding £500", and Broomhead's warehouse contents £600. The latter's contents in the warehouse, workrooms and workshops in Sheffield were insured for £300.

<sup>65</sup> WRRD CQ 354 507 (1785)

<sup>66</sup> MD 6626 ff178-184, MD 1738 f122 (1801)

who, by the later 1780's sold to customers in Amsterdam, Rotterdam, Paris, Altona and, especially, Hamburg, as well as venturing again into the transatlantic trade.<sup>67</sup> Some time after the achievement of American independence normal exporting was again permitted by the Act of June 1780.<sup>68</sup> This was Sheffield's opportunity, especially for silversmiths and platers. Fentons (Fenton & Watson, then Watson & Co. by 1795) sent casks and cases, usually described as plated goods, as well as the occasional box of hardware, via Liverpool to New York, Philadelphia and Jamaica, and after the turn of the century to Baltimore and Boston.<sup>69</sup> Thomas Holy crossed the Atlantic in 1786, and Ralph Mather of Manchester, writing to Matthew Boulton from Philadelphia in 1792, described the huge amounts of buttons and various other manufactures which Holy & Newbould were selling there and elsewhere in America.<sup>70</sup> The same letter also notes the intense rivalry between Sheffield and Birmingham in these markets. In 1793 Holy joined in a partnership with William Newbould and George Suckley with the stated intent of trading with the former colony. Suckley was to reside there. Later, Newbould withdrew (1797) leaving the other two to carry on the trade from their warehouses in New York, Philadelphia, Boston and Baltimore.<sup>71</sup> Exports included all types of table ware, scissors, razors, files, saws and sickles, as well as fabrics, buttons and steel.<sup>72</sup> The business must have been successful as monies owing at the change of partnership were almost £20,000.

Amidst widening markets for Sheffield goods at home and abroad, two of the traditional outlets were in sharp decline - markets and fairs - replaced by the growing army of travellers. Newspapers still advertised the regional fairs - Worksop (1787) and East Retford (1794), for example, and commented on the slow sales at Sheffield, Rotherham, Barnsley and Bawtry in 1799.<sup>73</sup> Their role was mainly food and livestock

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<sup>67</sup> Bradbury Records 240

<sup>68</sup> *House of Commons Journal* Vol. 37 p810

<sup>69</sup> Bradbury Records 240

<sup>70</sup> Letter 17 Dec 1786 Thomas Holy Correspondence (Methodist Archives, John Rylands Library, Manchester). Holy had been to recover monies owing and to secure his "Property". He gives a most pessimistic view of the American economy. Boulton Archives in Birmingham Assay Office Non-book Items Letter Box M1 (Ma to Mit) letters 18 July & 19 Nov 1792. (My thanks to Gordon Crosskey for these items).

<sup>71</sup> MD 5737 (4) & (7)

<sup>72</sup> MD 5734

<sup>73</sup> *Sheffield Register* 27 Oct 1787, *Courant* 20 Sept 1794, *Iris* 24 May 1799

orientated; indeed the various proposals concerning the Duke of Norfolk's new market and its additions with extra space for the fair are dominated by slaughterhouses, butchers' shops and agricultural produce.<sup>74</sup> The editor of the *Advertiser* in 1792 had noticed, very significantly, "of late years an immense quantity of business heretofore transacted at the great regular marts of the Kingdom now goes on by frequent and immediate correspondence between the manufacturer and the vendor of the shop". It was now typical for a member of a firm to make direct visits or, if the firm were big enough, to employ a full-time traveller or have agents selling on commission.<sup>75</sup> For Birmingham's trades, S.R.H. Jones gives an insight into the huge distances (over 1000 miles) covered by some travellers, with three or four months at a time on the road.<sup>76</sup> No comparable information has been found for Sheffield, but a local newspaper carried an advertisement for a traveller as early as 1763, and there are numerous references to this occupation subsequently.<sup>77</sup> A key factor not commented on, perhaps because of a gradual diminution of influence, yet none the less very important, was the end of the dominance of the Hull and London merchants. Besides eliminating the need for markets and fairs, the traveller or representative also freed the local trades from the hold of these intermediaries. The small producer still sold his goods to local merchants like the Hadfields and Holys who themselves dealt with customers, both at home and abroad, via travellers and/or members of the firm or through agents. George Newbould, Thomas Holy's nephew, for example, acted both for his uncle and for Watsons, silversmiths and platers, in New York and elsewhere.<sup>78</sup>

The relative paucity of extant records prevents the emergence of a full picture of Sheffield's increasing superiority in cutlery production. This, no doubt, was even more of a problem for Professor Lloyd in 1913, leading him to conclude that from around 1840 most cutlery wares came from the Sheffield area.<sup>79</sup> However, a letter of Robert

<sup>74</sup> see Chapter 11 Feeding the Town

<sup>75</sup> *Sheffield Advertiser* 23 Mar 1792

<sup>76</sup> S.R.H. Jones: "The Country Trade and the Marketing and Distribution of Birmingham Hardware 1750-1810" *Business History* XXVI/1 (1984)

<sup>77</sup> *Sheffield Public Advertiser* 22 Mar 1763 (in York Minster Archives); Bradbury Colln 237 (1770's); Thorncliffe Records 136 (1780's); *Iris* 22 June 1798, 30 Aug 1799, 8 Aug 1805, 13 Jan 1807, 4 Jan 1814 & 17 Feb 1818. The London-based Commercial Travellers' Society held its first Sheffield meeting in 1801 (*Iris* 16 Apl).

<sup>78</sup> MD 5736 and Bradbury Records 170 passim & 240 passim (1816ff)

Hadfield written to precede a donated consignment of hardware destined for the South Seas Missionary Society in 1798 emphatically states: ". . . this town is capable and does actually and exclusively furnish the whole British Dominions, North America, a great part of Europe and the whole of Turkey with almost all sorts of cutlery and other articles which bear an edge, (sic) and being of course perfectly competent to furnish all the natives of the South sea Islands with a year's consumption with one day's work only".<sup>80</sup> Hadfield's assertions are supported circumstantially by the local press whose advertisements in the course of the 1790's include numerous trade-related items. As well as the then usual Liverpool-America route, there are advertised Hull-New York and Hull-Baltimore sailings, and even sales of land in Georgia and Pennsylvania; ships sailing from Hull to Naples and Leghorn and to Seville, travellers requiring work, London firms wanting to be agents for Sheffield silver and plated ware, platers required in London, and an enquiry for "a person who understands German, Dutch and some French".<sup>81</sup> The assertions are given full contemporary substantiation by an item in the *Iris* where the author Mr. John Houseman of Corby, having journeyed through England and part of Wales for the *Monthly Magazine* seeking authentic information relative to the state of the poor, is quoted in some detail. After commenting on Sheffield's successful use of water power and steam, he states: ". . . the people of this town have made one improvement upon another in their manufactures, insomuch, that they are now able to undersell every other market in the world in these articles".<sup>82</sup>

Given the town's successes in loosening progressively its ties to both Hull and London merchants and in gaining a monopoly of so much of the world's cutlery trade, as well as being a dominant force in the the export of plated ware, it may be asked what other markets Sheffield was able to exploit. No reference has yet been made to Africa, other than those parts tacitly included in Hadfield's "British Dominions". Unfortunately, the only evidence of an African connection has been through a petition to Parliament from

<sup>79</sup> G.I.H.Lloyd: *The Cutlery Trades: an Historical Essay in the Economics of Small-scale Production* (London) 1913 Ch. IV

<sup>80</sup> MD 6626 ff170/171 The author also refers to his journey to Moscow, no doubt in search of sales.

<sup>81</sup> *Courant* 26 April 1794, 20 Feb 1796, 24 May 1796, 12 July 1796, 21 Feb 1797 and passim; 28 Sept 1793; 26 Apl 1794; *Sheffield Advertizer* 1Mar 1793; *Iris* 27 Apl 1798, 9 Nov 1798, 21 Dec 1798, 15 Mar 1799, 30 Aug 1799.

<sup>82</sup> *ibid* 7 Apl 1797

the Cutlers of Hallamshire in April 1789 in which they expressed their aversion to slavery, but at the same time were anxious about a possible threat to "considerable quantities" of cutlery sold through that trade.<sup>83</sup> Watsons did business with Quebec and Bermuda c1810, had a potential agent going to Brazil in 1817 (outcome not known) and made a failed attempt to trade with Halifax, Nova Scotia, in the same year.<sup>84</sup> Holys even sold goods in Bogota in 1824.<sup>85</sup> In principle, there was no limit to markets for Sheffield's cutlery and other products; in practice there were those regular inhibitors of commerce - wars and economic depressions, often interlinked.

### WARS AND DEPRESSIONS

Throughout the period of this study one or both of these affected the district in intermittent, yet often persistent, manner. After a recovery in national exports from about 1730, the War of Austrian Succession (1740-1748) created problems for the Baltic and North European trade.<sup>86</sup> The years 1741 and 1742 were very depressed as Richard Dalton reported: ". . . for it is owing to the Troubles abroad that makes our Trade so bad w<sup>ch</sup> cannot be better while those times continue . . ." and ". . . still continuing very bad here".<sup>87</sup> The 1745 Rebellion also had a passing effect - "The Bad News from Scotland has already put a Damp upon Trade here . . .", and we are reminded in 1748 that there were still seasonal as well as cyclical slack times.<sup>88</sup> From the mid-1740's to the late-1750's the country's exports grew in rapid if irregular manner until hindered by the Seven Years War.<sup>89</sup> Sheffield manufacturers' and merchants' gratitude to the Marquis of Rockingham for his efforts in restoring trade relations with Russia after the war has already been noted above, and hence the perceived importance of that part of the world to the town's economic well-being.<sup>90</sup> In broad terms, however, exports made little advance until 1780.<sup>91</sup> The outbreak of hostilities with the American Colonies in

<sup>83</sup> *House of Commons Journal* Vol. 44 p296

<sup>84</sup> Brad R 169 (121 and 123), 170 (141, 251 and 256)

<sup>85</sup> MD 5736 (10ff)

<sup>86</sup> P. Deane and W.A. Cole: *British Economic Growth 1688-1959* (Cambridge) 2nd Edn 1967 pp48ff

<sup>87</sup> Bagshawe Colln op cit 5/4/2 25 Apl 1741, 2 Sept 1741, 9 Jan 1741/2, 8 May 1742

<sup>88</sup> *ibid* 25 Sept 1745 & 26 Nov 1748

<sup>89</sup> Deane and Cole op cit p48

<sup>90</sup> WWM R68 (1765)

<sup>91</sup> Deane and Cole op cit p48

1775 must have halted burgeoning direct trade links, but these evidently were insufficient at that point to elicit a Petition to Parliament from Hallamshire, although many towns and areas did appeal.<sup>92</sup> Restoration of trade in 1780 marked the beginning of nearly two decades of sustained export growth, and enabled Sheffield to establish what soon became its largest overseas market.<sup>93</sup> In 1812 John Bailey, presenting evidence to a Parliamentary Committee of the whole House, reported that Sheffield and district's total annual (estimated) cutlery output was valued at about £1.2 million, of which one half was for the home market, one third for the United States and the remaining one sixth for other parts of the world.<sup>94</sup> Temporary loss of the American trade with the Anglo-American War of 1812 to 1814 was, therefore, devastating. Mr. Watson of Watson, Bradbury & Co, formerly Fenton, Creswick & Co., silversmiths and platers, wrote to a Mr. Mather (probably a customer) in February 1814: "We have every reason to suppose there will be a considerable advance on our articles in the Event of a Peace or otherwise as we have for a considerable time been manufacturing only to keep our Connections and Workmen together".<sup>95</sup> The same firm soon resumed its trading with New York (1815) through the agency of George Newbould, and by 1818 Sheffield's transatlantic relationship was important enough to attract a United States Consular Office to the town.<sup>96</sup>

On this side of the Atlantic a Commercial Treaty with France in 1786 facilitated a greater flow of Sheffield exports to Europe and was accompanied by a growth of markets in Spain, the German States and Russia.<sup>97</sup> The trade was short-lived with war against France in 1793 and the latter's invasion of Spain the following year. Russia compounded this loss of markets with a contemporary decree that all metalware imports other than scythes were banned.<sup>98</sup> For a time Swiss, German and Dutch trade

<sup>92</sup> *House of Commons Journal* Vol. 35 Index. There were petitions from London, Bristol, Glasgow, Halifax, Huddersfield, Leeds, Liverpool, Manchester, Nottingham, Staffordshire and Wakefield.

<sup>93</sup> *ibid* Vol. 37 p810 and Deane and Cole *op cit* p48

<sup>94</sup> cited by A. McPhee: *The Growth of the Cutlery and Allied Trades* (Sheffield) 1939 (typescript in Local Studies Library).

<sup>95</sup> Bradbury Records 240 16 Feb 1814. There was a risk in doing this as earlier letters in the same letter book state that each market had its own tastes and hence different patterns.

<sup>96</sup> MD 6207 (24)

<sup>97</sup> A. McPhee *op cit* and Robert Hadfield's travels (MD 6626 ff178-184)

<sup>98</sup> A. McPhee *op cit* and H. Scrivenor: *History of the Iron Trade* (London) 1841

continued, as well as the American above, which reduced the impact. But at the end of the century all commerce seems to have slowed. The editor of the *Iris* spoke of the town's great distress in a leading article of April 1800 and later of the prolonged depth of the slump. A William Dunn letter of the following year confirmed this. The poor suffered particularly, and in February 1800 3850 quarts of soup per week were being served, with more wanted to fend off mass starvation.<sup>99</sup> Fortunately the Hamburg trade revived and Russia's embargo was lifted, only to be followed by Swedish and Danish problems.<sup>100</sup> The Napoleonic War inevitably had serious effect on European and Baltic trading activity, particularly from 1807 when Russia and France "entered into an aggressive pact for the ruin of England". 1808 and 1811 were particular bad years for exports and must have had quite severely damaging results on Sheffield industry, to the degree that only half the steel making capacity was in action by 1812.<sup>101</sup> Huntsmans' sales were at their lowest in 1811 (c12½ tons) and 1812 (16t 17cwt) after 32 tons in 1809 and almost 50 tons in 1810.<sup>102</sup> War and its aftermath would have to end before any kind of normal European trading could resume. The extent of the problem is illustrated by letters from Watson & Bradbury in July 1815 to Messrs Schultz of Hambro (sic) and George Ferguson of Amsterdam referring to the fact that there had been no correspondence since 1806 and that payments were overdue! In October 1815 the firm gave power of attorney to Hunsenbeck, Runge & Co. of Hamburg to collect outstanding debts including those of Schultz above. This debtor was still being pursued the following year when John Leader, of the silver and plating family, was travelling to the German city, probably to collect money owed to his own company.<sup>103</sup> In the course of this series of Watson letters ending in June 1818, no European orders of any kind appear to have been dispatched. In 1802 the firm had had twenty clients in Amsterdam and Hamburg.<sup>104</sup> If this were typical, it was very fortunate that the American connection had recovered so rapidly.

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p166

<sup>99</sup> *Iris* 14 Feb, 4 Apl & 13 Nov 1800; MD 1738 Bundle 2 f110 (Dunn letter)

<sup>100</sup> *Iris* 4 Apl & 2 Oct 1800, 26 Feb, 12 Mar, 2 & 16 Apl & 28 May 1801.

<sup>101</sup> J.S. Watson: *The Reign of George III 1760-1815* (Oxford) 1960 p455ff & p507 citing T.S Ashton: *Iron and Steel in the Industrial Revolution* (Manchester) 2nd edn 1951 Chapter 6.

<sup>102</sup> LD 1617

<sup>103</sup> Bradbury Records 240 20 July and 9 Oct 1815; 18 Mar 1816

<sup>104</sup> *ibid* 248 f200-209

By the time of the opening of the Sheffield Canal in 1819, the town was ready to take full advantage of the recovery. Dominant in cutlery products, becoming pre-eminent in steel and having a mature silver and plating industry, Sheffield was already quite familiar with, and well-known to, most of the nation's and many of the world's markets. The local merchants and manufacturers were backed by an ascendant merchant fleet with access to most parts of the globe. They had an established reputation for quality (not least because of Huntsman), an ability to sell at a keen price, and total emancipation from Hull and London merchants.<sup>105</sup> In short, they had every opportunity to exploit the national and international demand for Sheffield and Hallamshire goods.

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<sup>105</sup> K. Barraclough Vol. 2 op cit p28-29 citing *The Times* 27 Feb 1879

## CHAPTER 10 THE TRANSPORT NETWORK FROM 1740<sup>1</sup>

An apparent tradition has existed among local antiquarians that before the mid-eighteenth century Sheffield was cut off and isolated from the rest of the country - a theory closely linked to the completion of the Don Navigation to Tinsley in 1751 and to the several regional Turnpike Acts of the late 1750's.<sup>2</sup> The erroneous inference was that before these basic improvements had been effected, communications with the outside world were difficult if not impossible. What was somehow forgotten was the centuries old road transportation of millstones and Derbyshire lead into the town, the importing of iron and steel and of foodstuffs, distribution of coal into neighbouring districts, and exporting of cutlery and hardware to London via Bawtry. Even though Sheffield was not on or near one of the principal highways there was a network of roads by which travellers could reach any part of the kingdom.<sup>3</sup>

Major improvements to the transport infrastructure were already in hand before 1740. The Don Navigation had reached Aldwarke in the early 1730's and Rotherham at the end of the decade. Richard Dalton, who had worked for his Aunt Dawson at Bawtry wharf before starting his own timber merchanting business in Sheffield in 1735, used Aldwarke almost exclusively from the outset and then Rotherham in spite of his family connection. Bawtry was twenty miles from the centre of town, Aldwarke only eight and Rotherham six.<sup>4</sup> With transport costs at this period averaging about 1s 3d per ton mile by road and 3d and 2d for the Don and likely to fall as low as 1d, such a policy was good business sense.<sup>5</sup> On occasions, however, when the Don suffered from

<sup>1</sup> Acknowledgements are made to T.S. Willan: *The Early History of the Don Navigation* (Manchester) 1965, which ends with the completion of the work to Tinsley in 1751, and to G.G. Hopkinson's "Development of Inland Navigation in South Yorkshire and North Derbyshire 1697-1850" (in *THunterAS* Vol. 7) and "Road Development in South Yorkshire and North Derbyshire 1700-1850" (in *THunterAS* Vol 10).

<sup>2</sup> Probably based on J. Aitken: *A Description of the Country for 30 to 40 Miles around Manchester* (London) 1795; and A. Rees: *Cyclopaedia of Arts, Sciences & Literature* (London) 1819.

<sup>3</sup> D. Hey: *The Fiery Blades of Hallamshire* (Leicester) 1991 p147ff

<sup>4</sup> Bagshawe Colln 5/4/1 (John Rylands Library, Manchester)

<sup>5</sup> WYAS QS 10/19 f152 Road Carriers rates 14d per stone (London-Sheffield) Mayday to Michaelmas, 15d Michaelmas to Mayday 1743, but same as 1738. Don Navigation rate (3s 0d per ton from Aldwarke to Doncaster, twelve miles, for most goods; lead, coal and some timbers were less) from PRO RAIL 825-1

drought, Bawtry had to be utilised, and from earlier years boatmen had been urged not to waste water when using the locks.<sup>6</sup> In spite of that intermittent problem, a wide range of goods was passing up and down the Navigation: lead, iron, steel, horns, deals, boards, cheese, salt, corn, groceries, nails, iron wares, cutlery, tallow, wine and coal.<sup>7</sup> From Quarter Sessions indictments and orders for the years around 1740 it is clear that many roads around Sheffield were suffering from great wear and tear, and that magistrates recognised the onerous nature of repair obligations for local residents.<sup>8</sup> For the Wapentakes of Strafforth and Tickhill (which included Hallamshire), Staincross and Osgoldcross magistrates at Sheffield Quarter Sessions of October 1738 made an order for the second time in five years that on moorland areas and "other places where intelligence is difficult" guide posts should be erected "with Indexes and Directions written or engraved thereupon in the plainest and most intelligible manner and in the most proper places ..... which direction shall not only contain the name of the next Market Town or other Notorious Place but also the number of miles the same is distant from such guide post ...". The order was to be executed within eight weeks! Clearly the growing usage of local roads was creating unprecedented problems of wear - more carts with heavier loads seems a logical explanation - and people who needed to know directions, that is those unfamiliar with the district, suggests more widespread travelling. Carriage rates (fixed annually by Quarter Sessions) favoured carts over pack-horses for the carrier.<sup>9</sup> A horse-pack was defined at sixteen stone or two hundredweight, so that a cart with two horses pulling a load of half a ton (plus the weight of the cart) was already more than twice as efficient, although a pack-horse train would *pro rata* need fewer men. Furthermore, the fact that ten horse-packs were deemed officially to equal one "tun" strongly suggests that this latter weight was a standard unit for road carriage by cart.<sup>10</sup> Pawson in fact states that up to about three

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August 1733. A. McPhee in *The Growth of Cutlery and the Allied Trades* (1939) p 38/39 quotes a contemporary source foreseeing one penny to three-halfpence per ton mile, a figure corroborated by T. S. Willan: *River Navigation 1600-1750* (Manchester) 1936 repr 1964 Chapter 7.

<sup>6</sup> Bagshawe Colln (John Rylands Library, Manchester) 5/4/1 f460 July 1740. Bawtry may have been less affected, because the Idle did not have a large number of works storing water. PRO RAIL 825/1 25 November 1734.

<sup>7</sup> PRO RAIL 825/1 August 1733 from list of Lock Dues.

<sup>8</sup> WYAS QS 4/29 f62ff and f146, QS 10/18 f103; QS 10/18 f210

<sup>9</sup> WYAS QS 10/19 f152

<sup>10</sup> This combination equates with the standard 8 stones to the hundredweight (cwt) and 20 cwts to the ton; no customary weights here as in the Navigation freight

tons was possible from 1741.<sup>11</sup> It takes little imagination to anticipate the damage caused by such relatively heavy loads transported in quantity over inadequately prepared surfaces.

Similar damage, much later, was the reason for an indictment of the inhabitants of Sheffield for not repairing their section of the road to Hope via Broad Lane, Crookesmoor and Redmires.<sup>12</sup> The case in 1771 hinged on "whether the Road leading from Sheffield . . . to Hope has been used from time immemorial as a Highway or a pack and prime way only . . ." The point was made that before the recent turnpike there had been no other road to Hope and Manchester. Sixty years previously there were few carriages and most traffic was by packhorse. Yet people from Castleton and Hope with wheeled transport had used the road "as well as foreign Common Carriers". Eighteen people made depositions, many of them referring back to the 1730's and 1740's, in which most repeated that this was the only route to Manchester. Samuel Hand of Yatehouse, husbandman, aged sixty stated that from the age of twelve to forty he had carried lead in carts "for wages". He remembered named carters, at least one with four wheeled carts, carrying timber in the 1730's to Yatehouse, Hope and Tideswell, and those hired by Mr. Clay "conveyed divers quantities of wood from Sheffield to Rushop Hedge beyond Hope where he had mines the same way" and he recalled "10 or 12 Carriages travelling together at one time very heavily loaded". Edward Holme of Yatehouse, farmer, some forty years before the indictment had travelled with Thomas Hallam's cart and horses from Sheffield to Hope and Chapel en le Frith with all kinds of hardware and had brought back Manchester goods. Other commodities listed include coal from Attercliffe, iron, steel, oil, corn, tow, tar, treacle and groceries going westwards and glue, butter and millstones in the opposite direction. Local and Manchester carriers are named or commonly mentioned by many witnesses. Perhaps because of the nature of the evidence pack-horses are less frequently cited, although some of the men said they had worked with them. William Wilde of Hope,

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charges - 25 cwts to the ton for steel and cutlery wares (PRO RAIL 825/1 August 1733)

<sup>11</sup> E. Pawson: *Transport and Economy - the Turnpike Roads of Eighteenth Century Britain* (London) 1977 p22. Fairbank as late as 1815 noted that 25 cwt of lime carried from Calow to Sheffield required a three horse waggon, and that a horse load of lime was "barely 2 cwt" (FB138 ff14 & 60).

<sup>12</sup> TC 413(9)

husbandman, had travelled with pack-animals during the 1730's and 1740's. The impression given overall is clearly that of a well-used route. Little is said of its condition, other than the fact that at least half the depositions contain references to the signatories having seen repairs to the road "for carts".

Roads to the east of Sheffield were regularly criticised by Richard Dalton whose timber and iron came to town via the Don Navigation and were at times delayed on the last stage.<sup>13</sup> He also commented that carters' wages were higher when roads were bad. Perhaps this was additional to the winter season premium.<sup>14</sup> Whether the problem for Dalton was one of delay or extra expense or both, there was every incentive for people like him to use water transport whenever possible and to press for improved roads.

In his detailed study of turnpikes Eric Pawson emphasises the key role of transport in the operation of the economy.<sup>15</sup> He quotes and synthesises the writings of both Adam Smith and the neo-classicists, concluding: "The role of transport can now be seen more clearly. It is responsible for creating increasing returns to firms and regions in a market economy by widening the physical and material extent of the market. It is also responsible, in large measure, for allowing the market system to emerge and operate effectively. These points are basic and cannot be disputed". He challenges Rostow's theory of derived demand, preferring the idea of transport as a permissive factor and not an initiator of the process of economic change. He supports this by underlining the evolutionary nature of small-scale and piece-meal undertakings responding to local needs and gradually growing into a national and coherent system. It is in not understanding this sequence that many of our antiquarians were in error. They looked on the Don Navigation and local turnpikes purely as a cause rather than principally an effect of Sheffield's development.

#### TURNPIKE ROADS

It is now important to examine in more detail the region's roads and the schemes which were devised to improve them.<sup>16</sup> The first step in this improvement almost by-passed

<sup>13</sup> Bagshawe Colln (John Rylands Library, Manchester) 5/4/1 (16) and ff

<sup>14</sup> see footnote 5

<sup>15</sup> E. Pawson *op cit* Introduction

<sup>16</sup> Almost all turnpikes upgraded existing roads. The wording of the Acts makes

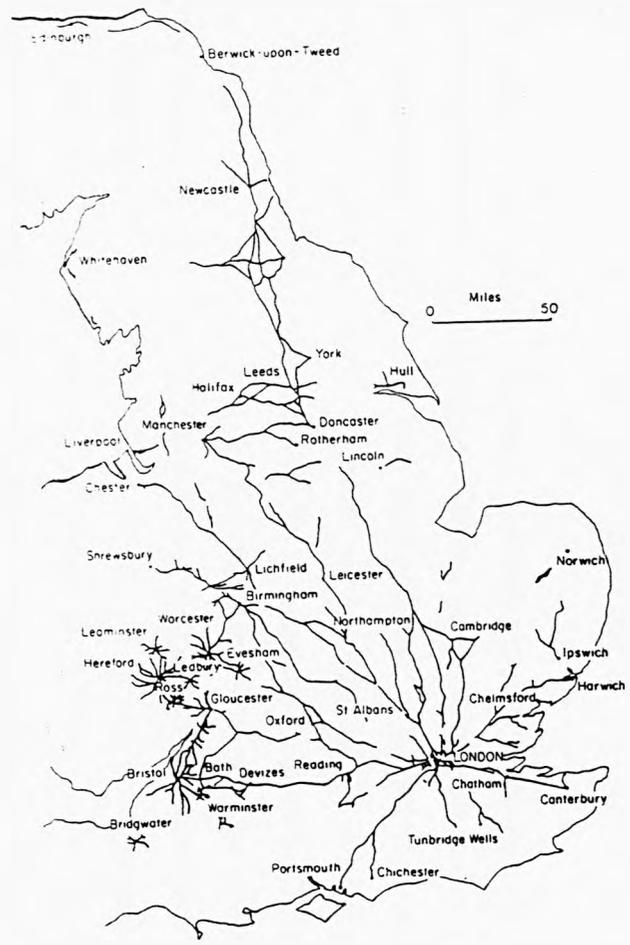
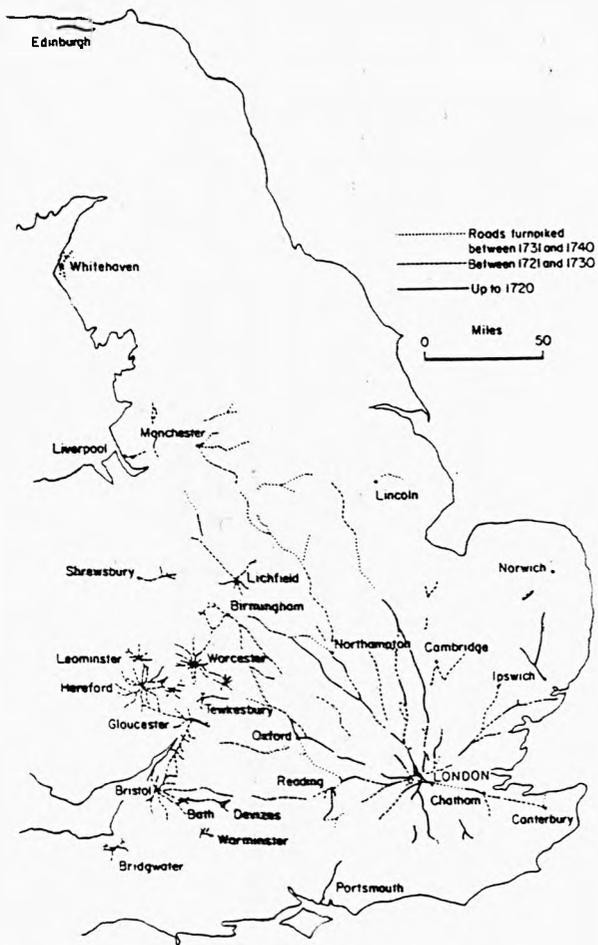


Fig. 10.1 Turnpike Roads in Britain 1740, 1750 and 1770 (adapted from W. Albert 1972 and E. Pawson 1977)

our region. The Doncaster to Saltersbrook (via Barnsley) Turnpike of 1740 linked up with the earlier Manchester to Saltersbrook road and was thus enabled to advance the east to west trade mentioned in the Act's preamble.<sup>17</sup> Its branch went from Rotherham through Chapeltown, Wortley and Penistone, sections of which were very bad "for several years last past", particularly in winter because of "many heavy carriages". The road improvement coincided with the head of the Don Navigation reaching Rotherham which must have been mutually beneficial.<sup>18</sup> The relevance for Sheffield is that this new road immediately increased traffic flow northwards through Wadsley Bridge where the indicted inhabitants blamed the Turnpike for their inability to maintain their own road.<sup>19</sup> This improved, although longer, route to Manchester via Mottram and Ashton under Lyne may have affected Sheffield to Hope and Chapel en le Frith traffic, but no corroborating evidence has been found. However, it was certain to have benefited those trading with the further north-west.<sup>20</sup>

For some reason, perhaps because of concentrating on the Navigation, Sheffield made no Turnpike petitions of its own for sixteen years, apart from that relating to a stretch of road between Harborough and Northampton.<sup>21</sup> Somehow the perceived benefits which had increased trade to the north and would improve London and Manchester commercial links were not related to local roads until the mid-1750's.<sup>22</sup> Whilst some stretches became the subject of an indictment or an order in the previous decade, the vast majority did not.<sup>23</sup> Maybe Dalton was exaggerating the severity of the conditions, or possibly the increasing proximity of the Don Navigation diluted the desire for an improved road network, particularly eastwards. There is also the possibility that carriers were relatively flexible in offering cart or pack-horse transport, according to weather and season. Both explanations would fit comfortably with the view discussed

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this very clear.

<sup>17</sup> SYCRO 500/Z 1/1

<sup>18</sup> G. Jackson: *Hull in the Eighteenth Century* (Oxford) 1971 p14

<sup>19</sup> TC 367 f23

<sup>20</sup> The Fell Partnership was supplying at least one customer in Preston, another in Whitehaven and three in Kendal in the period 1736 - 1744 (SIR 22)

<sup>21</sup> *House of Commons Journal* Vol. 25 p958 1749/50.

<sup>22</sup> In November 1740 the Town Trustees had consulted "about a Turnpike from Manchester". The account (TT14 f92) may, of course, have referred to the Doncaster to Saltersbrook noted above in the text .

<sup>23</sup> WYAS QS 4/29 f62 and ff, QS 10/18 f103

above that transport was largely the handmaiden of economic growth. Furthermore, several unnamed gentlemen covered the measured distance of 164.2 miles between London and Sheffield in September and June respectively of 1742 and 1743 in less than twenty-seven hours using a four-horse chaise.<sup>24</sup> This rate could never be repeated by a heavy cart, but shows that these roads were even good enough for faster driving, at least some of the time.

Whatever the explanation for the delay, Sheffield's first Turnpike was the one enacted in April 1756 which linked the town to Derby (and hence to Birmingham and London) via Chesterfield and Duffield. This precedent was soon followed by the Sheffield to Wakefield and Leeds via Barnsley and the joint Little Sheffield to Sparrowpit-gate near Chapel en le Frith and the Barber Fields Cupola to Buxton, all of which received royal assent on 9th June 1758.<sup>25</sup>

Evidence for the Chesterfield and Derby Road is sparse. A copy of the Act is extant, if not publicity or details of any opposition. Trustees included the Roebucks, Shores and Younges and, it appears, a preponderance of non-Sheffield names. The legislation envisaged a four-horse coach and waggon as the largest vehicles, each to pay 1s. at every toll-gate. The nearest gate to town was at Heeley Bridge through which milk laden animals were to travel free and coal en route for Ecclesall was to be charged no more than one halfpenny. Much more detail survives for the 1758 roads. In the "Memorandums relating to the intended Turnpike Roads from Sheffield over the Derbyshire Moors" local petitioners wanted qualifications for Commissioners to be an income £50 per annum from freehold property or £1000 assets.<sup>26</sup> "If a greater qualification be required Sheffield and the country about it will have very few persons qualified to act, and the Derbyshire People would carry everything as they pleased". They also made the point: "As most of the Sheffield Commissioners are deeply employed in Business it will be difficult to procure the attendance of many of them other than Sheffield". In fact the town appears to have been well represented with

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<sup>24</sup> Wharncliffe Muniments 110 The route is not known.

<sup>25</sup> *House of Commons Journal* Vol. 27 p 505, Vol. 28 p 28. Bound copies of the Acts of Parliament relating to local roads are to be found in Sheffield Local Studies Library.

<sup>26</sup> The figures were £100 and £2000 in most Acts.

familiar names in the list of 140 - Joseph Broadbent, Benjamin Roebuck, Thomas Boulsover, two Shores, two Younges, John Fell, Walter Osborne, and Rev. James Wilkinson and Philip Gell, joint owners of the Broomhall estate.<sup>27</sup> Benjamin Roebuck, Joseph Matthewman and St Andrew Raynes raised £4500 and £3500 for the respective branches in the form of mortgages against anticipated tolls and not shares as in the case of the Navigation.<sup>28</sup> The Sheffield to Wakefield Road had an initial capital of £5900 with the Dukes of Norfolk and Devonshire, the Marquis of Rockingham and the Earl of Strafford contributing £3300 at 4%, whereas the remaining loans were at 5%.

William Fairbank was responsible for surveying at least part of the Little Sheffield to Sparrowpit gate Road and for measuring, staking out and estimating the value of lands taken for the Sheffield to Wakefield.<sup>29</sup> Details of its construction occasionally emerge - one Thomas Stocks was "willing to finish Either Two or Four miles of Turnpike Road and begin at Bridgehouses near Sheffield and proceed the Road leading towards Barnsley in manner following (to wit) Eight Yards in Breadth and Cast up Six of which shall be laid with stone eighteen inches deep in the Crown and ten inches deep in the Skirts at Two Shillings and Threepence per Yard and make all necessary Soughs and Drains Bridges excepted".<sup>30</sup> Similarly William Wilkinson and Samuel Wroe put in a specification "for widening fencing and making the Road from Wakefield to Sheffield 24 foot broad ditch to ditch in the Lanes and 30 foot broad ditch to ditch on the Commons to cover same with stone 20 foot broad 8 inches thick at the edge by 18 inches high in the middle and the stone to be laid on three coverings Firstly 8 inches of strong stone 8 inches thick second covering 6 inch of middleing broke stone and third covering 4 inches thick of small broke stone, these to be laid in a circular manner and then the sides to be ribbed or backed up with earth . . ."<sup>31</sup> If this latter method were used it was advanced for its time and reminiscent of Telford's techniques forty years later. The whole road from Wakefield Bridge to Lady's Bridge was divided for construction purposes into fifteen sections mainly at 15s. per rood.<sup>32</sup> Total cost was £4172 -12-0, with the Pitsmoor to Lady's Bridge stretch (one and a half miles) £382-17-0. Problems

<sup>27</sup> TC 362

<sup>28</sup> see Chapter 12 Financing the Expanding Economy

<sup>29</sup> Fairbank Colln AB4 ff5 & xvi

<sup>30</sup> TC 363 f23

<sup>31</sup> *ibid* f26

<sup>32</sup> One rood is thirty and a quarter square yards ie a square rod (5½ yards squared)

over the purchase of some of the necessary land must have arisen as Trustees were obliged to have an amending Act in 1760 to strengthen their powers and to appoint a jury as required to arbitrate over compensation.

Completion of the route was in a way the real beginning rather than the end of the undertaking. Regular income and expenditure started to flow and the repair schedule began. Tolls were exacted and many hundreds of waggon-loads of cinders (mainly from Chapeltown Furnace) and of stone were used in the sections near to Sheffield and hundreds of thousands of bricks burnt as needed for work along the whole road.<sup>33</sup> After initial "profits", tolls brought in just under £550 in 1765 with other income preventing a deficit. The following year appeared better with £862, but a deficit of some £70 was registered even with other income. Finally in 1768 the toll revenue alone of £907 exceeded expenditure by nearly £40. Subsequently toll/expenditure balances stayed negative, with some redress from other sources, until the end of the account in 1775. It is not surprising that only £400 had been deducted from the original debt after sixteen years.<sup>34</sup>

Rising toll income illustrates a nearly two-fold increase in traffic over the whole road in the decade from 1765. It does not inform where the busiest toll bars were or the make-up of users. £500 represents 5000 six horse coaches or 20,000 two horse wagons or 120,000 pack-horses or, more realistically, a mixture of these and other combinations.<sup>35</sup> Pawson uses the statistics from the Old Mill Bar, north of Barnsley, for the flows in 1760 and 1761, and draws the obvious conclusion from those figures that pack-animals were still pre-eminent. The absence of the contract carts and coaches (almost by definition the most regular users) from the figures probably means that the pre-eminence was less than at first appears.<sup>36</sup> Comparative statistics for Pitsmoor Bar, which may have been quite different are not available. All we have are records of tickets printed - 12,000 in October 1760, 4000 more in March 1762 and 6000 twice in 1763.<sup>37</sup> Such figures are circumstantial, but hint at about twenty units per day over and

<sup>33</sup> TC 363 to 365 and TC 406 to 410 (1759-1775)

<sup>34</sup> TC 364 The toll income reached a high point of £1004-18-0½ in 1772. There is no indication in the records that the charges rose, although costs did in that labourers' wages rose gradually.

<sup>35</sup> TC 363 f2

<sup>36</sup> *ibid* f45

above contract carriers, and, in view of rises in earlier toll totals, seem likely to be doubled in ten years.

The building of turnpikes to the south and west apparently stimulated a petition for one to the East, from Sheffield to Bawtry with a spur to join the Rotherham to Wortley branch, in January 1760. Inhabitants of Bawtry probably saw the route, which was in urgent need of repair and described as "impassable in the rainy and winter seasons", as a means of redressing the port's flagging fortunes in the face of overwhelming competition from the Don Navigation.<sup>38</sup> The irony of the situation was that the first section of road would be from Sheffield to Tinsley, with the distinct possibility of the Navigation's link with Sheffield being subsidised by the remainder of the turnpike. In the event, the Act avoided this anomaly by leaving the Navigation to maintain the first part as they had in the past.<sup>39</sup> As a *quid pro quo* the Act allowed the latter's petition against a toll-bar there. Already they were taking a toll at Tinsley Wharf of 1d per waggon plus 1d per ton and claimed to have expended £3500 over and above that revenue on a road that was prone to be cut up by narrow wheeled vehicles.<sup>40</sup> Nothing in the Proprietors' minutes notes any actual construction of a further improved roadway until August 1768 when it was resolved to obtain, if possible, a Norfolk lease of land near Burton's Mills to make the road "wider and more passable with carriages" and "to fill up the hollow part of the said Road" to stop water accumulating.<sup>41</sup> Eventually, in 1774, John and Thomas Taylor, paviors, were granted a seven year contract to maintain the route at 7/- per rood per annum.<sup>42</sup> Most of it does appear to have been already set and pitched, although 12/6 per rood was initially allowed to resurface the stretch from Handley's Gate to Burton's Wear: the six inches of ganister in the centre and two inches at the sides seems third-rate compared with specifications for the Wakefield road. The Taylors' work must have been satisfactory, however, as John was given a new contract for seven years at £220 per annum from 1781.<sup>43</sup> Much later, in 1804, a Mr. Jessop,

<sup>37</sup> TC 365 ff215, 253, 330 and 371.

<sup>38</sup> *House of Commons Journal* Vol. 28 (23 Jan 1760). It was also a link with the Great North Road.

<sup>39</sup> Sir Lionel Pilkington's interpretation TC 404-18(a). As "no Person interested in the Navigation [was] to act as a Trustee" that view was likely to prevail.

<sup>40</sup> PRO RAIL 825-5 5 February 1760; *House of Commons Journal* Vol. 28 (10 Mar 1760)

<sup>41</sup> PRO RAIL 825-5 11th August 1768

<sup>42</sup> *ibid* 825-5 and 825-1 13 May 1744

engineer, gave a report to the Proprietors "respecting a Railway from Tinsley to Sheffield". No details are noted in the minutes, and the scheme was not implemented, even though proposed again in 1813.<sup>44</sup>

Soon after completion of the Sheffield to Bawtry Road, further petitions were put before Parliament in January 1764 to widen and repair the ruinous and, in places, narrow route between Worksop and Attercliffe and link it to the above turnpike, and to improve the road between Doncaster and Tinsley (effectively a Sheffield to Doncaster link).<sup>45</sup>

It was more than a decade before another element was placed in a steadily growing network of turnpiked roads; in 1776 an Act was passed for the repair and widening of the Halifax to Sheffield Road, of which the third district was Penistone to Sheffield. The Act obliged the Trustees to rebuild Owlerton and Wadsley bridges to make them more commodious for carriages and carts. Maintenance of Wadsley bridge had long been a problem for the local community.<sup>46</sup> The new road linked with the more westerly textile towns of the West Riding and with the Doncaster-Saltersbrook. Eventually, in 1805, a branch from Wadsley to Langsett shortened the distance to the latter road and hence to Manchester.<sup>47</sup> In 1778 the Sheffield to Mansfield (Sheffield-Gander Lane) Road with a spur from Mosbrough Green to Clowne was authorised, a southerly route following on from a northerly one in quick succession. Rather unusually, in the Park, a separate causeway was constructed "for passengers on horseback and on foot". In the same area it was permitted to make diversions of not more than fifty yards to allow the working of coalpits, and notwithstanding the usual compulsory purchase of essential land, the Duke of Norfolk was to receive a £20 annual payment as compensation for loss of amenity.

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<sup>43</sup> *ibid* 825-1 6 August 1781

<sup>44</sup> *ibid* 825-1 20 January 1804 & 12 Nov 1813. Half a century earlier (August 1757) Walter Osborne and Joseph Clay had been given permission to lay a timber road beside "part of the Highway . . . made and supported by the Company" between Carbrook Lane End and the wharf "for the better and easier conveying of Coals" (*ibid* 11 August 1757).

<sup>45</sup> *House of Commons Journal* Vol 29 pp 715 and 745.

<sup>46</sup> TC 367

<sup>47</sup> The Wadsley-Langsett was the first local purpose-built turnpike, ie not an improved road like the others.

The system of turnpikes was almost complete in our region by the end of the 1770's. However, the least well served direction because of the topography was inevitably the west. Two elements were added in 1781 - Hathersage to Greenhill Moor joining the Sheffield to Chesterfield Turnpike in Norton Parish, and Totley to Stoney Middleton joining the Chesterfield to Hermston Lane Head (towards Chapel en le Frith) Road. Remaining deficiencies were not redressed until the new century. The 1781 Act was enlarged in 1803 enabling branches to Baslow and Goose Green, Ecclesall, to be constructed.<sup>48</sup> The Wadsley-Langsett of 1805 has already been noted above, and another similar link road was enacted in 1812, Banner Cross to Fox House via Dore to join the Tideswell Road at Fox House and the Baslow Road near Owler Bridge. The most challenging project, the Sheffield to Glossop turnpike, was the last. Enacted in 1818 "to facilitate the carriage of various vegetable and mineral Productions" (without explanatory detail in the preamble), it was not opened until 1821. No-one who has travelled over the Snake Pass can fail to appreciate the difficulties faced by the builders, on account of both terrain and weather. There were also some problems in town because West Street, the designated starting point, had no clear thoroughfare to Church Lane and High Street, and still terminated in gardens near to the Fairbanks' residence at West Hill. Houses and a few workshops had to be demolished, although the Act allowed Portobello Street as a nearly parallel "branch". With the Sheffield-Glossop turnpike the network really was comprehensive of all points of the compass.

At this stage we might stop, but earlier reference has been made to the ongoing nature of turnpikes after construction. B.J. Buchanan, using the Bath Trust as a case study, argues that Turnpike Trusts were subject to continual evolution within a network which was itself evolving.<sup>49</sup> We have seen aspects of the latter as it affected the Sheffield region over some eighty years; the former is illustrated by the numerous renewals and amendments of those Acts examined in that period.<sup>50</sup> For example, the Sheffield to

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<sup>48</sup> Because this link was near to the existing Little Sheffield to Sparrowpit-gate Turnpike and likely to reduce its toll revenue, annual compensation was awarded.

<sup>49</sup> "The Evolution of the English Turnpike Trusts" *Economic History Review* 2nd Series XXXIX 2 (1986)

<sup>50</sup> For the sake of brevity post-1820 renewals and amendments are not discussed. The toll pricing was frequently related to national legislation on wheel rim (fellie) widths.

Derby Trust had twenty-one year Renewal Acts in 1775, 1795 and 1816. The second of these allowed a 50% increase in the tolls levied between the end of October and the beginning of May and a small change in the route at Whittington Moor near Chesterfield. This, like all renewals, named new trustees to replace those who had died or had withdrawn for some reason. Similarly the Sheffield-Wakefield, after the Amending Act of 1760 (noted above), had Renewals in 1777, 1797 and 1813. The last permitted a general rise in tolls, a Sunday premium and a new route with a longer, but less severe gradient via Spital Hill instead of using Nursery Street and Pye Bank. The contemporary Sheffield-Buxton and Sparrowpit-gate Act was renewed in 1778, 1795 and 1811. An excessively complex toll pricing with over thirty categories and numerous exceptions was imposed and later replaced by a much simpler *pro rata* system. The Sheffield-Bawtry Renewal of 1781 reduced the qualifications required of trustees from an income from property of £60 per annum or personal and real estate of £2000 to £40 and £800 respectively, no doubt to maintain numbers, and halved the tolls for vehicles carrying corn to and from Canklow Mill. The Tinsley-Doncaster was renewed in 1785 and 1806, the Attercliffe-Worksop in 1786 and 1807 and the Sheffield to Penistone in 1792 and 1817. The last mentioned, among other things, permitted loads of lime and manure and all agricultural equipment, as well as those travelling in a vehicle to and from church on Sunday, to be exempt from toll. Pragmatic decisions seem to have dictated development throughout.

The turnpiking of principal roads does not imply that lesser routes fell into disuse. On the contrary an increase in traffic put pressure on unimproved links and cross-roads as continuing indictments show through much of the period.<sup>51</sup> The specifications for Broad Lane in 1763 were almost as high as for a turnpike, with eighteen inches of stone at the crown and twelve at the edges of the six yard wide road plus a yard wide "ditch" at either side. The same road (Sheffield to Hope) a little further West was indicted eight years later and not for the first time.<sup>52</sup> If conditions were reasonable, at least for some months in the year, there must have been a temptation to use the old road to avoid paying tolls.

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<sup>51</sup> TC 367, *Sheffield Courant* 15 March 1794.

<sup>52</sup> TC 413(9), *Sheffield Public Advertizer* (No. 144 1763),

## THE DON NAVIGATION

Having looked in some detail at the progressively evolving network of local roads, it is appropriate to return to the Don Navigation and its continuing history. The involvement of the Navigation in road legislation has already been outlined, and its commercial activities must have benefited considerably from improved land communications with Tinsley. Ever eager to increase trade further, after deciding in 1759 to end a sequence of leases and run the business themselves, the Proprietors sent William Martin, their recently appointed manager, and a group of keelmen to Manchester in 1760 "to keep up correspondence with the traders in those parts for the advantage of the said keelmen and the Trade of the River Dun". The Proprietors also paid for advertisements "in several Publicke News Papers".<sup>53</sup> Shortly afterwards, in 1763, they instituted a company carrying service for "mercantile goods" between town and wharf charging 1½d per hundredweight from Sheffield to Tinsley and 2d in the opposite direction.<sup>54</sup> No doubt the renewing of boats and the appointment of the Taylors (above) to maintain the road was part of that improvement process.<sup>55</sup>

As might be expected, once the Navigation was completed in 1751, calls on shareholders declined in frequency as the £270 shares were gradually paid up.<sup>56</sup> In the decade which followed, dividends were on average about twice the value of calls which finally ended in 1763. From then onwards dividends steadily grew to a typical £30 in the later 1760's, then to £40 and £50 and more in the 1770's, after which £50 (plus or minus a few pounds) was the norm. The value of the shares rose accordingly - to £800 in 1783, to about £900 in 1785 and to £1000 in 1786.<sup>57</sup> In 1795 two shares were mortgaged for £2300, and the dividends of the decade fluctuated between £50 and £60 per annum, a pattern which continued into the new century.<sup>58</sup> The long-term profitability of the investment at more than twenty per cent of outlay compared very well with later canal schemes elsewhere - the Grand Junction in its heyday achieved

<sup>53</sup> PRO RAIL 825-5 14 August 1760. Martin was replaced in 1765 by William Stanley who in 1792 became a partner in the Sheffield & Rotherham Bank.

<sup>54</sup> *ibid* 825-5 11 August 1763

<sup>55</sup> *ibid* 825-5 7 November 1765

<sup>56</sup> British Museum Additional MSS 27538 f 472 The original expense of the Navigation was estimated at £30,000 ie 150 shares of £200 each.

<sup>57</sup> LD 1164 f224

<sup>58</sup> PRO RAIL 825-1 22 May 1795 and *passim*.

over ten per cent, the Oxford over thirty, but the Kennet & Avon only three per cent. Such profitability illustrates in part the extent of the Navigation's contribution to the town and regional economy.<sup>59</sup>

If dividends are well recorded in the Minute Books, there is no parallel for the accounts whose survival is very fragmentary. The earliest are two sets of summaries for the decades 1759 to 1769 and 1769 to 1779.<sup>60</sup> In the first the average revenue from Lock Dues was £7006, in the second £10,557. Without annual figures it is impossible to determine the nature of the increase. However, a different and more comprehensive series shows annual growth of income from all sources from 1764 to 1769, respectively £11,493, £11,766, £12,651, £12,687 and £14,837.<sup>61</sup> The remaining item is an account for 1780/81 in which the total income is £12,620, the latter coinciding with a general decline in exports to the American market rather than indicating a possible ceiling to income from the waterway.<sup>62</sup>

#### THE SHEFFIELD CANAL

Thoughts of removing the bottleneck of the Tinsley to Sheffield road must have entered the minds of some interested party at this stage, quite possibly triggered by the recent opening of the Chesterfield Canal. In 1783 one John Thompson estimated the cost of a waterway, from which a Mr. Hartop deduced that annual outlay would outweigh the average (hypothetical) income of the previous seven years by £425.<sup>63</sup> It was almost a decade later when the Proprietors called a meeting to consider an application to extend the Navigation to the Wicker, and immediately provoked a spate of objections - damage to existing water-powered sites, lack of water, too many locks, future neglect of the Sheffield-Tinsley road, loss of land and so on.<sup>64</sup> What they must

<sup>59</sup> C. Hadfield: *British Canals: an Illustrated History* (Newton Abbott) 2nd edn 1959 chIX.

<sup>60</sup> British Museum Additional MSS 27538 f472 op cit

<sup>61</sup> PRO RAIL 825-14

<sup>62</sup> P. Deane & W.A. Cole: *British Economic Growth 1688-1959* (Cambridge) 1962 p49

<sup>63</sup> Wheat Colln 2486 There is nothing in the Navigation Minute Book to indicate that it was the Proprietors. An undated Fairbank plan, ECa 31L, may relate to this - it is catalogued as [1782]. It seems more likely, however, to be appropriate to 1792.

<sup>64</sup> British Museum Addnl MSS 27538 f464 & 465 nd, but supported by entries for July and August 1792 in the Navigation Minute Book (PRO RAIL 825-1).

not have known at this point was the apparent intention of the Norfolk estate, from as early as 1787, to have the canal head in Castle Orchards.<sup>65</sup> In spite of, or perhaps because of, the outcry a canal from Sheffield to Rotherham, joining the Don there and not at Tinsley, with a branch to Renishaw, was proposed and unanimously agreed. Benjamin Outram's estimate in April 1793 of the outlay on a Sheffield-Eckington canal with a branch to Tinsley - not quite the same as the original proposal - was £49,215 plus £3000 for reservoirs.<sup>66</sup> Simultaneously, a Don (from Swinton) to Barnsley canal and a Stainforth-Trent cut (to improve the lower reaches of the Navigation) were investigated and costed.<sup>67</sup> This bold attempt to widen the catchment area to North and South was only partially successful in that the Dearne and Dove (Swinton to Barnsley and Silkstone with a branches to Elsecar and Worsbrough) received Royal Assent in June 1793, whereas the Sheffield, Rotherham and Renishaw was not taken to petition stage because of opposition from the Chesterfield Canal and extreme doubts about its cost effectiveness, particularly for coal carriage, its main potential revenue.<sup>68</sup> The Stainforth-Trent seems to have met a similar fate.

The persisting limitation and expense of road transport eventually persuaded an independent group, principally the Cutlers' Company, to employ William Dunn to survey the Sheffield-Tinsley option once again in 1802. The cost, including five locks to descend fifty-nine and a half feet in four and one third miles was put at over £50,000. In contradiction to other reports, Dunn believed that there would be ample water without injury to the mills, although lock sizes were restricted.<sup>69</sup> Convinced by the figures, the group decided to advertise for subscriptions to a newly proposed Sheffield to Tinsley canal and to petition Parliament in February 1803.<sup>70</sup> The Proprietors opposed the bid which failed to be enacted. Even so, subscribers had raised

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<sup>65</sup> ACM S381 ff26/27 The wording in the lease of 1a 3r 4p is: ". . . except so much of the said Land as shall or may be wanted for a Navigation or a Wharf . . ."

<sup>66</sup> Fairbank Colln CP 4 f94.

<sup>67</sup> PRO RAIL 825-1 September to December 1792. There was also a meeting in October with representatives of the Aire and Calder Navigation and gentlemen from Barnsley about a proposed canal linking that town to the Calder.

<sup>68</sup> *House of Commons Journal* Vol. 48 3 June 1793; PRO RAIL 825-1 January 1793.

<sup>69</sup> MD 1740

<sup>70</sup> PRO RAIL 825-1 17 February 1803; *House of Commons Journal* Vol. 58 p191.

£29,400 in anticipation. Within a year (January 1804) the Proprietors considered the option of a railway, mentioned earlier, as a cheaper alternative to a canal. There is no indication that this ever went further at this stage. In 1809, a petition was sent to Parliament concerning proposed new cuts and tow-paths below Tinsley and "regulation" of tolls and duties. Again this made no progress.<sup>71</sup>

In spite of the hindrance to trading activity of the road link to the Navigation, the town still had connections from Tinsley wharves to numerous other waterways. During 1808 and 1809 William Wade & Co. advertised canal carriage to Manchester, William Judd & Sons to Warwick, Banbury and Oxford with twice weekly "post boats" to Southampton, and Cresswell & Barnes to Birmingham and Bristol.<sup>72</sup> A few years later Thomas Smith of Rotherham publicised the continuation of his Tinsley to Manchester "fly-boat" service.<sup>73</sup>

Over several more years, pressure for a Sheffield-Tinsley waterway persisted. James Montgomery wrote a strongly supportive editorial in the *Iris* in October 1811, and correspondence about the benefits of cheaper coal and food soon followed.<sup>74</sup> A well argued letter of May 1813 set out several key points relevant to the problem and its solution. The writer pointed out the excess of horses currently employed in road transport and an acute shortage of pasture which was raising land prices and hence carriage costs. He was particularly anxious over the rising price of food. Short-term benefits of a canal included employment in construction, and permanent advantages were cheap freight, wide-ranging boats in search of cheaper foodstuffs, and the possibility of a small boat building industry.<sup>75</sup> Within weeks, the Master Cutler was requested to convene a meeting to consider water carriage between Sheffield and Rotherham (sic) and to initiate a survey and report.<sup>76</sup>

One year later, on behalf of the Canal Committee, not the Navigation, W. & J. Fairbank presented their survey of the proposed route and William Chapman of

<sup>71</sup> *House of Commons Journal* Vol. 64 p89

<sup>72</sup> *Iris* 5 & 12 Apl 1808 & 11 Apl 1809

<sup>73</sup> *ibid* 23 Mar 1813

<sup>74</sup> *ibid* 5 Oct, 5 & 19 Nov 1811

<sup>75</sup> *ibid* 25 May 1813

<sup>76</sup> *ibid* 29 June & 27 July 1813 At some point this must have been modified.

Newcastle, civil engineer, reported that the projected cost, inclusive of land, would be £47,575 for a Wicker-Tinsley route to the North of the River. The alternative which he did not recommend was a Castle Orchards-Tinsley canal to the South and costing £58,072. Chapman also made estimates for improvements to part of the Navigation between Tinsley and Rotherham (£13,765), for a Castle Orchards-Eckington narrow-boat canal with branches to the Chesterfield Canal near Killamarsh and to the Wicker (£68,000) and for another narrow-boat canal up the Sheaf valley with a tunnel through to the Derwent valley to join the proposed Peak Forest-Cromford (total £183,088).<sup>77</sup> Out of all the schemes only one of the routes received firm support - the Sheffield to Tinsley to the south of the Don - from the Duke of Norfolk who offered a £1000 subscription.<sup>78</sup> Although more expensive to construct, the southerly option had more water available (from the Sheaf and colliery workings), would have less to pay to water works in compensation, and would hence create less opposition in Parliament. Moreover, it left available the possible link with the Chesterfield Canal.<sup>79</sup> Montgomery again backed the project to be "immensely beneficial to the commerce of Sheffield" and condemned the present terminus at Tinsley as "a standing reproach to this neighbourhood".<sup>80</sup> The Navigation Proprietors refused the opportunity to build the new canal because of its greater expense, suggesting the same solution as had been mooted in 1804, that of a railway. They also saw in the canal a major threat to Tinsley Wharf and were ready to oppose the Bill had not £11,000 been offered for their property there - a section of waterway, wharves, cranes and equipment, inn, fifteen houses and two and a half acres of adjoining land.<sup>81</sup>

Besides estimating the above range of construction costs, Chapman also reported that the probable annual revenue of a Sheffield-Tinsley canal calculated from recent years'

<sup>77</sup> Fairbank CP4 f90 There was also an estimate of £54,280 for a double track railway from Castle Orchards to Eckington with a branch to the Chesterfield Canal, plus £1000 for another to the Wicker. Wheat Colln 3278 gives the cost of the Sheffield-Tinsley Canal with a branch to Darnall as £47,000 plus the cost of the land (c71 acres). This may equate with the £58,072 in the text above.

<sup>78</sup> The 1787 reservation of land by the estate for a wharf in Castle Orchards (ACM S381 ff26/27) has already been noted.

<sup>79</sup> Fairbank CP4 f47 and f51. The mine water was from Crooks Croft, near Castle Orchards, and from Greenland Engine at Attercliffe. In a twelve hour day the steam engine at Crooks Croft could pump 692,640 gallons into the canal basin.

<sup>80</sup> *Iris* 2 Aug 1814

<sup>81</sup> PRO RAIL 825-1 7 Apl 1815 & WRRD GR 122 127

REFERENCES.

parts coloured deep Yellow describe the Wharf and other Property belonging to the River Dun Company at Tinsley.

Distance from said Wharf to Lady's Bridge, Sheffield along the present Turnpike Road is 246. 15

Distance from the Point where the River Dun should have been made Navigable thro' the Holmes Crosses and over Brightside Bridge to Lady's Bridge Sheffield is 246. 70

From which it appears that the Wharf ought to be 667. 00 or nearly half a Mile nearer to the Town of Sheffield than it is at present.

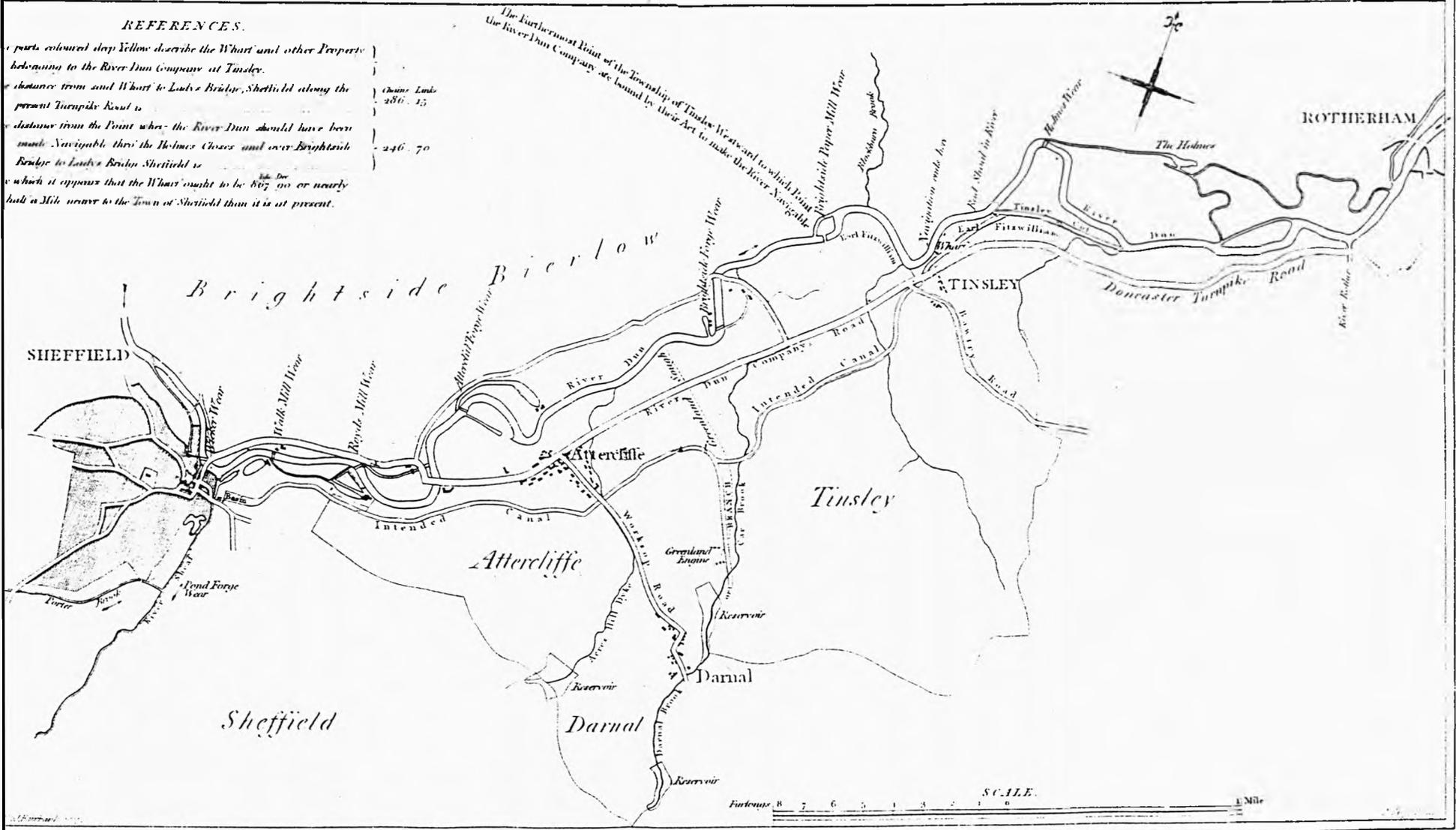


Fig. 10.2 W. & J. Fairbanks' Plan of the Intended Sheffield Canal 1815 (LS S33S)

(rather indifferent) freight figures would be £3690 and the savings over road carriage would exceed £7800 from a total annual tonnage of some 36,000. Then came the most encouraging part of the report - potential carrying capacity was over four times greater at 150,000 tons per annum. A correspondent to the *Iris* extrapolated figures from the Dearne & Dove to show likely growth rates from about 40,000 to 99,000 tons over a six year period and a saving of some £7500 per annum.<sup>82</sup> Armed with such statistics the Canal Company pressed on with a successful Petition, and the Act received royal assent in June 1815.<sup>83</sup> The *Iris* records requests for contractors for the various elements including six locks 70 feet long by 16 feet 6 inches wide and tunnel masonry and brickwork, as well as the sequence of ten per cent calls.<sup>84</sup> A huge crowd watched the first stone laid in the new basin in 1816, and, amidst a blaze of publicity, the Sheffield Canal was opened in February 1819, almost a century after the first Act to make the Don navigable to Tinsley.<sup>85</sup> Montgomery's assessment of the benefit to the town seems fully justified. Final total costs were £104,719, but shares were already at a premium, reportedly rare at the opening of a canal.<sup>86</sup>

At this period with canal completed and turnpike network mature and enhanced by ongoing improvements Sheffield was linked from within the town to Hull, to Liverpool and to much of the country by water and to all points of the compass by road. Local coaches and carriers had daily schedules which depended on good surfaces in all seasons. For passengers and freight of every possible kind and bulk, the system, although not yet as speedy as the future steam railways, was functional and effective. The town now enjoyed to the full all the economic advantages of the facilitating agency of transport.

#### CARRIERS AND COACHES

In *The Fiery Blades of Hallamshire* David Hey has detailed the pre-1740 carriage and coach developments as they affected Sheffield.<sup>87</sup> There was a long-established regular

<sup>82</sup> *Iris* 9 Aug 1814

<sup>83</sup> Wheat Colln 3277/1

<sup>84</sup> *Iris* 8 Aug, 3, 10, 17 Oct 1815, 2 Jan, 6, 27 Feb, 25 June, 23 July, 8 Oct 1816, 7 Jan, 8 Apl, 8 July, 14 Oct 1817, 17 Feb, 2 June 1818 Montgomery reported on 25 Feb 1817 that 200 casual poor were to be employed in the digging.

<sup>85</sup> *Iris* 25 June 1816, 9, 16 & 23 Feb 1819; 12 Geo I c.38 (1726)

<sup>86</sup> *Iris* 23 Feb 1819

London passenger and freight service on the north-south road from Leeds to the capital, the eastward Bawtry route for imports and exports via the River Idle, the Trent and Hull (until the Don Navigation began to usurp the Hull traffic through Aldwarke), and the westward Pennine road to and from Hope, Castleton and Manchester, details of which have already been examined.<sup>88</sup> Freight rates were fixed by the Quarter sessions, and services operated throughout the year unless the roads were impassable. Carriers received a premium for the winter months to compensate for the slower rate of travel.<sup>89</sup>

It is clear from Richard Dalton's business letter books that in the 1740's set carrier days were in operation for the York (and indirectly Hull) route - departing Tuesdays from Sheffield and returning with fish on Fridays.<sup>90</sup> The more frequent London service, noted above, was at least a century old at this time and it seems very likely that other routes would have a regular weekly pattern. Between November 1746 and October 1747 William Dawson (brother of Sheffield attorney Samuel) at Buxton received small sums of money from his family in Sheffield sent by carrier, and circumstantial evidence from 1751 indicates a more than casual service between Hope and Sheffield. Then fourteen carriers made a three year agreement to charge predetermined minimum prices of 12d per load of goods or 8d per three bushels of wheat.<sup>91</sup> Unfortunately, the earliest extant editions of the local newspaper of the mid-1750's make no reference to carrier services.<sup>92</sup> The first such promotion found is in the *Sheffield Public Advertizer* of 10th/17th September 1768; John Wright was operating the Sheffield to Newark route with forwarding to all parts of the counties of Lincoln, Rutland, Northampton, Huntingdon, Cambridge, Norfolk, Suffolk, Essex, Bedford and Hertford and to London.<sup>93</sup> Other evidence for the period exists, but is very fragmentary. For example,

<sup>87</sup> D. Hey op cit p 146ff

<sup>88</sup> TC 413(9)

<sup>89</sup> WYAS QS 10/18 f87 and 10/19 f152; Bagshawe Colln (John Rylands Library, Manchester) 5/4/1 (16), (24) and passim

<sup>90</sup> Bagshawe op cit 5/4/2 3 Nov 1742, 3 Oct 1744, 5/4/3 20 May 1747, 6 Dec 1749.

<sup>91</sup> TC 519 f15; Photocopy Colln 446(a) As many were based in Hope they presumably escaped the West Riding Justices' jurisdiction over carriage pricing.

<sup>92</sup> Lister's *Sheffield Weekly Journal*; four copies between February 1755 and March 1756 (in York Minster Library). Hull shipping is detailed, but no land transport.

<sup>93</sup> Nationwide the increase in activity prompted Parliament to enquire into weights and prices involved in common stage waggon haulage. They noted that two and

during the 1760's Matthias Spencer, filesmith, used Francis Rogers to take his files to Namptwich (sic) and Mr. Billam to deliver to Bawtry. In 1770 Mr. Shaw had replaced Rogers, and John Rogers was delivering Spencer's horse rasps to Mansfield.<sup>94</sup>

By the 1770's the picture becomes a little fuller, although the first extant Trade Directory has no list of carriers.<sup>95</sup> In the *Advertiser* dated 29th January/3rd February 1774 John Anderton of Norton (who had carried files for Matthias Spencer in the late 1750's) publicised his stage waggon service to Derby to connect with a weekly Derby-Birmingham service.<sup>96</sup> Two years previously Thomas Lidgard of Lincoln and Richard Gardiner of Manchester had agreed mutual guarantees over deliveries which incorporated the Sheffield-Manchester stage. Forwarding towns included Chesterfield, Mansfield, Newark, Nottingham, Grantham, Stamford, Peterborough and Cambridge.<sup>97</sup> Such evidence from both decades, although sparse, suggests that there was not much long distance travel between provincial towns, but rather an amalgam of relatively short links in a very wide delivery network.<sup>98</sup> By the time of the 1787 Gales and Martin Directory this situation had changed; John Anderton now had a waggon going all the way to Birmingham with goods forwarded to Coventry, Oxford and all points West. Local carriers provided once per week services to Ashbourne, Bakewell, Bewdley, Cambridge and Kendal; twice per week to Gainsborough, Lincoln, Mansfield and Tideswell; three times to Halifax and Macclesfield; four to Birmingham, Leeds and York; and six to Manchester; thirty-seven provincial services to and from Sheffield.<sup>99</sup>

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a half to four (occasionally four and a half) tons was normal and that some counties observed a set of regulated carriage rates (*House of Commons Journal* Vol. 30 p526 Feb 1766)

<sup>94</sup> LD 1925 f20 to f78

<sup>95</sup> 1774. The index notes that the carriers are at the back. The page or pages are missing.

<sup>96</sup> Anderton had purchased a coach-house in Cheney Square in 1772 and converted it into a carrier's warehouse (WRRD BP 241 296 & BT 467 588) Parker Colln 1088

<sup>97</sup> It was at this time (1773) that central government realised the extent of the range of carriers' travel movements so that legislation was passed to facilitate their identification by obliging them to display name and address in a conspicuous place on their waggon. There were also clauses concerning the conduct of drivers and control of horses. (*Parliamentary Sessional Papers* [Sheila Lambert's Series] Vol. 23 p157 Road and Turnpike Act).

<sup>99</sup> Arrival and re-departure times indicate that these are all complete services. Macclesfield had a canal with a direct link to the Trent and Mersey waterway.

Together with the London route and with forwarding facilities they covered most of the kingdom.

Ten years later the Manchester link had three daily waggons (except Sunday) and twenty-three per week; Macclesfield had twelve weekly, Leeds six, Halifax four, Chesterfield three, Birmingham two, and Bewdley, Cambridge, Kendal and Longstone one each; fifty-four in all.<sup>100</sup> What is interesting is an apparent real decline in the Birmingham service and relative decline of London (nine) in the face of the massive increase of both the Manchester and Macclesfield provision. The 1790's was a period of rising costs for carriers, which may have had the effect of driving some out of business; clearly that did not prevent an overall rise in the number of services.<sup>101</sup> Indeed, the strength of the Manchester and Macclesfield carriers was such that they resolved at the end of 1799 to raise their rates.<sup>102</sup> Perhaps more of Sheffield's imports and exports were being conveyed by water from and to Birmingham and the capital, or perhaps there were simply omissions from the Directory - William Nicholson, a Doncaster and York carrier, for example, who was in the 1787 list and still in business on the same route in 1799, does not appear in the 1797 schedule.<sup>103</sup> And a seventy-two hour, once weekly Birmingham service, was advertised in the *Iris* on 19th February 1801 by Cooper and Green, neither of whom had been in the recent Directory, although they may have been new to the business. It is also possible, but not corroborated, that bigger firms employed their own private carriers.<sup>104</sup>

Wardle and Bentham's Directory of 1814 does not detail the frequency of the services. It only names the carriers with their destinations. Again Birmingham is not well represented. For the provinces thirteen firms are noted, compared to eleven in 1797. In 1817, when rather more information is printed, fifteen firms are listed and about sixty weekly operations, a relatively small increase in twenty years.<sup>105</sup> Manchester and

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<sup>100</sup> 1797 Directory

<sup>101</sup> *House of Commons Journal* Vol. 49 p456, Vol. 51 24 Dec 1795

<sup>102</sup> *Iris* 8 Nov 1799

<sup>103</sup> *ibid* 23 August 1799. He sold his business to John Winn in 1800 (*Iris* 19 June)

<sup>104</sup> There is some evidence for private carrying Sheffield-Rotherham (MD 1740 [21]), but all appear to be millers.

<sup>105</sup> Fifty-eight services are enumerated plus two firms which have no detail. It is not known how many wagons were used on each service.

Macclesfield were predominant with four separate daily departures (it seems that these were joint services), followed by Leeds with seventeen per week. Three firms carried to Birmingham, two without specifying the number of weekly runs and one of these part water carriage. By 1821 fifteen named firms ran some ninety services with no mention of Macclesfield.<sup>106</sup> Manchester still led the way.

The general conclusion to be drawn is that Sheffield's cross Pennine trade came to dominate its provincial road transport links. Much of this must have been due to the growing importance of Liverpool as an outlet to Irish and especially transatlantic commerce as Sheffield's international strength in metal wares and silver goods was consolidated.<sup>107</sup> During the 1780's and 1790's members of some of the town's leading families established themselves in the port: James Eckley Colley, son-in-law of Thomas Newbould and first mariner and then merchant, Joseph Colley, a partner of Samuel Newbould and merchant, Thomas Staniforth, merchant, and John Kindersley Tudor, attorney, for example.<sup>108</sup> Furthermore, from this period local newspapers carried shipping news for Liverpool as well as for Hull.

Contrary to the scarcity of material for early provincial operators, the London carriage trade is quite well documented. The Wright family of Sheffield mentioned by David Hey were London carriers at least up the 1770's.<sup>109</sup> Mrs. Wright, of the Park, who had a daughter living in London, sent or requested a variety of items by the family waggons in the 1740's including a "Rowling Pinn", plates and dishes, a "Hatt" and a wet-nurse who was to travel with Jarvis.<sup>110</sup> Twenty years later her daughter was asking for scissors, dessert knives and forks with ivory handles, oddments of crockery and a snuff box "bespock of Mr. Hancock", acknowledging a hare and beef received, and sending oysters, handkerchiefs and even dirty washing, all by brother's waggon.<sup>111</sup> Samuel

<sup>106</sup> This Directory has been found to understate in other categories. Robert Moss & Co. are omitted from the Manchester carriers.

<sup>107</sup> see Chapter 9. In 1793 Holy, Newbould and Suckley became partners specifically to trade with America, Suckley to reside there (MD 5737/4).

<sup>108</sup> WRRD CP 39/40 48/49 (1784), DM 405 473 (1793), CF 725 920 (1780), DS 312 230 (1794)

<sup>109</sup> *The Fiery Blades of Hallamshire* op cit p148, ACM S377 f173 (1744), LD 1576 and 1577 family letters (1743 to 1763), TC 522 f380 (1776).

<sup>110</sup> LD 1576 It is not clear if this is Jarvis Wright or William Jarvis, London carrier.

Dawson, attorney, received papers and documents from the Chancery Office via Joshua Wright and via John Law, "Sheffield Carryer", in 1742 and from Furnivals Inn in 1751, carrier unknown.<sup>112</sup> He also sent and received Hollis Trust material by the same means over the same decade.<sup>113</sup> A few years later (1757), Mrs. Dawson took delivery of a pound of tea and two pounds of chocolate delivered from London by Woodall the Carrier.<sup>114</sup> At this period Matthias Spencer was using the services of Thomas and Joshua Wright and of John Woodall to some degree, but mainly Mr. Clark's waggon for his London orders. By late 1758 and early 1759 most of his goods went with Matthew or William Jarvis. Then within two years the London material was travelling with John Woollas to Tinsley and on to the Don Navigation.<sup>115</sup>

Matthew Jarvis was still described as a London Carrier in 1774, 1776 and 1782 although leasing over one hundred acres in the Park from the Duke of Norfolk; Edmund and Thomas Woodall, probably sons of John, above, were similarly depicted in a 1777 mortgage of a house near the Wicker; and Robert Clarke of Leicester was consolidating his position before joining in a complementary partnership with John Anderton, the Derby and Birmingham carrier.<sup>116</sup> Thomas Nowill and Co. frequently used these two during the 1780's.<sup>117</sup> In the 1787 Directory four weekly London services were operated by Clarke travelling via Mansfield, Nottingham, Loughborough, Leicester and Harborough and using two different London inns. Royle's waggons did two journeys, Tuesday's departure using the Chesterfield, Mansfield, Newark and Grantham route, Friday's waggon passing through the same towns as Clarke. Heaton and Jackson's Wednesday and Friday services followed the Great North Road south from Doncaster with a slight deviation to Retford. All took seven or eight days to reach the capital. Such slowness must have prompted twenty-four leading tradesmen and manufacturers (including Nowills, Daniel Holy & Co., Tudor & Leader, Thomas Pierson, J. T. Younge, Morton Warris & Co. *et al*) to explore the possibility of a "Fly

<sup>111</sup> LD 1577

<sup>112</sup> TC 522 ff10 & 11, TC 520 f7

<sup>113</sup> LD 1163

<sup>114</sup> TC 517 f22 (1757)

<sup>115</sup> LD 1925

<sup>116</sup> ACM S380 ff62, 81 & 268; ACM S158 LD 1777 f55 & LD 1779 f55; WRRD EK 271 363.

<sup>117</sup> LD 216

Waggon" to obtain "an expeditious conveyance of goods from hence to London . ." in 1793, some eighteen months after a similar venture from Leeds.<sup>118</sup> Unfortunately the outcome of neither has been found in the newspapers. It may have been the threat of such a service which induced coach proprietors to reduce their small parcel and heavy goods rates in 1796 and later to speed up their activities.<sup>119</sup>

Robinson's 1797 Directory shows an increase of two weekly services from the previous decade: Clarke's waggons still made four journeys, Royal's (sic) now made three and Hunt and Son's three, with two different routes. Five or six days' travelling time seems to have been the norm at this date. Of the subsequent Directories, the Wardle and Bentham of 1814 gives the names of the two waggon proprietors, Hunt & Son of Eyre Street and Pickfords of Arundel Street, but no frequencies, and the 1817 list shows William Acton & Co. and Deacon, Harrison & Co. each operating a daily routine. This probably implies twelve services per week rather than fourteen. Journey time appears to have been dramatically shortened by August 1819. The Waggon Warehouse in Arundel Street (Acton & Co.) advertised a two day regular service to London, and Pickfords their thirty-five hour "caravans".<sup>120</sup> It is likely that these conveyances were somewhat lighter than the overloaded five ton stage waggons of a few years earlier which were criticised for being dangerously top-heavy.<sup>121</sup>

Road carriage trade to London appears to parallel that of the Don Navigation with a steady ongoing increase in freight, although numbers of services are not available until 1787. This growth does not match the surge of trans-Pennine activity from the latter period, but bearing in mind that much London-bound material travelled by water from Tinsley, it would be unwise to belittle that market. We must also remember coach transport, briefly referred to above, which for more valuable goods in particular was in direct competition with the carriers. Fenton, Creswick and Co., for example, commonly used the coach in the 1790's and early nineteenth century to send silver and plated ware to the capital.<sup>122</sup>

<sup>118</sup> *Sheffield Advertizer* 4 Jan 1793; *Sheffield Register* 18 July 1791 (a four day journey)

<sup>119</sup> *Courant* 24th May 1796

<sup>120</sup> *Iris* 3 & 24 Aug 1819

<sup>121</sup> *ibid* 30 Jan 1816

<sup>122</sup> Bradbury Colln 169 and 170 *passim*

Even though helpful evidence for the London service has been found, provincial coach travel, other than to Barnsley, Wakefield or Leeds on the itinerary above, is particularly difficult to quantify before the 1787 Directory. Enoch Oakes, for example, travelled for Fenton, Creswick and Co. to York and Lincoln in 1774 and one of his employers, Mr. Fenton, to London and Norfolk. There is no certainty that they actually used the coach although there are some considerable expenses.<sup>123</sup> The same may be said for Thomas Nowill and Thomas Hague in the next decade when they went on their annual business visits. A coach journey to Birmingham is accounted for in 1791, however.<sup>124</sup> The first real evidence of the spread of the network comes in the Directory of 1787. It lists nineteen departures to London weekly, fourteen to Leeds, six each to Birmingham and Edinburgh, three to Carlisle, two each to Doncaster and Hull, and three to Manchester in the summer months only. In 1797 there were two per day each to London, Leeds and Doncaster, four per week to Birmingham, three to Carlisle and a summer only service (four) still to Manchester. Strangely, a letter to the *Courant* on 24th January 1797 requested a direct Sheffield to Birmingham coach and mail, which is probably a less than clear way of stating that the writer wanted a daily service. This had existed in December 1789 when a light coach from the Tontine Inn was advertised in the *Sheffield Register*.<sup>125</sup> Only in 1801 was a Birmingham Royal Mail Coach (at 4am daily from the Tontine) noted as new established from 1st May in the *Iris*.<sup>126</sup>

In the meantime (March 1798) the London service was improving with a three times per week Post Coach from the Royal Oak in Pond Street advertised to reach the capital in thirty-one hours and return in thirty-two. Such competition spurred the Tontine, some nine months later, to offer the "Loyal Duncan Light Elegant New Coach" with four seats inside and three out to travel from Leeds to London in thirty hours.<sup>127</sup> Wardle and Bentham's Directory of 1814 confirms a sustained increase in the London service, but without the "Loyal Duncan". Three coaches ran daily on that route, one each from the Tontine, the King's Head and the Commercial Inn, and two per day to Birmingham, and one to Doncaster, to Manchester and to Edinburgh via York, all from

<sup>123</sup> Bradbury Records 237 ff 13, 14, 15

<sup>124</sup> LD 216 passim and f33

<sup>125</sup> 4th December 1789

<sup>126</sup> 14th May 1801

<sup>127</sup> *Iris* 9th March and 30th November 1798. There is no information re the number of days per week for the Light Coach.

the Commercial. The 1817 Directory indicates what appears to be a massive expansion from eight to twenty-one daily services plus three others three times weekly, but there are omissions, notably for Leeds, in 1814.<sup>128</sup> Even so, these additional provincial coaches cannot easily be dismissed. There is a broad proportional similarity with the carrier activity for London and the North, except that Manchester does not overshadow the rest. In fact the latter was third after Leeds and Birmingham, reminding us that it was not so much a major market for Sheffield goods as a means of access by way of Liverpool to one of the town's largest overseas markets.<sup>129</sup>

Carriers and coaches, as road users, complemented the developing turnpikes and canals in providing the final element in the communication system. No evidence has been found for occasional (casual) or private (producers' own) waggoners, apart from those using the short Rotherham route, although they may well have existed. The picture from 1740 to 1820 is one of the emergence of a coherent network of transport links integrating land and water carriage. Rising numbers of vehicles, greater loads, more consistent schedules, more direct destinations and quicker journeys enabled Sheffield-based or related operators to fulfil the ever-growing demands of the town's industry and commerce.

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<sup>128</sup> The Halifax service appears in 1797 and in 1817, but not in 1814, for example, and some Leeds coaches, at least, must have been included in the London route.

<sup>129</sup> The detail is as follows: Leeds (and the north-east) five per day, Birmingham (and Bath and Bristol) three and a half average, Manchester (and Liverpool) two and a half average, Edinburgh two, Doncaster two, Gainsborough (with Hull), Chesterfield and Worksop one each, and Halifax a half average (ie three per week).

## CHAPTER 11 FEEDING THE TOWN

The town of 1740 was immediately surrounded by numerous farms and small holdings. In the course of the previous decade the Duke of Norfolk had leased out over 1000 acres of agricultural land in the Park, the Manor, Heeley, Little Sheffield, Upperthorpe, Neepsend, and in the Wicker and Brightside.<sup>1</sup> Together with all of these were extensive areas of pasture and arable land even closer in and within the township - Alsop Fields, Carver Field, Back Field, Bailey Field, Colston Crofts, Long Croft, Hickstile Field and the Town Fields group on the North-western fringe, as well as widespread orchards and gardens.<sup>2</sup> A little further away stood the farms of Ecclesall, the Hallams, Ecclesfield, Bradfield, Handsworth, and those of Scarsdale. Such farming units were mainly small with comparative advantage for the production of cattle and sheep,<sup>3</sup> although a failure of the local oats crop in 1744 reveals that this cereal was normally grown in some quantity.<sup>4</sup> They also provided butter, cheese, eggs, poultry and, at times, fruit.<sup>5</sup> And if butter and cheese were for sale, they must have produced milk. Husbandmen were to be found in the Park, and cowhouses at Town Head Well, Ponds, West Bar, Castle Hill and Blind Lane, all in the 1740's and 1750's.<sup>6</sup> WRRD Memorials from the late 1730's show numerous centrally situated barns and stables which may well have housed cows in parts of Hartshead, Fargate, Red Croft, Castle Green Head, Blind Lane, Coalpit Lane and so on, and a Beast House in Barker Pool in 1749, as well as cowhouses in West Bar and New Street in the following decade.<sup>7</sup> Lest we forget the omnipresent urban

<sup>1</sup> New 21 year leases ACM S377 (1731-1740)

<sup>2</sup> see Gosling's Plan of Sheffield 1736 and Fairbank's Plan 1771

<sup>3</sup> Rennie, Brown and Shirreff: "General view of the Agriculture of the West Riding of Yorkshire" (1793) as in William Marshall: *Review and Abstracts of the County Reports to the Board of Agriculture* (1808) p370ff. There is risk of anachronism here, but the broad principle must have been fully applicable half a century earlier.

<sup>4</sup> Bagshawe Colln (John Rylands Library, Manchester) 5/4/2 (10 Oct 1744) There is confirmation that a variety of cereal crops was grown in the 1770's - eg Beauchief Muniments (BM)50ff - barley, oats & wheat; and 1780's - Borthwick Inventories - corn, hard corn, oats & wheat (Saml. Hides Oct 1780, Philomena Almond Mar 1783, Thos Binney Sept 1784 *et al*).

<sup>5</sup> West Yorkshire Record Office QS 4/29 (5th August 1741)

<sup>6</sup> ACM S377 & S378 *passim*

<sup>7</sup> WRRD MM 750 1072, MM 751 1074, NN 255 361, NN 445 625, NN 512 717, OO 281 402, OO 288 413, OO 600 850, PP 251 353, PP 418 610, QQ 16 17, QQ 183 219, RR 174 231 etc - all 1739-1742; AI 298 369 (1753), AP 96 127 (1757) & AS 214 284 (1749)

pig, swine hulls are noted at the rear of Prior Row, in Bullstake, Colson Crofts, Castle Green and Sycamore Alley.<sup>8</sup> For horticultural output the area had several professional gardeners who appear in the Lease Book and WRRD - Tobias Andrews (who held three acres in Sheffield and a share of eleven acres near the Wicker), his successor William Winnell, and John Greaves (with his garden near Burton Bridge).<sup>9</sup> Besides this provision, frequent examples of what might now be called "allotment gardens" (about which much more will be added later) appear in the Lease Book in batches and elsewhere.<sup>10</sup>

Such a range of products from within the region implies that Sheffield could be at least partially supplied from its neighbourhood and hinterland at the beginning of our period. The urban population of some 10,000, although large for its time, was in a rural setting, even if much land to the west was as yet uncultivated moor. Bearing in mind the comparative advantage, the greatest shortfall was likely to be that of cereals. Corn, salt, cheese and groceries (unspecified) in the 1730's were carried from Doncaster to Aldwarke, then the highest point of the Don Navigation, and Richard Dalton, timber and iron importer, brought oats from Hull regularly from 1741.<sup>11</sup> From the same direction came fish - a food which Sheffield could not provide more than perhaps seasonally from local sources.<sup>12</sup> Dalton, in letters of 1744 and 1747, wrote of Morley the Fishman and of the York carrier who brought supplies on Fridays.<sup>13</sup> For those who had money, an occasional barrel of live oysters came up from London by carrier.<sup>14</sup>

The question then arises as to where foodstuffs were sold and who did the selling.

<sup>8</sup> WRRD NN 534 757, RR 747 1001 & AP 703 891; ACM S378 (1750 & 1757); Fairbank FB9 f57; R. Scola: *Feeding the Victorian City: The Food Supply of Manchester 1770-1870* (Manchester) 1992 p38.

<sup>9</sup> ACM S377 f5; WRRD MM 495 683 & QQ 279 327

<sup>10</sup> ACM S377 f89 (19 in Lambert Croft 1738), f121 (23 gardens in the Millsands 1739), f 200 (14 in the Wicker 1746). Fairbank surveyed several "potato pieces" during the 1750's in Scotland, Broomhall and elsewhere in and around the town - FB3 f35, FB6 f57, FB11 f22 & f96, FB15 f120, AB4 viii, and more in the 1760's.

<sup>11</sup> PRO RAIL 825-1 (1733 freight charges) The earliest extant account is for 1764-1769. Bagshawe Colln op cit 5/4/2 (29 Apl 1741 and passim) Oats would have been mainly for horse feed.

<sup>12</sup> Tradition has it that the Don was a salmon river.

<sup>13</sup> Bagshawe Colln op cit 5/4/2 3rd October 1744 & 5/4/3 20th May 1747

<sup>14</sup> TC 526 (61)

Firstly we must look at the Market Place. Sheffield Market was of ancient foundation and held under the auspices of the Duke of Norfolk. The estate leased out the thirty-four butchers' shops and tolls and rights of stallage for all other commodities there, but the Town Trustees appear to have gained some jurisdiction over its regulation.<sup>15</sup> For example by 1755 they had set up a check on weights and measures, offering free testing on Tuesdays, Fridays and Saturdays.<sup>16</sup> Clerks operating the system were urged "to be vigilant in their duties to detect such frauds and to seize unwholesome and unmarketable commodities ...". It may well have been the Town Trustees who in 1750 pressured Richard Shepley, the Duke's lessee, to sign Articles of Agreement with twenty-nine other butchers to reduce the nuisance ("the great quantity of Blood, Garbage and other Filth") created in the Nether Shambles near Norfolk Street by binding them for eight years to employ only apprentice-trained slaughtermen.<sup>17</sup>

This document is particularly informative in that it reveals that those buildings then used for slaughtering animals were once butchers' shops and that cattle, calves, sheep and pigs were killed. The separation of location for slaughtering and selling post-1784 as described by Janet Blackman had already begun and also, by implication, an increase in meat retailing in the market.<sup>18</sup> This inference is supported by the appointment of two additional cattle inspectors in 1747, although the number of butchers' shops leased by the Duke remained at thirty-four.<sup>19</sup>

Not all food was sold on market days. As Ms Blackman reminds us, foodstuffs were typically purchased by many on a daily basis throughout the year, and for that service some other form of outlet was required.<sup>20</sup> Street hawkers sold dairy produce and poultry (and a good many other items) and required a licence from the Justices.<sup>21</sup>

<sup>15</sup> ACM S158 Lady Day 1740; S377 f136 21 year lease 1741 (the butchers' shops were excepted)

<sup>16</sup> TC 421(7) (1755)

<sup>17</sup> TC 784 (1750)

<sup>18</sup> J. Blackman: "The Food Supply of an Industrial Town - A Study of Sheffield's Public Markets 1780-1900" in *Business History* Vol V No 2 June 1963.

<sup>19</sup> West Yorkshire Record Office: QS 10/20 f75 This was the period of a widespread cattle "distemper" which required a stricter regime. ACM S158 (at the end of each rental till separate listing ends in 1762). There is evidence that others took advantage - new built freehold slaughterhouses were offered for sale in 1756: *Sheffield Weekly Journal* 17th Feb (in York Minster Archives).

<sup>20</sup> J. Blackman op cit

Almost certainly other street vendors distributed milk which had to be sold daily by the very nature of its production and short life. For cereals there were the badgers - too many in 1741, according to the Justices, blaming the former for "the price of corn being greatly advanced" and stiffening the licence requirements in consequence.<sup>22</sup> But was the everyday outlet for food retailing possibly some form of shop which ought to be relatively easy to find in deeds, memorials, leases and other documents? Unfortunately in Sheffield and district the word "shop" was most commonly used in the eighteenth century as a brief version of "workshop" as in "smithy or shop" or "yard/backside with shop". It is even a risk to assume that a shop-keeper buying, selling, leasing or mortgaging premises with a shop was not involved with property in which a craftsman was living. A "shop in the Market Place" or "warehouse or shop" is safer, as is the fact that the retailer concerned was actually occupying the premises.<sup>23</sup>

The WRRD records a dozen each of grocers and bakers in the late 1730's and early 1740's - the ones who were sufficiently affluent to buy, sell or mortgage property. Robert Lambert, Quaker and grocer, had a shop in the Market Place, Thomas Allen, grocer had premises at the junction of Bullstake and Jehu Lane and Thomas Buck, Quaker and grocer, premises in Pudding Lane.<sup>24</sup> Joseph Mappin, baker, had a shop and bakehouse on the street leading down from the Market Place to the Irish Cross, Thomas Copeland, baker, had premises in the Ponds and Henry Brownhill, also baker, premises in Fargate.<sup>25</sup> A further bakehouse, owner unknown, stood between Prior Row and the Hartshead.<sup>26</sup> One grocer or baker to nearly a thousand of the population seems a rather high ratio. On the other hand, definition is the key to the problem. If we examine the contents of Benjamin Parramore's grocer's shop in the late seventeenth century and those of the late John Holbem's in 1788 we can surmise that the three grocers named above were probably in the same tradition.<sup>27</sup> For example, all three purchased "train

<sup>21</sup> Wakefield QS 4/29 f177

<sup>22</sup> Wakefield QS 10/18 f233

<sup>23</sup> The word "occupied" in the WRRD is not always used in the modern sense. It is evident that it can mean "in the possession of" and not "the dwelling of".

<sup>24</sup> ACM S378 (6th June 1748) - a renewal of an existing lease; WRRD AG 83 109 (Will 1738), AR 557 752 Sale of freehold by Buck's heir 1759.

<sup>25</sup> NBC 816 and WRRD QQ 586 768; ACM S377 ff65 & 194

<sup>26</sup> WRRD NN 534 757

<sup>27</sup> D. Hey: "Sheffield on the Eve of the Industrial Revolution" in *JHunterAS* Vol XIV 1987; Borthwick Wills (Nov 1788) Inventory of John Holbem ygr.

oyl" from Hull via Richard Dalton in 1743<sup>28</sup>. "Groceries" sold by this type of grocer were for the most part complementary to, and more expensive than, local produce of the kind that might be expected on a market stall. They were tea, coffee and sugar in different varieties, cocoa, treacle, nuts, raisins, ginger and other spices, salt, pepper and mustard, oils, tobaccos and other food and non-food items.<sup>29</sup> If, as appears, these grocers were catering for a different clientele,<sup>30</sup> the question then arises: were there shops selling only or principally the more mundane foodstuffs on a daily basis? No evidence has been found for an affirmative answer, nor for even the existence of, say, greengrocers' shops. But hawkers with their farm produce and badgers selling flour for home baking had licences to pay.<sup>31</sup> They would probably be at work every day, and the separate leasing of the thirty-four butchers' shops in the market area (in fact in the new-erected shambles) in January 1738/9 at a typical fine of £14 and rent of twenty shillings per annum strongly supports the notion that these were open daily for meat sales.<sup>32</sup>

As the population increased in the next two or three decades, that is to the 1760's, several significant changes in the regional transport infrastructure took place. First was the extension of the Don Navigation to Rotherham in 1740 and to Tinsley in 1751. Second was the construction of turnpikes to Chesterfield (and to Derby and London) in 1756, to Leeds via Barnsley and to Buxton (and from there to Manchester) in 1758, and to Bawtry in 1760. Sheffield's imports of raw materials and its exports were considerably facilitated by the improved transport network. In like manner, so were incoming foodstuffs en route for the town. On the other hand some cultivable land was lost to housebuilders along the turnpikes and the enclosure of waste was yet to come. We cannot rule out some degree of agricultural improvement in the environs, but the

<sup>28</sup> John Rylands Library, Manchester: Bagshawe Colln 5/4/2 8th Oct 1743

<sup>29</sup> John Holbem's Inventory op cit. Holbem's father was a grocer in 1762 in Silver Street (WRRD AX 225 264). The continuity of the Paramore-style grocer seems likely.

<sup>30</sup> D. Alexander: *Retailing in England during the Industrial Revolution* (London) 1970 p24

<sup>31</sup> WYAS QS 10/18 f233 op cit

<sup>32</sup> ACM S377 f91ff 21 year leases. In the same lease book a message at West Bar cost a £14 fine and 10 shillings per annum and a message, stable and limehouse at Castle Dike a £10 fine and 2/6. The butchers' shops were relatively expensive.

reasonable supposition is that there was a growing dependence on food brought in from a greater distance.<sup>33</sup> From 1764 to 1769 an annual average of just over £550 worth of corn was transported on the Don Navigation - probably in excess of 2000 tons - much of it bound for Sheffield.<sup>34</sup> Other foodstuffs are hidden in "sundries". They may have included fish which came from Hull by boat in 1770.<sup>35</sup>

In apparent response to the changes, numbers of grocers recorded in property transactions in the 1750's and 1760's increased to fifteen, suggesting (from an admittedly very small sample) a little expansion in the retail trade in this period.<sup>36</sup> They were joined by four druggists whose stock seemed to have overlapped that of the grocery business. Ralph Hogkinson, for example, who moved from his shop in the Hartshead to the Market Place in 1772 sold "fine Teas, Coffee and Chocolate, all sorts of Funeral Biscuits and most other Articles in Confectionary, Bride Cakes etcetera, as also the most approved Patent Medicines".<sup>37</sup> Those (different) Sheffield grocers in property transactions in the 1770's and 1780's totalled almost forty, plus four "shopkeepers" and two druggists. The difference is so great that it suggests two things - (a) that grocers who in previous decades may not have been parties to property transactions were now more inclined to be so, and/or (b) there were many more grocers - perhaps twice as many as previously. Figures from the earliest Directories also emphasise the rise in numbers between the 1770's and 1780's: in 1774 twenty-one are listed and in 1787 forty-eight.<sup>38</sup> If we add this information to that of the petition for a new market the conclusion that retail food sales were rapidly increasing is very solid.<sup>39</sup>

<sup>33</sup> D. Alexander op cit p37.

<sup>34</sup> PRO RAIL 825-14 River Dun a/c The freight values are 1764/5 £516, 1765/6 £640, 1766/7 £531, 1767/8 £587 and 1768/9 £499. The Thorne-Tinsley carriage rates for corn in 1770 were 4/8d per customary ton (not defined, but 25 cwts for some goods). The rate would be unlikely to be higher in the earlier years. However, not all corn would travel the full distance (PRO RAIL 825-5 Nov 1770 & Apl 1776). There is risk of anachronism, but the assumption for 1814 was that about 85% of corn on the Navigation came to Sheffield in the four preceding years (WC 3278).

<sup>35</sup> Hull Customs Letter Books (HLCB C-B 6 Mar 1770) quoted by G. Jackson: *Hull in the Eighteenth Century* (Oxford) 1972 p16.

<sup>36</sup> WRRD

<sup>37</sup> *Sheffield Public Advertiser* Apl 25/May 2 1772

<sup>38</sup> The corresponding figures for bakers are 5 and 14 plus two confectioners. Directories alone are not reliable, being subject to varying degrees of understatement.

## THE NEW MARKET

A petition from the Earl of Surrey in 1784 for an improved Market Place stressed the increased pressure on available space and on adjoining streets with all the attendant congestion, as well as the "very improper situation" of the slaughter-houses and their offensive sights and smells.<sup>40</sup> Proposals for a large new market building and for the distancing of the killing shambles appeared to address the problems of overcrowding and nuisance, and the Act went ahead.<sup>41</sup> Resultant improvement was commented upon by the *Sheffield Register* on 4th August 1787 and is worth quoting in full. Our markets which "used to be held in a confused, irregular manner, in the streets, and which travellers have frequently complained of as dangerous and disagreeable, are now confined to particular places. The newly erected market place which is neatly elegant in appearance and commodious in the construction contains the butchers, hucksters, part of the gardeners etc, the rest with the dealers in earthenware, fruiterers and others stand in Paradise Square - a large convenient place in the centre of the town. By these agreeable regulations the streets have a better appearance, and carriages pass free from interruption, without endangering the foot passengers ..." This appears at first sight to have been a successful remedy for a deteriorating condition.

The whole story is not revealed, however, nor the extent of the Earl's (or his Steward's) underestimate of the overcrowding problem. A small Select Committee from the town's leading citizens was given the task of appraising the situation in relation to the Earl's petition and proposals in early 1784.<sup>42</sup> Their findings were very significant: they counted 108 butchers' shops and stalls occupied in different places in and around the existing Market Place. The proposal was for sixty-four shops - a shortfall of forty-four. In an area destined for no butchers' meat and excluding corn (but not oatmeal), butter, eggs and fowls, the space proposed was less than half that currently needed, let alone making allowance for inevitable growth or for extra demand for places during the biannual fairs.<sup>43</sup> Anxieties concerning future pressure on the market were based on a

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<sup>39</sup> see Chapter 1 Population of Town and Parish.

<sup>40</sup> ACM S329 "Earl of Surrey", hereditary title of the Duke of Norfolk's eldest son, was retained in use after his father's death and before assumption of the main style.

<sup>41</sup> ACM S330

<sup>42</sup> ACM S476/1c

<sup>43</sup> They estimated that clothiers and cheesemongers alone required 446 square

rather imprecise report of the Rev. Mr. Goodwin that "the Increase of Population appears to have been very great indeed within these late years" and the much more cogent point that the number of butchers' shops and stalls had risen by more than 25 per cent in the past seven years and could rise in the next seven by a comparable amount. An alternative plan was drawn up, less expensive than the Earl's. It allowed greater space, but involved additional demolition (and the cost of another Act).<sup>44</sup> For reasons of its own, the estate did not adopt any modification and the original scheme went ahead. The earliest extant rental information for the New Market is for Lady Day 1790.<sup>45</sup> It shows that there were 215 shops and stalls, but more than seventy were non-food including twenty-five shoemakers and ten breechesmakers. However, the Select Committee were proved right. The Act laid down a requirement that all market retail activity should take place within the confines of the New Market and already in 1787 the *Register* (above) had reported that a considerable part of the stallholders stood in Paradise Square.

With the construction of the new slaughterhouses to the south-east of Lady's Bridge, and location of the Beast Market in the Wicker, Ms Blackman emphasises the importance of the separation of the functions of farmer and retailer, and the growing role of the butcher as middleman.<sup>46</sup> However, the first New Market Rental shows that some butchers came from Bradfield, Southey Green, Grenoside, Hackenthorpe, Norton and Beighton, which strongly suggests that they were still raising their own animals for meat.<sup>47</sup> Even so, the changed system encouraged a wider catchment area for the supply of live animals - essential for an urban population which increased three-fold from the beginning of our period to 1800 and rose particularly rapidly in 1770's and 1780's. Roger Scola points out that overland droving was an established pattern, and that the

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yards. Sheffield fairs were held in June and November.

<sup>44</sup> Messrs J. Stacey and Joseph Badger estimated the Earl's scheme to cost £4081 all in, and Badger priced the alternative at £3581 (including a new Act) to which Fairbank added £53-11-0 for the loss of rents occasioned by the extra demolition. It was also suggested that the alternative would bring in more new rents for the Earl.

<sup>45</sup> ACM S343/1 There were 53 butchers' shops and 41 butchers' stalls, and stalls (mainly) for 17 gardeners, 6 bakers, 6 fruiterers, 5 fishmongers and 2 cheese factors.

<sup>46</sup> Fairbank BB71 f136 & WRRD DZ 549 732; Fairbank BB73 f142; J. Blackman op cit

<sup>47</sup> LD 1790 (ACM S343/1)

fattening side of the business developed in the north of England, particularly in the Craven area, in the later eighteenth century very much in response to demand from new industrial town markets, particularly Manchester and north-west textile centres.<sup>48</sup> No evidence has been found to link Sheffield to that source.

Fast growing demand for meat, and for food in general, must have stimulated local farmers and landowners to think about ways of profitably increasing the supply from largely unused land resources within the region. Besides the rearing of cattle and sheep, the potential for crops such as wheat, barley, oats and beans, for which there are details for the late 1770's in the accounts of the Beauchief estate, appeared enormous with a mark up in some cases of more than 100 per cent.<sup>49</sup> Turner questions the true financial benefit of all Parliamentary enclosure in view of the inherent costs of the essential Act, the survey and fencing, although for waste he suggests that the returns might have been high relative to the value of the land.<sup>50</sup> Whatever the advantages and disadvantages, much of Sheffield's surrounding moorland was enclosed in the fifteen years from 1779 with at least a perceived benefit in terms of a greater acreage in production and a growing market near at hand.<sup>51</sup> WRRD Memorials provide ample testimony for the resulting active market for newly enclosed land.

#### SELF-HELP IN FOOD PRODUCTION

Not all agricultural or horticultural produce was primarily for general sale, although in some cases it might be a supplementary business. For a minority of workers within the region self-sufficiency was a normal state and an established characteristic of the rural metal trades with their dual employment as craftsmen and part-time farmers.<sup>52</sup> In the 1780's amongst the scattering of Borthwick deposits are more than a dozen examples of cutlers, scissor-smiths and razor-smiths whose inventories show that they kept cows, and the majority of whom had stocks of wheat, oats and hay and/or ploughing tackle.<sup>53</sup> As might be supposed most were from the Park, Wadsley, Attercliffe and other parts

<sup>48</sup> R. Scola op cit p43

<sup>49</sup> BM 50, 51, 52 & 53 (Farming and stock books) No allowance is made for rent.  
<sup>50</sup> Michael Turner: *English Parliamentary Enclosure* (Folkestone) 1980 Chap 5

<sup>51</sup> 1779 Ecclesall, 1784 Ecclesfield, 1788 Brightside and the Hallams, 1795 Handsworth

<sup>52</sup> David Hey: *The Rural Metalworkers of the Sheffield Region* (Leicester) 1972

<sup>53</sup> Borthwick Institute, York Wills and Inventories May 1781 to November 1789.

surrounding the town, but John Goodison grinder (May 1783) and John Greaves cutler (January 1786) are noted as from Sheffield. Not all craftsmen were necessarily in the metal trades. One John Burdekin, described as a hatter, of Woodhouse in Bradfield (December 1780) had oats, wheat and hay to the value of over £50, horses, cows, calves, young beasts, a pig, 50 sheep and a "plow" and harrow; in fact a mixed farm. Thomas Ford, millwright, of Sheffield (April 1787) had two cows, a harrow and plough; and John Kitchen, badger, of Walkley (August 1787) fourteen milk cows and a quantity of hay.

Small-holdings of the kind that might be needed to provide a secondary source of income or to bring a family to a point of being relatively independent needed space which most urban families had little hope of affording or even finding in town. Yet there is ample evidence of a means of partial self-support in foodstuffs which still persists in the twentieth century - the garden or what is now termed the "allotment". Its size varied from about 200 to 1000 square yards, with a strong tendency towards the lower end of the scale, enough for a good range of vegetables and perhaps some chickens.<sup>54</sup> Approximate numbers of gardens in the 1740's, 50's and 60's are difficult to determine because primary evidence is lacking. Even so recurrent Norfolk leases and references in WRRD, as property was bought and sold, indicate widespread activity.<sup>55</sup> This is particularly clear for the 1770's when gardens in the Norfolk Rentals were being overbuilt.<sup>56</sup> Confirmation comes in a quotation from Dr. William Buchan, a druggist in Hartshead (1766-1769) and cited in James Montgomery's *Memoirs*, which states: "In the town of Sheffield in Yorkshire, where the great iron manufacture is carried on there is hardly a journeyman cutler who does not possess a piece of ground which he cultivates as a garden. This pastime has many salutary effects. It not only induces these people to take exercise without doors, but also to eat many greens, roots, etcetera, which they would never think of purchasing".<sup>57</sup> Buchan goes on to suggest that it

<sup>54</sup> J. Blackman op cit takes little account of gardens and is rather derogatory concerning urban yields citing poor soil and industrial pollution. She is quite clearly wrong in both respects as subsequent evidence will show.

<sup>55</sup> ACM S377 ff5, 22, 89ff, 121 & 200 (1732-46); WRRD PP 216 299 (High St), RR 560 724 (Pepper Alley), UU 192 260 (High Street), AB 27 34 (Balm Grn) & 210 276 (Creswick Cl), AG 225 299 (Fargate), AH 443 585 (Fargate), AR 2 2 (L Sheffld) & 146 206 (High St) (1741-59)

<sup>56</sup> ACM S158

<sup>57</sup> J. Austen: *Historical Notes on Old Sheffield Druggists* (Sheffield) 1961 p10



Fig. 11.1 Gardens on the western edge of Sheffield (W. & J. Fairbank 1808)

would be most beneficial for other towns to encourage their inhabitants to do likewise. Nothing comparable has been found in Dr. Scola's book for the Manchester region, and for Leeds, Professor Beresford describes house and market gardens, but makes no mention of the "allotment".<sup>58</sup> Sheffield may have been unique in this respect.

A later Fairbank survey (c1788) of the area immediately surrounding the central core of the town further confirms the extent of garden provision.<sup>59</sup> Gardens were in or near the Park, the Manor, Park furnace, the adjoining part of Attercliffe, Duke Street and Broad Street, Cricket Inn, Spring Street, the Infirmary, Roscoe Place, Port Mahon, Netherthorpe, Watery Lane, Uppertorpe, Allen Street, Radford Street, Corn Hill, Solly Street, Edward Street, Broad Lane, Portobello, Springfield, West Street, Charles Street, Furnival Street, Jessop Street, Earl Street and the Ponds. One area (that near the Infirmary) had thirty-five gardens, the remainder, frustratingly, had "gardens" or "several gardens". If we calculate, say, three and four respectively for these plurals the total is about 450 gardens. Extrapolation from other information indicates that this could well be a serious underestimate. The formula gives fourteen for the Ponds. The number near the Forge alone there in 1805 was fifty.<sup>60</sup> A similar calculation gives twenty-five for Portobello, Springfield, and West Street together, whereas in Portobello itself some three acres of gardens were noted in 1794.<sup>61</sup> If these were as large as 500 square yards each there would have been about forty gardens and proportionately more of smaller units. These may be extreme cases, but more information is available from areas not covered by the survey. There were thirty-three gardens in Millsands in 1781 and thirty more and a bowling green on seven acres in Moorhills, Little Sheffield two years later.<sup>62</sup> Such brief insights into the density of some of the provision suggests a total exceeding a thousand and rising during succeeding decades.<sup>63</sup> Having reported at

<sup>58</sup> R. Scola op cit & M. Beresford: *East End, West End: the Face of Leeds during Urbanisation 1684-1842* (Leeds) 1988 pp47ff & 212

<sup>59</sup> Bagshawe Colln 300 Copy of the original plans and key (watermark 1809).

<sup>60</sup> WRRD EY 2 2

<sup>61</sup> WRRD DN 728 902

<sup>62</sup> ACM SheS 1495L

<sup>63</sup> There is ample evidence of multiple garden provision in addition to the examples above and below in WRRD after 1800 - nearly 3 acres near the Cotton Mill in 1805 (EW 83 58ff), nearly 4 acres at the end of West Street in the same year (EX 353 442), one and a half acres at Pond Tilt in 1810 (FK 468 583) and others a little farther away to the north or north-west at Pitsmoor, Hill Foot, Neepsend, Owlerton and Farrfield, and to the south at Heeley. The

various times outstanding urban potato crops, extremely large potatoes, a two and a quarter pound onion and gooseberries of prize-winning size, in the *Iris* editorial of 26 April 1808 Montgomery wrote of the value of home grown produce, especially potatoes, to the "very numerous proprietors of small gardens in the neighbourhood of this large and populous town".<sup>64</sup> Perhaps Dr. Buchan was not exaggerating.

Despite the plethora of evidence for gardening activity, not all vacant land was suitable for cultivation, however enthusiastic the tenant. Charles Bowns, agent to Earl Fitzwilliam, in a letter to his master in 1792 commented that the ground on Little Sheffield Moor was so damaged by digging clay and making bricks that it was only fit for house building.<sup>65</sup> This same letter indicates the price of gardens at one halfpenny per square yard rent compared with one penny or even one and a half pence for building land.<sup>66</sup> Even though this form of usage was less remunerative to a landlord than building lots, potential revenue was greater than for letting out a large parcel to one tenant.<sup>67</sup> Another benefit accrued - that of having a series of appropriately sized plots levelled and in use until a building lease was required for each. One landowner to take full advantage of this was John Hoyle, the younger son of William Hoyle, attorney. He leased out thirty-eight gardens in Netherthorpe in 1810, rising to sixty-three in 1812 and ranging from 206 to 825 square yards.<sup>68</sup> The tenants' addresses are noted in the rentals and in some cases their craft; all came from streets in the north-west part of the town within easy walking distance.<sup>69</sup>

#### THE WIDENING CATCHMENT AREA

Whatever the true number of gardens, and even if a some families had a patch to cultivate adjoining their homes, there was still an ever-growing need for dairy produce,

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1808 Fairbank Map of the town gives a very good overview of garden areas. (242 square yards per parcel yields 20 to the acre).

<sup>64</sup> *Iris* 17 Sept 1801, 30 Dec 1806, 11 Aug 1807 & 25 Oct 1808 Gooseberries were popular enough to have their own show (18 Aug 1807).

<sup>65</sup> WWM F121 (11) 1792

<sup>66</sup> *ibid* There is also another point made - the main customers for gardens were journeymen "from whom it is difficult to obtain the rent".

<sup>67</sup> *ibid* £4 to £5 per acre was the rate for professional gardeners - about one farthing (¼d) per square yard.

<sup>68</sup> TC 1076, 1077, 1078 (1810-12) There is reference to a plan (not found). Extra charges were levied for "walks".

<sup>69</sup> The farthest address was Campo Lane, not more than half a mile away.

meat, bread and groceries.<sup>70</sup> The town's population had reached 31,000 and the parish's 45,000 by the time of the first census in 1801. In 1821 the two, respectively, would exceed 42,000 and 65,000. Growth in the parts of Brightside, Ecclesall and Nether Hallam closest to the town was creating a larger urban area and adding to the demand for foodstuffs and putting further pressure on shops, the market and transport facilities. The latter did not remain static from their inception: during the 1770's, for example, the Sheffield to Derby, Sheffield to Wakefield and Little Sheffield to Sparrowpit Gate/Barbers Field to Buxton Turnpikes gained enlargement of both term and powers by Act of Parliament.<sup>71</sup> Further enlargements were enacted again in the 1780's, 1790's and early nineteenth century.<sup>72</sup> Such progress led to an ever widening catchment area, with circumstantial evidence that animals were brought to market from at least as far afield as Halifax.<sup>73</sup> Seafood seems to have been more available: oysters four times a week in the season, and occasional supplies of Newfoundland cod, barrels of herrings, and cheap salted cod provided with cooking instructions, suggesting it was not commonly part of the poor's diet.<sup>74</sup> It also appears that the milk trade had become far less parochial, as may be expected with a larger population to supply. The change from local supply, which could have happened much earlier, only becomes clear in the new century. For example, a "Country Dairy" in 1807 was trying to forge links with a Sheffield "milk house", and during the next decade, the *Iris's* editor reported recurring accidents caused by milk boys racing or "riding furiously" in town and on their homeward journey to Cold Aston and along the Chesterfield and Penistone turnpikes.<sup>75</sup> He also commented on one occasion on "considerable quantities of milk conveyed to the town of Sheffield and elsewhere in barrels and tin cans . . ."<sup>76</sup>

<sup>70</sup> For example, a house at Redhill, advertised in the *Iris* (30 Apl 1801), was a freehold with garden, dovecot and henhouse, and a house to let at the top of Allen Street (7 Feb 1809) had a well stocked garden with fruit trees.

<sup>71</sup> *House of Commons Journal* Vol 35, 36, 37

<sup>72</sup> *ibid* Vol 38 & 59 Bawtry, Sheffield and Wortley, Vol 40 & 61 Tinsley to Doncaster, Vol 41 Attercliffe to Worksop, Vol 52 Sheffield to Wakefield, WRRD EY 409 535 & EZ 196 292 Richard Bates, a Halifax farmer, was a major creditor of Thomas Chapman, a bankrupt Sheffield butcher.

<sup>74</sup> *Iris* 16 June & 27 Oct 1803, 29 Mar 1808 & 19 Jan 1813 Some of these may have come by the Navigation.

<sup>75</sup> *Iris* 7 Apl 1807, 27 Aug 1811, 30 Jan 1816, 27 Aug 1816 & 17 June 1817 The barrels slung one on either side of the horses, mules or asses were likely to strike pedestrians and other riders alike if the milk boys were reckless.

<sup>76</sup> *ibid* 17 June 1817

The catchment for cereals and groceries was extended much further by the Don Navigation - effectively to the whole of Hull's hinterland and the port itself. More than 28,000 quarters of corn had been transported in 1780/1781, with probably 23,000 coming up to Tinsley.<sup>77</sup> The total was over 38,000 quarters (an estimated 32,000 destined for Sheffield) in 1814.<sup>78</sup> Groceries in 1817/1818 included "foreign apples" and onions from the Leeward Islands.<sup>79</sup> As detailed in the previous chapter, attempts were made over the course of some thirty years to join the Navigation to the town, but not until 1814 was a successful Bill put before the House for a canal coming up to Castle Orchards.<sup>80</sup> The scheme was completed in 1819 and with it the town's major freight access until the coming of the railway.<sup>81</sup>

#### INCREASES IN RETAILING

It is appropriate to look again at retail outlets and the market to examine their circumstances in the final years of this study. From WRRD some twenty new grocers and shopkeepers appear in property transactions in the 1790's in Sheffield, about thirty in the first decade of the new century and the same again from 1811 to 1820. Bakers, on the other hand, do not proliferate. There are seven new ones in the 1790's plus two confectioners and a sugar baker and only three or four in each of the next two decades. Robinson's 1797 Directory corroborates this continuing growth of retail grocers, sixty-eight compared with twenty listed in 1787, and 109 in 1817.<sup>82</sup> Bakers increased from eight in 1787 to twenty-two in 1797 and remained at twenty-two in 1817; trends for these and for confectioners are fully compatible with the WRRD additions.<sup>83</sup> In addition forty flour dealers, seven cheesemongers and eleven druggists are listed, as well as seventy-five butchers including four specialist pork butchers.<sup>84</sup>

<sup>77</sup> JC 744 and using the same reasoning as in WC 3278/2.

<sup>78</sup> WC 3278 Baltic wheat was imported in 1805 (*Iris* 13 June).

<sup>79</sup> *Iris* 14 Oct 1817 & 3 Nov 1818

<sup>80</sup> WC 2486; WC 3277/1; NRA 239; Fairbank ECa 31L; *House of Commons Journal* Vol 58 p191; Chapter 10 pp193ff

<sup>81</sup> WC 3278/2

<sup>82</sup> Directory totals given here are based on outlets within about five minutes walking distance of the Market Place ie half a mile or so, and do not include the Park and Sheffield Moor.

<sup>83</sup> The two confectioners and one sugar baker are in both 1787 and 1797 Directories.

<sup>84</sup> W. Brownell's 1817 Sheffield Directory. Wardle and Bentham' Directory of 1814/15 is not quoted as it seriously understates what must have been the true

The town's New Market began with a space problem (discussed earlier) and it might be expected that by the turn of the century places would be at a premium. This appears not to be the case in the Market rental of Michaelmas 1804 when twenty-five unlet stalls are noted, although the following rental indicates the letting of eight new Gardeners' Stalls.<sup>85</sup> In view of comments below it seems very likely that some traders were avoiding paying stallage by setting up elsewhere. Then the postwar period witnessed a renewed campaign to extend existing market facilities because the streets were "now crowded with Commodities of every Description". John Curr, formerly the Duke of Norfolk's colliery viewer, who wrote these words seemed to think that the Town Trustees were resolved to clear the streets and in so doing would increase demand for market space which in turn would lead to higher rents. Curr planned a site on the Duke's property at the corner of Fargate and Norfolk Row with 105 shops, shambles, stalls and open standings plus a "Butter and Egg place cover'd in" at a cost of £5000 and an anticipated return of nearly 15% on outlay. A revised version with a Mr. Hawley's ground added (about 360 square yards) would permit 144 units.<sup>86</sup> This scheme was not adopted, the Duke preferring an extension to the main site by demolishing the gaol and other buildings to the North of King Street and building a new Market House, 28 butchers' shops, two slaughterhouses, fish shops and other (unspecified) market shops at a cost of £5751 plus £1800 for the compulsory purchase.<sup>87</sup> The Leather Plan of 1823 gives an overview of the development with broadly named areas: butchers in the central building, fruit market to the south, fish market to the north and hay market to the east.<sup>88</sup> The town had an expanded market almost one hundred yards square, no longer central because of the disproportionate southward and westward spread of urban building, but within a quarter of a mile of the newly built canal wharf and, hence, enjoying ready access to regional, national and international supplies.

As the southern West Riding's biggest town throughout the period of study, Sheffield

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figures with only 59 grocers, 12 bakers and flour dealers and 3 cheesemongers. The 1821 Directory is similar in its understatement except for druggists and chemists (21).

<sup>85</sup> ACM S343 (4) & (5)

<sup>86</sup> ACM S345/1

<sup>87</sup> ACM S346/1 (1817-20) A building in Scotland Street became a gaol (S345/6).

<sup>88</sup> No Fairbank plan has been found.

was by far its major consumer of foodstuffs. It benefited considerably from an improving transport network envisaged by merchants and manufacturers primarily to facilitate the import of raw materials for its industries and the export of finished products. It also gained from the enclosure of moorland, the value of which can only be gauged from the large quantity of which was bought and sold after allotment.<sup>89</sup> There was benefit, too, from the widening scale of shop retailing and, particularly, from the expansion of the town's market place. Even so, the tradition of self-sufficiency, more realistic in the less developed parts of the parish, still persisted in spirit at least in the abundance of private gardens which flourished throughout.

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<sup>89</sup>

More than 30 transactions for Loxley Chase allotments appear in WRRD (1790-1815). Bradfield has some 300 Memorials (excluding the above and all Norfolk rentals) in the same period, but for farms more than allotments. About 50 have been noted for Ecclesall.

## CHAPTER 12 FINANCING THE EXPANDING ECONOMY

Sources of finance for local industry and commerce were, understandably, very varied - from craftsmen's small personal profits to combinations of affluent share buyers, and from delayed payments to near-perpetual secured loans. This chapter aims to explore the whole range, examining both user and provider, and quantifying where possible. Industrial and business investment is commonly divided into two basic categories: those monies and resources devoted to raw materials and unsold or unpaid-for goods (circulating capital) and those converted into equipment, machinery and buildings, including replacements and renewals (fixed capital). Both types are interrelated in that the less money is tied up in the one, the more is available for the other, hence, for example, the two-fold value of free or cheap credit. Whereas it is not always difficult to differentiate the two categories in Sheffield's trades and industries in the following text, it has been possible to quantify their respective values only in a small number of cases.<sup>1</sup>

In the early eighteenth century, while units of cutlery and hardware production were still small and setting up in business was easy and relatively inexpensive, the raising of capital for stithy and tools in this sector was unlikely to be a problem. For a new proprietor of an existing wheel there was commonly the hurdle of a fine at the beginning of his term which may have required savings, but the ongoing rents were again relatively small.<sup>2</sup> The exceptional large scale enterprise, that of operating many of the iron furnaces and forges of the region involved men with means joined in partnership.<sup>3</sup> By contrast other successful early entrepreneurs such as Thomas Parkin

<sup>1</sup> P. Hudson in *The Genesis of Industrial Capital : a study of the West Riding wool textile industry c1750-1850* (Cambridge) 1986 looks in great detail at this topic as it affected a very different regional economy.

<sup>2</sup> There appears to have been some form of sliding scale whereby the bigger the fine the lower the rent, and the less overall paid over the 21 year period. The best example found is non-industrial, but makes the point clear: an eight guinea rent with no fine for 10½ acres at Row Lees in 1739 was revised to £2-12-6 with a £63 fine (ACM S377 f116). Cornelius Hawke "saved" £58-5-6. He could have fared marginally better by investing in a 4½% mortgage (£59-10-8), assuming no charges.

<sup>3</sup> Staveley Ironworks Records (SIR) 1690ff. Initially the partners were John Simpson, Dennis Heyford and Francis Barlow. The Fells eventually dominated the partnership.

(ironmonger), Samuel Shore (ironmonger) and Nicholas Broadbent (scissorsmith) had worked mainly alone or with family to establish their businesses. No doubt profits played an important role in their expansion, but that may well have needed a lifetime or more than one generation, just as in Birmingham Matthew Boulton, entrepreneur *par excellence*, "was enabled to begin his expansion on the savings of his father's lifetime in trade".<sup>4</sup> For example, Daniel Hawley (or Holy), buttonmaker, in the 1730's put his earnings into Norfolk leasehold properties and several freeholds in West Bar.<sup>5</sup> It was his grandsons, Thomas and Daniel, who ultimately achieved enormous commercial successes. Thomas Boulsover, inventor of Old Sheffield Plate, was a rarity in making a personal fortune in less than a decade - enough to build a grinding wheel at Beeley Wood, to buy himself a country estate and later to branch out into a new manufacturing project, the rolling of steel and production of saws.<sup>6</sup> Capital investment of profits in his case is very clear. For the most part that is not so, and enormous returns of that kind were far too infrequent to have had much overall impact on the local economy. There is an anomalous situation in the early stages of an enterprise if profits are the only road to investment - profits come as a result of investing, but without initial profits the would-be entrepreneur cannot invest.

## CREDIT

Such an entrepreneur, Richard Dalton, at the time a newcomer to Sheffield, had launched a successful importing business single-handed in 1735.<sup>7</sup> How did he initiate an enterprise of this kind alone with apparently little in the way of savings or other financial backing?<sup>8</sup> In the first place he was personally known to his suppliers in Hull,

<sup>4</sup> J.S. Watson: *The Reign of George III 1760-1815* (Oxford) 1960 p28

<sup>5</sup> ACM S377 ff49, 51, 52 (twice), 58; WRRD MM 610 850, NN 399 488, OO 280 401

<sup>6</sup> Boulsover, a cutler, reputedly discovered the properties of fused silver and copper in or around 1743. Beeley Wood wheel c1749 was later converted into a tilt. He bought Whiteley Wood Hall estate in 1752 for cash in hand (WRRD B 387 129) and subsequently built a forge and a rolling mill there from 1761.

<sup>7</sup> Bagshawe Colln (John Rylands Library, Manchester) 5/4/1 f10 19 July 1735 Dalton's family came from York. See also G.G. Hopkinson: "The Business Correspondence of Richard Dalton, Raff Merchant 1735-1749" in *THunterAS* Vol. 8 1963.

<sup>8</sup> Bagshawe Colln op cit f36 1 Oct 1735 An attempt to borrow £500 from Samuel Mowld (Hull) failed. As Dalton does not appear in the WRRD it is supposed he rented his domestic and commercial accommodation in Hawley Street. His wife was a Bright, so he may have had some assets via his marriage.

having worked for the Mowld family firm of importers there for five years. Secondly, he was known to the inland navigation carriers and collectors having helped his Aunt run Bawtry wharf for a similar period of time."<sup>9</sup> In such fortunate circumstances his credentials and reputation were impeccable. Dalton himself might prefer to claim that he had earned that status and credit-worthiness.

Hunter states that it was commonly Hull credit which enabled Sheffield merchants to conduct their businesses, even going so far as to suggest delays in payment in excess of twelve months.<sup>10</sup> There is no doubt that credit was an important element for Dalton as both buyer and seller. However, long credit must be treated with caution. Dalton expected from his customers a prompt payment on receipt of goods and complained if there was a delay. He even refused to trade with one George Thornhill, an apparently late payer.<sup>11</sup> Of course, a price could be negotiated for late settlement. For example Dalton offered a hundred of fifteen foot deals to Ralph Tunnicliffe of Rotherham for £15-15-0 at six months' credit or for £15-17-6 at twelve months.<sup>12</sup> The additional premium was less than 1% in this case, but was still payable. As a buyer, having failed to negotiate £9-10-0 ready money for eleven and twelve foot deals from David Field of Hull, he offered five shillings more at two months, losing, as it were, on the outlay and gaining on the delay.<sup>13</sup> Furthermore, he arranged to pay his water carriage dues annually, thus obtaining regular extra credit.<sup>14</sup> In general, however, Dalton paid on delivery by bill of exchange commonly via a local businessman.<sup>15</sup> Where terms are

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None are mentioned, nor any mortgage. He had no control or jurisdiction over the Banner Cross Estate which his daughter was to inherit at her majority.

<sup>9</sup> *ibid* f10 19 July 1735. P. Hudson *op cit* p24 comments that "all [borrowing/lending] was underpinned by face to face contacts, by local knowledge and intelligence networks, and by customs and traditions which were only slowly being broken on the rack of industrial progress".

<sup>10</sup> J. Hunter: *Hallamshire* (London) Gatty edn 1869 p175

<sup>11</sup> Bagshawe Colln *op cit* 5/4/2 15 Oct 1743

<sup>12</sup> *ibid* 5/4/1 f17 11th August 1735. One hundred of deals (indicated by a Greek theta ( $\theta$ ) as for hundredweights in other commodities) indicated 120 pieces (Bagshawe Colln *op cit* 5/4/3 6 Mar 1749). The sub-divisions are quarters (Q=30) and deals (D=1). The price of this timber, as would be expected, varied in relation to number, length, thickness (width and depth) and quality. All elements, especially quality, led to disputes with suppliers.

<sup>13</sup> *ibid* 5/4/2 10th January 1740/41 (The folio numbers end in December 1740)

<sup>14</sup> *ibid* 5/4/1 f7a 16 July 1735

<sup>15</sup> See Chapter 13 Banking in Sheffield.

noted, in the late 1730's payment was usually at twenty days, and by 1740 and throughout the following decade typically at one month.<sup>16</sup> Hull credit oiled the wheels of commerce, and was clearly organised in a practical and efficient system.

At the same period the Fell partnership was supplying iron and steel to firms and individuals in and around Sheffield mainly for cash. In spite of the close proximity of seller and buyers, delay in payment was normally three to four months in the later 1730's and throughout the 1740's and 1750's.<sup>17</sup> Indeed, credit of this kind was almost universal. When Thomas Holy, button-maker, died in 1758 over £1140 was quickly recovered from upwards of 300 clients, many out of Sheffield, but after his widow's death ten years later, debts proved harder to collect. Only £1047 of nearly £2000 had been collected by August 1769.<sup>18</sup> During the late 1750's Elizabeth Parkin and Walter Osborne, steel converters, had about 180 cutlers noted, the majority owing sums of between £2 and £20. This number was little changed in the next ten years.<sup>19</sup> One of the associated problems of credit was, however, revealed in the same ledger - by 1765 some of those debts had become "dubious" or "bad".<sup>20</sup> Most, if not all, of Matthias Spencer's payments must have arrived in arrears. The bulk of his output of files in the late 1750's went to London by road, and later, in the 1760's and 1770's via Tinsley and from there to Hull and London.<sup>21</sup> Fenton, Creswick & Co., silversmiths, from 1773 were commonly in arrears with their receipts, and both Dunn & Co. and Nowills, cutlers, similarly in the 1780's.<sup>22</sup> In their book-keeping the nature of the outward flow of goods and inward flow of payments, unmatched and almost always leaving a debit balance to be carried forward in ledgers, make assessment of delays in settling very difficult. The books of Benjamin Huntsman & Co., crucible steel refiners, for the twenty years from 1785 are easier to judge. Payment periods were very varied, even for Sheffield clients. They usually paid within the year if not much before five months. J. & K. Wright were exceptional in paying the balance of their account in 1793 for three

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<sup>16</sup> Over 120 bills out of 175 drawn locally in the period 1740 to 1749 are at one month. Most of the remainder are not noted for term.

<sup>17</sup> SIR 22, 23, 24

<sup>18</sup> MD 5733 (3ff) Thomas Holy ygr took over the business in May 1773.

<sup>19</sup> OR 2 ff12ff, 65ff, 95ff

<sup>20</sup> *ibid* f36

<sup>21</sup> LD 1925 There is no record of his receipts.

<sup>22</sup> Bradbury Records 237, MD 1737(4), LD 192ff

separate orders, the first sent out twenty-one months previously in 1791.<sup>23</sup> Finally, in the last few years of this study the letters of John Rodgers to Joseph Rodgers & Co. from the Lancashire towns in 1819 illustrate an extreme in long-term credit. The traveller was sending back (with his correspondence concerning new business) the payments, usually by bill, for the previous commissions, long since delivered. He was a debt collector as well as a salesman.<sup>24</sup>

By contrast, the vast majority of cutlers and metal workers with whom the merchants and suppliers dealt could give no such credit, at least in the early years. They kept no stock, but responded to orders given and expected ready money. These three points were frequently used by Dalton to enlighten his customers on the nature of Sheffield goods.<sup>25</sup> The picture thus created is one of a small number of merchants and suppliers paying and being paid in arrears to a greater or lesser degree and usually by consent or by convention, and a large number of artisans who required cash on the delivery of their output.<sup>26</sup> The latter were trapped, as it were, in a cycle of dependence. They received their iron or steel on credit, produced their goods as ordered which they sold for cash to pay for the raw materials and necessities of life. This is inevitably an over-simplification, but the message is clear: for any industrial growth beyond that created by more artisans, individuals had to be in a position to give credit. An ability to forego immediate cash for a finished product would be one of the keys to the independent marketing of a manufacturer's work at home and eventually overseas. How was that freedom to be gained? Savings were a possibility, but for most very slow to accumulate, particularly when trade was erratic as it was likely to be without the cushion of stock. More advantageous was a lump sum - an advance of some kind on which interest was paid and the principal gradually reduced or, perhaps, allowed to run on almost indefinitely. And as a corollary to the ability to extend credit, the unit of marketing, if not always of production, would have to increase in size.<sup>27</sup> Borrowing on

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<sup>23</sup> LD 1612

<sup>24</sup> MD 6205

<sup>25</sup> The almost infinite permutations of size, pattern, handle material etc made stock keeping too much of a gamble. Rust, too, was a constant threat to finished items. Bagshawe Colln op cit 5/4/2 & 3 21 Mar 1743/4, 26 Mar 1746, 19 Apr 1746, 17 Jan 1746/7

<sup>26</sup> *ibid* 5/4/1 f104 29 Sept 1736 The iron importers were Mr. Fell, Mrs. Parkin and Mr. Shore

<sup>27</sup> A business employing in-house and outworkers was quite viable in the

note, on bond and on the mortgage of property, freehold or leasehold, became common ways of financing expansion and enterprise.<sup>28</sup> Similarly, partnerships proliferated and the employment of fellow workers. Not surprisingly there was a surge of such transactions and combinations as both cause and effect of economic growth in the eighteenth century.

#### BORROWING AND LENDING

Borrowing money was not a new phenomenon in 1740. Ample evidence of it is provided by attorneys' letters, and examples occur over much of the period in surviving collections.<sup>29</sup> L.S. Pressnell regards attorneys, with their conveyancing, scrivening and investment expertise, as the key men outside London in eighteenth century financial matters.<sup>30</sup> However, in Sheffield they may not have had quite the overall influence found elsewhere by Pressnell. Attorneys were certainly very important, as subsequent material will show, but many other people were independently involved, such as early local bankers and private persons, particularly through the Norfolk estate in whose Rentals the vast majority of its own property mortgagees were "booked" before the general adoption of the 99 year lease in the early 1770's. After this date far less securing of premises was noted.<sup>31</sup> Indeed, during the thirty years 1740-1769 more Norfolk bookings are recorded for Sheffield parish (286) than there are identified mortgages for the same area over the same period in WRRD (228). Many of the bookings were for small amounts, between £5 and £20, yet over sixty were for £50 or more, and of these twenty-five for £100-£199, three for £200-£299, and one for £300.

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Sheffield trades. Nowill & Co. are a good example (LD 192 & ff).

<sup>28</sup> An Act of 1734 "Act for the more easy Compelling the Redemption of Mortgages" (7 Geo II c20) made the process of mortgaging more readily acceptable to borrowers. The actual motive for an individual's borrowing at any one time is usually difficult to assess, except perhaps for building speculators. See B.L. Anderson: "Provincial Aspects of the Financial Revolution of the 18th Century" in *Business History* XI 1969

<sup>29</sup> D. Hey: "The Establishment of a Legal Profession in Sheffield" in *T Hunter AS* Vol. 16 1991; TC 523 f366, f705, f946 & TC 525 f1, MD 3985 f42, f67, f165, f181, f186, f323.

<sup>30</sup> L.S. Pressnell: *Country Banking in the Industrial Revolution* (London) 1956 p39

<sup>31</sup> William Bagshawe of "The Oakes" at Norton, for example, lent and borrowed amounts grossing almost £2000 in the 1740's (Oakes Deeds 1516), and see Chapter 13. ACM S158 volumes (Norfolk Rentals) give details of mortgages in the margins.

Not all mortgages drawn up by attorneys were registered, so the total here understates, but the fact remains that the Norfolk estate helped bypass the usual formal channels for perhaps half of all relevant transactions, even if not for such a high proportion of the money involved.<sup>32</sup> Borrowers would not incur legal costs or commission charges if they could avoid them.<sup>33</sup>

The evidence for notes and bonds is inevitably overshadowed by the considerable amount of material above illustrating mortgage activity. Even so, enough is extant to show that notes of hand and bonds were very commonplace and in general use throughout the period of study. Elizabeth Parkin, merchant, lent out numerous sums, usually of £50 and less, on note and bond. Some loans ran on for years; for example Mrs. Sarah Yelliott's note for £20 dated 1737 had built up interest of £9 by 1746, and Thomas Rawson's notes for £300 (1752) and £100 (1756) were finally paid off by 1761.<sup>34</sup> William Fairbank, surveyor, lent sums not exceeding £50 in the 1750's and his son both lent and borrowed similar amounts in the following decade.<sup>35</sup> George Deakin, currier, borrowed £300 on four notes between 1791 and 1796, which, together with another two totalling £150, he still owed at his death in 1803.<sup>36</sup> Borthwick Wills and Inventories of the 1780's and 1790's make it clear that private notes and bonds were still popular in spite of the establishment of local banks and the preferences of many lenders for the security of property. In the first of the above decades over £10,000 loan money is recorded in Sheffield inventories, about half on note or on bond, the remainder on mortgage or "out at interest" (which may imply any one or all three).<sup>37</sup> Such proportions, viewed along with the detail of mortgages below, do suggest a considerable activity in unsecured loans.<sup>38</sup> A natural assumption that notes were for

<sup>32</sup> WRRD Memorials rarely give amounts secured by the mortgages registered, but the average is likely to have been greater than for their Norfolk equivalents.  
<sup>33</sup> I suspect that "booking" a mortgagee for a leasehold in the Norfolk rentals was easy, cheap and convenient, especially for small borrowers, and secure for lenders.

<sup>34</sup> OR 1 f1 & f4 and passim

<sup>35</sup> Fairbank AB 1 f14 & 63 & AB 2 f30-33

<sup>36</sup> YWD 923 (first packet, but not numbered)

<sup>37</sup> Borthwick Institute of Historical Research, York. Most of the inventories have an exact sum, but a few, particularly in the 1790's, amalgamate book debts and notes or money and notes. There are also a small number which have no sum. The above totals must, therefore, understate the amounts.

<sup>38</sup> Unsecured by property that is. Sometimes the term "personal security" is

small amounts and mortgages for large ones, with bonds somewhere in between, does not hold good. Some of Elizabeth Parkin's mortgages were smaller than some of her notes and bonds, and Borthwick evidence confirms this varied pattern half a century later.<sup>39</sup> Numerous examples of extremely small mortgages (between £5 and £10) are to be found in the Norfolk Rentals in the 1740's and 1750's, and only a tiny minority of mortgages from all sources were bigger than William Loy's £1000 promissory note to John Bishop in 1803.<sup>40</sup>

The overall picture of the spread of borrowing by mortgage is more readily available as previously explained. There are still difficulties even here: annotations in the Norfolk Rentals rarely indicate the occupation of borrower or lender, thus providing a totally disproportionate quantity of "unknowns". WRRD Memorials on the other hand always give details of trade or status, but quite often, being summaries, inconveniently omit the word "mortgage" in the indenture, thus risking confusion with absolute assignments and conveyances. Subsequent redemptions, remortgages, repossessions, assignments to creditors, inheritances and so on, sometimes many years later, usually reveal the nature of the initial transaction. However, there must inevitably be some unrecognised so that the mortgage statistics essentially understate totals. Further understatement is caused by the fact that registration was a convention and not compulsory: for example, no memorials have been found for mortgages contracted by the local Turnpike Trusts.<sup>41</sup> Despite the incompleteness of the record, the quantity of indentures registered at Wakefield between 1740 and 1820 - upwards of 11,000 related to Sheffield and its immediate environs, and of these some 1100 mortgages identified - permit comment in broad percentage terms at least.<sup>42</sup>

In these aggregates, local non-building craftsmen, principally cutlers and metalworkers,

expressed as the collateral.

<sup>39</sup>

OR 1

<sup>40</sup>

ACM S158, particularly 1750's; YWD 923 (first packet, but items not numbered)

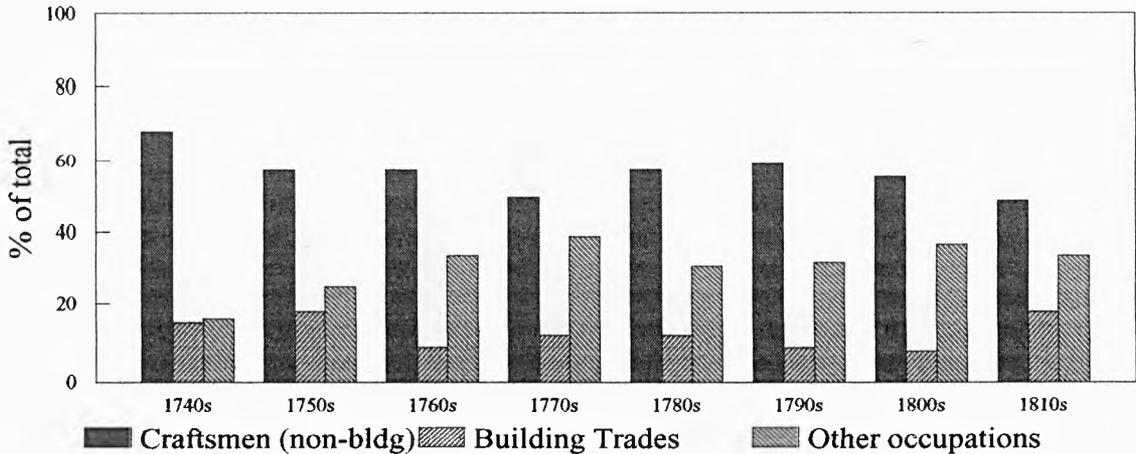
<sup>41</sup>

TC 365 f2 & f331 £5900 was raised for the Wakefield to Sheffield road, with £1200 from the Duke of Norfolk. TC 362 (7) Benjamin Roebuck, Joseph Matthewman and St Andrew Raynes raised £4500 and £3500 for the two branches of the Little Sheffield road to Sparrowpit-gate and to Buxton.

<sup>42</sup>

Those indentures for property in Wadsley and Owlerton (in Ecclesfield parish), for example, which have Sheffield parties have been included in the total.

Fig. 12.1 Occupation of Mortgagors of Sheffield Property from WRRD Memorials 1740-1819



dominated the mortgagors as might be anticipated.<sup>43</sup> In the 1740's 69% were in this category, and in the following decades through to 1809 (apart from the 1770's at 47%) the figures were consistently within two points either side of 57%, until in 1810-1819 they fell to 48%. The next largest group in the first twenty years from 1740 were the building tradesmen at 15% to 1749 and then 18%, after which there was a decline to below 10%, reversed to 18% in 1810-1819. Throughout the eighty years from 1740 the only other group to achieve double figures (11% in the early nineteenth century) were shopkeepers.<sup>44</sup> As the cutlers and metalworkers above totalled about 600 for the whole period, we may tentatively suggest that a good proportion of this major part of the local workforce used mortgages as a way of raising money for investment. What proportions were for investing in circulating or in fixed capital, or even for house building, it is not possible to judge.<sup>45</sup>

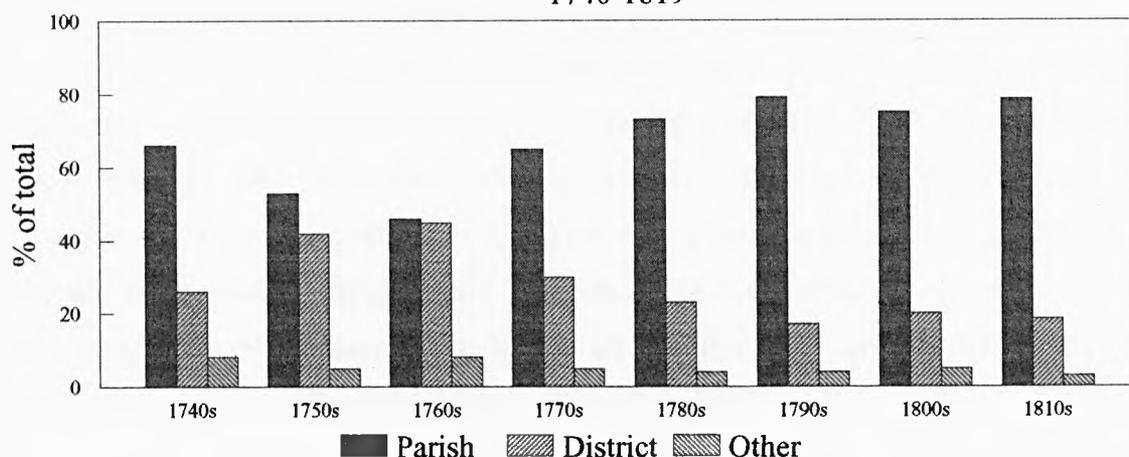
Those who loaned capital, the mortgagees, were essentially local people. For the definition of "local": the parish of Sheffield is the inner core, so to speak, with the rest of Hallamshire and six miles round plus a little more of South Yorkshire (extending to Wath, Rotherham and Doncaster), of North Derbyshire (reaching Dronfield and Chesterfield), and of North Nottinghamshire (to Worksop) as the region. The rest of

<sup>43</sup> Samples from 18th and early 19th century Parish Records regularly show the secondary metal trades comprising more than 60% of the work force. Building crafts - bricklayers, masons, carpenters, joiners, slaters, plasterers and glaziers - are categorised separately in the mortgage statistics throughout.

<sup>44</sup> Includes butchers, mercers, bakers etc, but not factors or merchants.

<sup>45</sup> See the sections on speculators in Chapters 14-16.

Fig. 12.2 Origins of Mortgagees of Sheffield Property from WRRD Memorials  
1740-1819



England, including Wakefield, Nottingham, Derby and further afield, is outside. In the whole period outsiders only accounted for more than 5% of all mortgage loans in two decades - the 1740's and 1760's, both at 8%. At least 65% of the registered mortgages came from within the parish except in the 1750's and 1760's when the figures are somewhat skewed (to 53% and 46% respectively) mainly by two large mortgagees from the wider Hallamshire outer ring. In the two decades Joseph Hammond, yeoman, of Whiston made at least fifteen secured loans and Elizabeth Parkin of Ravenfield about ten within the town.<sup>46</sup> By the 1780's the proportion was 73% of mortgagees from the parish and in the 1790's 79%, with a slight fall to 75% in the first decade of the new century before a rise to 79% again in the second. If the statistics are reasonably representative it may be suggested that as the local economy accelerated in the 1750's and particularly in the 1760's it had to draw rather more heavily on regional finance, after which the town and parish became largely self-supporting.

Who were these mortgagees who provided finance for Sheffield's expansion? Those from outside the area are too few to categorise, made up of expatriates or relatives of Sheffield people, London gentlemen (perhaps creditors), those involved via attorneys and others probably through trading links. There is no consistent pattern. The outer ring can be classified more clearly: farmers/yeomen and gentlemen were the main

<sup>46</sup> As there are only 79 and 112 registered mortgages in the two decades such large mortgagees have a disproportionate effect. There is also the argument that Mrs. Parkin should be considered as of Sheffield since her business was town-based.

source, with widows and spinsters a significant minority.<sup>47</sup> The former group averaged over 70% of the regional mortgagees, the latter about 13%. There were also a few craftsmen, merchants, shopkeepers and innkeepers who made up the remainder. Within the parish during the 1740's and 1750's gentlemen (including clerics and professional men), retailers and ladies (widows and spinsters) provided threequarters of the mortgages in broadly a 5:4:3 ratio. The rest were a small number each of craftsmen, factors or merchants, farmers and innkeepers. In the 1760's the gentlemen only generated 16% of the mortgages, but in all the following decades the gentlemen reached or exceeded 25% (31% in the 1780's). Retailers remained constant at about one quarter of mortgagees from 1740 to 1770, then declined to one fifth, one sixth and one eleventh in successive decades before recovering to some 15% in the 1800's. Widows and spinsters had a high point of 21% in the 1750's, a low of 8% in the 1780's, another high of 21% in the 1790's with 12% to 15% elsewhere. Craftsmen averaged 10% between 1740 and 1760, then 20% in the next decade before settling at 12% to 14% for most of the remaining period to 1819. Factors and merchants only reached double figures (11% to 14%) from the 1780's, and friendly societies and sick clubs had most impact in the 1790's and 1810's with about 11%. Few groups within the parish were not represented in some way.

Demand for a safe and remunerative repository for savings or profits is the reciprocal of the requirement of money to invest in business or industry. Like borrowing, the attitude to lending in general, too, was very parochial.<sup>48</sup> Relatively little evidence has been found for local people putting their money into government or other stock, for example, or into infrastructure projects outside the region. A search of the extant volumes of Consolidated Annuities between 1745 and 1779 revealed no Sheffield and minimal Yorkshire participation, although the Church Burgesses in the 1780's, and in the 1790's John Marshall, Thomas Vennor and Hanbey's Charity (supervised by the Cutlers' Company) held large amounts of consols.<sup>49</sup> A little earlier, in 1786, Mary

<sup>47</sup> Farmers, yeomen and gentlemen are grouped together in this area because of the propensity of the former to become the latter.

<sup>48</sup> B.L. Anderson op cit confirms that this was typical of the English provinces.

<sup>49</sup> PRO NDO 1&2 1745/46, 1757, 1766 & 1778/79 Wakefield had one participant, Leeds none. The findings are confirmed by Alice C. Carter: *The English Public Debt in the 18th Century* (Historical Association Pamphlet) 1968. CB 162 ff121, 125 & 128 (£922-3-0); John Marshall (Borthwick July

Churchill had £250 in 3% East India Stock, contemporaneously the Fairbank family had £160 invested at 5% in the Leeds and Liverpool canal, and later, in 1820, William Younge and James Deakin jointly held £1030 in Navy 5% Annuities.<sup>50</sup> Evidence from Borthwick wills shows that at least a further two local men had a share or shares in the Leeds-Liverpool canal and another a share in a Derbyshire lead mine.<sup>51</sup> Other than for those few people almost nothing has been found.<sup>52</sup> Elizabeth Parkin possessed shares in the Bristol Brass Wire Company and Woolley Powder Mills in the late 1740's and 1750's, but these were inherited or built on inherited property, rather than purchased.<sup>53</sup> Overwhelming indications are that local folk chose principally local securities for their money.

Hitherto, most of the mortgage lenders have been mere statistics. Mention has been made of two people, but there were others - mortgagees on a grand scale. There were also very unexceptional investors and lesser individuals still who formed societies to enable them (as well as mutually supporting each other in times of sickness) jointly to advance a sum or sums against the security of property. Isaac Shepherd of Greenhill, tinman, was a modest lender in the 1760's. However, his son, also Isaac, built up an empire of more than thirty mortgages in and immediately around the town during the 1780's and 1790's and became a gentleman in consequence.<sup>54</sup> Similarly, Peter Wigfall, cutler and eventually victualler, began in a small way in 1750 with a £10 mortgage of a Norfolk leasehold, before adding at least another twenty properties in the following two decades.<sup>55</sup> His son Peter inherited the business and added more, before moving to Millhouses as a gentleman. Their efforts pale almost into insignificance compared with those of Thomas Pierson of King Street, stationer, who was named in more than 250

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1793) no amount given, but with other investment had to support a £100 annuity for his widow; Thomas Vennor (YWD 384) £3000, £3100 & £2574; Hanbey's charity (Iris 11 May 1798) £8000.

<sup>50</sup> Borthwick (June 1786); Fairbank AB 2 f48; YWD 923 (First packet, item not numbered)

<sup>51</sup> Borthwick (May 1771, June 1786 & Jan 1790)

<sup>52</sup> Advertisements occur in the newspapers intermittently for investments such as shares in the Bristol Tontine (*Courant* 28 Sept 1793), several Derbyshire Lead Mines (*Iris* 1 Oct 1801) and a 5% return on loans to Barnsley Church (*Iris* 25 Jan 1820).

<sup>53</sup> OR 1

<sup>54</sup> WRRD

<sup>55</sup> Mainly ACM S158 beginning at Michaelmas 1750

memorials in WRRD from 1783. Unfortunately, because he was frequently a trustee in other people's freehold conveyances (but not usually named as such), it is difficult sometimes to disentangle his activities. Even so, it seems likely that he undertook at least seventy mortgages from the 1780's and possibly many more. Two Samuel Staniforths, linen drapers, father and son, between them accumulated about fifty from the late 1750's and Rev. Francis Parker possibly almost as many from 1789, but he too is a difficult subject. Other prolific mortgagees with more than twenty securities were Samuel Turner the elder, mercer, from 1765, and Joseph Fawley of Grenoside and then Ecclesall, gentleman, and John Smith, gentleman, both from the 1780's. The latter's nephew, John Sheldon of Little Sheffield, gentleman, also acquired about twenty-five of his own before inheriting from his uncle in 1814. Two contemporaries, Thomas Parker, gentleman, of Brinsworth and Francis Carr, merchant, individually and jointly accumulated nearly as many. Three ladies followed in the footsteps of Elizabeth Parkin as active mortgage lenders, each with between ten and twenty: they were Sarah Stevin, spinster, Elizabeth Pitt of Carlton in the parish of Royston, widow, and Martha Hargrave, spinster, beginning in successive decades from the 1770's.

## SOCIETIES

Besides the big lenders were hundreds of people and sometimes their executors who placed money against the security of perhaps just one or two properties.<sup>56</sup> Collectively they may have been as important a source of capital as their more affluent townsfolk. But £10 or £20, however modest it may seem, would be beyond the scope of many with small savings and no Savings Bank until 1819. For them a Friendly Society or Sick Club provided an opportunity to offer joint funds with the prospect of sickness benefit and a small return.<sup>57</sup> Nearly sixty societies and clubs have been identified by name and almost as many again by their meeting place or simply by the description "society" or "club". No doubt a good proportion will overlap.<sup>58</sup> Sir F. M. Eden noted

<sup>56</sup> Borthwick Wills *passim* Executors or Trustees are frequently requested to put money into real estate to earn interest for a widow and/or dependants.

<sup>57</sup> The societies took interest at four, four and a quarter or four and a half per cent, as compared to the more common four and a half to five per cent elsewhere.

<sup>58</sup> The entry in the WRRD Memorials usually has a Master and two Wardens. As the former was replaced annually by one of the latter, their names cannot provide a link between a known and an unknown society three or more years apart. Nor does strict registration of both mortgage and assignment or redemption seem to have been a regular practice, so that property is not usually

fifty-two in 1786 and fifty-five the following year.<sup>59</sup> The "Five and Eight Shilling Club", active at this period, gives a suggestion of the sums contributed. Few societies invested more than £100 in property securities.<sup>60</sup> Also popular for a decade or so from 1803 were Funding or Money Societies with regular monthly payments, typically five shillings, for group investment over a long period.<sup>61</sup>

## BANKS

In contrast to clubs and societies were the banks - financial institutions - for whom monies on loan or on overdraft were two of a range of sources of income. Recorded mortgages from the Shores and their various partners are disappointingly few in WRRD, less than forty over a period of fifty years. The Haslehursts have only one definite and one probable.<sup>62</sup> Walkers, Eyre and Stanley provide a little more evidence; over fifty mortgages are noted from 1792, including some from Richard Stanley possibly acting on his own behalf.<sup>63</sup> There are also a handful with Rimingtons and Younges from 1816. Perhaps some borrowers preferred to deposit their deeds or bonds as a less expensive method of giving security.<sup>64</sup> However, the extant ledgers (1792-1804) of the Sheffield & Rotherham Bank (Walkers, Eyre & Stanley) give insight into just how much money was overdrawn for long periods.<sup>65</sup> For example,

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available as the common factor.

<sup>59</sup> Sir F. M. Eden: *The State of the Poor* 1797. Some societies were probably ephemeral, having only a single mention in the Norfolk Rentals or WRRD. The Merciful Society (1792) falls into this category. The Taylors' Society, however celebrated its centenary in 1820 (*Iris* 8 Aug).

<sup>60</sup> No accounts for Sick Clubs have been found, but sums loaned on mortgage typically range from £10 to £50 in ACM S158 passim, usually not more than one or two per club. Montgomery in the *Iris* (22 June 1819) comments that the Waterloo Sick Society had accumulated savings of £139 through its 100 members since its foundation in 1815.

<sup>61</sup> The first advertised in the *Iris* (14 Apl 1803) was the Eagle Funding Society offering 200 x £50 shares at 5s per month. Another in 1805 at the "Barrel" had 400 x £25.

<sup>62</sup> ACM S158 M1778 f44 & WRRD CG 190 233

<sup>63</sup> The summary in the memorial sometimes is clear: ". . . acting on behalf of himself and his partners . . ." At other times there is nothing added or perhaps ". . . as therein further described . . ." referring to detail in the original deed.

<sup>64</sup> MD 5652; TC 525 fl Robert Thornley of Chesterfield offered bonds as collateral security against a £500 or £600 loan for nine or twelve months at 5% (1777).

<sup>65</sup> SR/38/1, 2 & 3 (Archive Section, The Royal Bank Of Scotland plc, Gresham Street, London). Each town had a branch. See chapter 13 for more details.

John Jervis, cutler, overdrew by between £10 and £167 at the end of every year from 1792 to 1800 when his account was finally settled and closed. Richard and Peter Spurr, merchants, had a perpetual annual deficit from 1792 (£144-8-11) to 1801 (£1316-6-8). Samuel Norris's overdraft ran from the first months of his account, from October 1794 to the end of the ledgers in 1804 when he owed the bank £3677-19-0.<sup>66</sup> Jane Green & Sons, shearsmiths, were overdrawn for exactly the same time scale, leaving £2107-1-7 to be carried forward to the next volume. Although some firms were in surplus at 31st December each year, the general picture is one of deficit trading by the bank, so much so that partner Vincent Eyre deposited annually in the Sheffield section of the undertaking a series of large sums, often of cash, rising to an average of more than £30,000 in the years 1799 to 1804.<sup>67</sup>

#### ATTORNEYS

For those who needed to use their properties as security instead of or as well as holding bank accounts, the professionals in the drawing up of their deeds were the attorneys, many of whom were deeply involved in the local property market themselves. The twelve most prolific were parties in upwards of a thousand deeds, buying, selling, leasing, at times acting as trustees and executors, and frequently being mortgagees.<sup>68</sup> William Hoyle the elder, for example, with over a hundred entries in WRRD, held property under the Duke of Norfolk including sixteen and a half acres at Shalesmoor from 1774 and Slack Wheels from 1784, as well as two acres of freehold at Brockow Meadow purchased in 1780.<sup>69</sup> He was mortgagee of more than twenty properties including the Wheels above (after sub-letting) and of several small parcels at Brockow Meadow which he had broken up for leasing purposes. Similarly John Watson split up former Norfolk land near Porter Lane and Arundel Street into small leases, but preferred to be mortgagee to other people's property and not to his own, although some of his tenants in fact took out mortgages with his brother Thomas. Robert Rodgers with

<sup>66</sup> Norris, a razorsmith and proprietor of a long-standing family business, appears to have continued trading until at least July 1808 (WRRD FG 138 208). He was declared bankrupt in 1809 (*Iris* 28 Mar).

<sup>67</sup> These are gross figures

<sup>68</sup> From WRRD: Kenyon Parker c120, William Hoyle 100+, James Wheat the elder c90, John Rimington c150, Thomas Sambourne c60, Adamson Parker 100+, James Burbeary c50, John Shearwood c90, John Watson c100, Charles Brookfield c75, William Tattershall c50 and Robert Rodgers c75.

<sup>69</sup> ACM S380 f57, S382 f128r, WRRD CG 369 473

more than seventy entries was active in like manner from 1801. With his fellow attorney, James Wheat the younger, he purchased Norfolk land in Shalesmoor, Carver Street, Blind Lane and Norfolk Street, and individually and together contracted more than twenty mortgages on others' properties in and around the town.<sup>70</sup> It is clear that attorneys jointly exercised a very significant role as providers of finance in this sphere in Sheffield, but demonstrably not quite the dominant one claimed by Pressnell.<sup>71</sup>

The question now remains: how did borrowers and lenders learn of each others needs? With bankers' and attorneys' clients the request for money against real security might well be a direct consequence of other business. In the case of William Bagshawe and his transactions cited above, the same names occur several times in his notebook.<sup>72</sup> No doubt he had private or business contacts whom he approached or who approached him. However discrete the parties, acquaintances or mutual acquaintances would be likely to know who was wanting or offering a sum on loan. Borthwick wills and inventories give occasional examples of relatives lending money, at times with no apparent notes or bonds - fathers to sons, perhaps - and absolving the debt in their will as part of the inheritance. WRRD has revealed three money scrivenors (the term used pejoratively) who went bankrupt in 1761, 1770 and 1779 respectively.<sup>73</sup> They may have been brokers. Two men described in the memorials as brokers also appear: Robert Burnand from 1781 and Thomas Saunders, also an auctioneer, from 1796, but little is known of their mortgaging activities.<sup>74</sup> Much more explicit was the publicity given in 1796 to a "Register Office" in Church Lane which proposed to link servants and places, apprentices and masters, partners in trade, and those seeking mortgages and annuities to appropriate parties.<sup>75</sup> Proprietor Richard Sharpe, who offered "the greatest secrecy", has been found nowhere else, so perhaps his venture was short-lived.<sup>76</sup> Newspaper advertising also played a part in bringing together would-be borrowers and lenders: the *Sheffield Public Advertizer* of 19/26 May 1761, for example, carried two requests for

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<sup>70</sup> WRRD EY 509 649

<sup>71</sup> L.S. Pressnell op cit

<sup>72</sup> Oakes Deeds 1516 op cit

<sup>73</sup> John Redfearne, William Battie ygr and Samuel Fisher gentlemen before bankruptcy.

<sup>74</sup> ACM S382 f58, *Courant* No 138 30th Jan 1796

<sup>75</sup> *Courant* No 135 9th Jan 1796

<sup>76</sup> Sharpe's name does not appear in the 1797 Directory.

money - £100 at 5% and £150 against security of property in Sheffield and Doncaster respectively.<sup>77</sup> Newspapers of the 1790's and early nineteenth century frequently advertised for both sides of the market: sometimes a mortgage was offered with the sale of a property, sometimes sums were available against "eligible freehold or leasehold", and most commonly specific amounts were required with the promise of suitable security.<sup>78</sup> In some cases the editor was acting as broker, in others respondents were to apply to a named attorney.

It was certainly the attorneys as a body who provided the most comprehensive service for linking potential borrowers and lenders. They were already in a privileged position in the property sphere as has already been indicated, but above and beyond this they attracted interest from people outside the central area, farmers and gentlemen in particular, who had funds available. These men relied on local attorneys to seek out suitable collateral and to affirm its quality. Samuel Dawson's correspondence from 1754 includes letters from Chesterfield, Mansfield, Nottingham and Doncaster.<sup>79</sup> Jonathan Dawson of Thorne, apparently another attorney (who elsewhere calls Samuel "a valuable old acquaintance"), in a letter of 1768 had sums ranging from £100 to £2000 awaiting suggestions for securities. His comment that they would "divide the profits as usual" is very much in keeping with an ongoing and beneficial line of business.<sup>80</sup> In a similar vein from the 1760's to the 1780's William Hoyle the elder received letters from Leeds, Wakefield, Rotherham and Dronfield and occasionally from much farther afield - Margate and Tottenham - mainly seeking sound security for the money offered. It is clear that clients did not always accept the first property put forward after viewing or seeing the abstract of title, and on occasions might choose not to go ahead at all.<sup>81</sup> Another contemporary attorney, John Hoyland, received a letter from Richard Mawhood jnr of Wakefield requesting sums of £2000, £6000 twice and £9000 "upon unexceptionable real secu<sup>ys</sup> . . . or can you furnish securities for two 1500/ either in one or separate sums . . . or sundry 100/ on good personal securities . . .".

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<sup>77</sup> In Local Studies

<sup>78</sup> *Courant* Nos 6, 11, 17, 43; *Iris* 20 Sept 1799, 29 Jan 1801; *Sheffield Advertiser* 19 Apl 1793, *Iris* 1st Nov 1799

<sup>79</sup> TC 522 f99, f113, f246, f247, f301, f302, f304, f319, f341, f359, f368 & f410.

<sup>80</sup> TC 522 f270 & f304 (1770)

<sup>81</sup> TC 523 f8, f135, f212, f215, f347, f411, f423, f430, f522, f537, f556, f568, f605, f638, f796, f801, f882, f894, f928, f1061, f1064, f1075, f1091.

Early in the new century John Shearwood, too, had dealings with men from Doncaster and York and nearer to home. He wrote to John Foster explaining that he now had an applicant with £600 for the mortgage of his freehold at High Green.<sup>82</sup> Ample evidence is forthcoming that attorneys were fully involved in the provision of finance and security to those who could not achieve their requirements from other sources.

#### SHAREHOLDING AND PARTNERSHIPS

Very different from the mortgage, and another way of breaking through financial constraint, was the partnership and its larger extension, the capital stock venture. Both allowed the amalgamation of smaller sums into one big enough to launch or advance the enterprise jointly undertaken. Whereas the former was more appropriate for individual industrial and commercial concerns, the latter suited a large infrastructure project like the building of the Don Navigation.<sup>83</sup> The Holmstile to Tinsley length of the Navigation in 1729 had a group of "proprietors" holding collectively seventy-five shares. This was essentially a regional scheme in that these people or their proxies had to live within twelve miles of Sheffield. Even when the Doncaster group amalgamated with them four years later local interests were firmly maintained via the Town Trust, the Cutlers' Company and about half of the private shareholders.<sup>84</sup> The outlay on each share - seventeen calls of £5 between 1730 and 1741 for Mrs. Elizabeth Drake, for example - made the investment suitable only for the already wealthy.<sup>85</sup> On the other hand for those willing to take the risk and to wait, potential rewards were well above those of the 5 per cent statutory limit of the usury laws. Even in 1751 calls were as large as dividends, but in 1762 "Our savings now grow considerable by the large income from the Navigation shares" stated a Hollis Trustees letter. Dividends rose progressively from a typical £40-£50 in the 1770's to a regular eighty guineas during the period 1818-1824.<sup>86</sup>

Somewhat lesser schemes, but using the share method for raising initial finance, were

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<sup>82</sup> MD 3985 f399 (1807), f402, f425.

<sup>83</sup> The other infrastructure undertakings, the local turnpikes, were capitalised by the contracting of mortgages against the potential toll revenue.

<sup>84</sup> PRO RAIL 825/1 and T.S. Willan: *The Early History of the Don Navigation* (Manchester) 1965

<sup>85</sup> PRO RAIL 825/9

<sup>86</sup> LD 1163 1751 a/c and 18 Feb 1762; PRO RAIL 825-1; see p192

the new Theatre and Assembly Rooms in 1776 and the Tontine Inn in 1785. Thirty-six persons each with one share (cost unknown) launched the Theatre project and fifty each paying £100 with a subsequent 20% call raised the capital for the Tontine.<sup>87</sup> The Soho Steam Grinding Wheel in Bridge Street was also built using money raised by issuing shares in 1802. Small, but regular calls set the cost of each share at £107 by early 1805. There were eight proprietors named in the trust deed whose articles were reprinted by James Montgomery in 1809, emphasising the integrity of shares when sold, and a small premium of 10/6d was levied on each sale. The profitability of the venture seems confirmed by the sale of shares for £130 each in 1807.<sup>88</sup>

Such share speculations in the development of the Don Navigation and specific buildings, although relatively large in outlay, were quite rare in Sheffield. They seem even more so when compared with the two hundred and more registered partnerships recorded across the spectrum of local industry and business and by far the most common way of amalgamating resources.<sup>89</sup> Many were short-lived, not lasting the agreed term, but frequently advertised dissolutions in local newspapers are in most cases indicating not the end of the firm in question, but rather a changed leadership.<sup>90</sup> The success of the regional forge and furnace partnerships of the Fells and the Spencers perhaps created a precedent in joint industrial operations.<sup>91</sup> However, in 1740 there is no evidence indicating imitators other than the traditional mutual working of water-powered grinding wheels and possibly informal family groups.<sup>92</sup> In fact the first known recorded partnership in Sheffield was that of Thomas Webster and Joseph Wilson, both

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<sup>87</sup> Wilson Deeds 256 and MD 3034. A thirty-sixth share in the Assembly Rooms and Theatre was regarded as sufficiently valuable in 1810 to be registered at Wakefield (WRRD FL 247 291). The Tontine was something of a novelty, although shares did change hands from time to time (eg Wheat Colln 1201) the last surviving original holder would eventually take the property.

<sup>88</sup> MD 711 & Local Pamphlets No 211(8) The shares were still £130 in 1820 MD 711 f141.

<sup>89</sup> Deeds are always at pains to emphasise whether partnerships are equal or not. Many are recorded in WRRD. Others appear in a wide range of archive material and particularly in the Parker Collection.

<sup>90</sup> Seven, fourteen and twenty-one years seem to be common terms, but five and ten years not unusual. A partner dying, leaving or joining caused a dissolution of the old agreement and the drawing up of a new version.

<sup>91</sup> William Cotton and Samuel Shore had also had an iron partnership (see p112).

<sup>92</sup> The ends of the wheels were let separately, but co-operative working from a single source of power would be essential.

ironmongers and factors, for a seven year term from 1746.<sup>93</sup> Webster's health was "precarious", and Wilson, who was "young and healthy", was to do any work requiring the vigour which Webster lacked. The second known partnership concerned a family, the Roebucks, father and three sons, drawn up legally in 1750 and 1751.<sup>94</sup> The contract was for ". . . the buying and selling of iron and steel cutlery wares and the buying and selling of steel . . ." for a period of eleven years from August 1750. During the decade several more partnerships emerged: Walter Osborne was in both coal and iron with Joseph Clay and others, and with his relative, Elizabeth Parkin, in steel production and merchanting.<sup>95</sup> In 1753 Joseph Parkin and Joseph Dearden were at Webster Field foundry,<sup>96</sup> and in the same year Joseph Wilson, George Greaves jnr, William Vollimous and George Woodhead each contributed £3000 to a fourteen year term as factors and merchants, the articles of which were renewed (without Vollimous) in 1768.<sup>97</sup> The first specifically manufacturing partnership was that of James and Joseph Kenyon, filesmiths, and John Plummer, wire merchant, who imported Robert Jones from Kidderminster to make saws in 1757. The three entrepreneurs invested £200 each for twenty one years, agreeing with Jones to pay him 12/- per week.<sup>98</sup> A contemporary venture, the Whitelead Mill, had five partners - two apothecaries, a gentleman, a mercer and a factor.<sup>99</sup> It almost seems that the founders were without industrial experience, although William Cooper's father was a local shearsmith.

During the decade of the 1760's another ten or so known partnerships were contracted. Among these are the first found in silver-plating, in cast steel and in cutlery, and more colliers, merchants and hardwaremen.<sup>100</sup> A similar number in the 1770's included

<sup>93</sup> TC 164

<sup>94</sup> WC 2529, WC 2530, WC 1840

<sup>95</sup> see pp52, 96 & 119

<sup>96</sup> see p119

<sup>97</sup> MD 5238-5240 In 1768 Wilson put in £2000, the other two £4000 each

<sup>98</sup> WC 1553 & WC 2818

<sup>99</sup> TC 796 Dennis Browne, surgeon and apothecary, James Allott, gent, William Cooper, apothecary, Samuel Turner, mercer, and James de la Pryme, factor.

<sup>100</sup> Silverplaters: John Hirst & Co. c1761 (Fairbank AB4 f51), George Woodhead & Daniel Holy 1767 (MD 5241) Richard Morton & William Clayton 1768 (TC 833) and Joseph Hancock, father and son, & William Hancock 1769 (PC 736). Steel casters: John Love & Thomas Manson c1760 (TC 200) and John Love & Alexander Spear 1769 (TC 172). Cutlers: Joseph Shemeld, Jonathan Hague & Jonathan Parkin 1767 (PC 735) and John Elam, John Winter, Samuel Roberts *et al*, later silver platers, 1767 (WRRD BF 422 605). Colliers: George Townsend

buttonmakers, jappanners and grocers. In the course of the 1780's the total doubled, then doubled once more in the 1790's and more than doubled again over the two decades to 1819. There were unexpected outcomes: partners producing carpets and hair seats, flour machines, batting cotton and wool machines, and combs.<sup>101</sup> More predictable were silver platers, steel casters, cutlers and edge tool makers, button makers, coal mine proprietors and merchants. Among the latter was a partnership of 1793 specifically designed to trade with North America, with one party to reside there.<sup>102</sup> Herein lay the value of the partnership: protagonists were enabled jointly to identify a market, assemble necessary resources (financial and otherwise) and put into action a *modus operandi*. There were, of course, those industries which needed the kind of investment which was normally beyond the scope of the individual. Not surprisingly, after the pioneering work of Thomas Boulsover in fused plate and Benjamin Huntsman in cast steel, their imitators and successors usually required joint capital to build the specialist furnaces, accommodation and equipment. In the less obvious case of, say, a cutlery firm like Nowill & Hague, they needed one partner to be in Sheffield coping with outworkers and everyday production in-house, while the other was free to travel.<sup>103</sup> For many businesses, too, it was of great advantage to have a partner resident at the main outlet. In this way a firm largely freed itself from the Hull and London merchants on whom Sheffield had been so dependent in 1740. The importance of the former's credit advances is not in question, nor is the continuing need of many local producers for the benefit of it, nor the requirement of poorer workers for instant payment. However, it is quite clear that the onus of credit steadily shifted away from Hull and London during the eighty years to 1820 as more ambitious and enterprising firms took greater control over their own destiny.

Having come full-circle, we can summarize the elements of the financing of the town's industrial and commercial development. In broad terms Sheffield's industrial

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and Mark Furniss at Park Colliery (see p96).

<sup>101</sup> MD 5255 & 5266, PC 749, PC 751 & 755, PC 792.

<sup>102</sup> Holy, Newbould and Suckley. Within four years they had warehouses in New York, Philadelphia, Boston and Baltimore MD 5737 (4) & (7).

<sup>103</sup> LD 192 f2; S.R.H. Jones in "The Country Trade and the Marketing and Distribution of Birmingham Hardware 1750-1810" *Business History* XXVI/1 (1984) discusses the problems of monitoring the performance of employed travellers and of retaining the services of the more competent.

revolution, or more strictly, that part of it between 1740 and 1820, was initially supported by credit from outside (but with an increasingly parochial trend), yet funded overwhelmingly by local moneys via profits, notes, bonds, mortgages, shares and partnership investment. A wide cross section of people played their part, directly or indirectly, from sick club savers and modest tradesmen to affluent ladies, gentlemen, merchants and manufacturers. If any groups should be singled out for special mention, perhaps they ought to be: first the attorneys, not so much for their personal involvement in the capital market which was overshadowed by others, but rather for their professional role as the major clearing house in that market. And second should be the Norfolk estate for facilitating easily secured and redeemable loans on its leased properties, at least to the early 1770's.

## CHAPTER 13 BANKING IN SHEFFIELD FROM THE 1730's TO 1820

R.E. Leader's 1917 paper on the Early Sheffield Banks is probably the major source of what has become received wisdom that banking began in the town in 1770 with Benjamin Roebuck.<sup>1</sup> Leader himself makes passing reference, no more than that, to earlier banking operations in the West and East Ridings undertaken by grocers and merchants, but dismisses them as merely a sideline to their principal activities. The first part of this chapter aims to show that many aspects of banking were already well established in Sheffield by 1740 and continued unabated during the following decades, notwithstanding their "part-time" nature. Rather than being an innovation, the banks of Roebuck *et al* were essentially an evolutionary development from their forerunners in the provision of banking and financial services to Sheffield and its environs.<sup>2</sup>

Initially, it is important to understand the functions of a bank in order to ascertain whether early Sheffield institutions did or did not fulfil the criteria. Firstly a bank offers safe keeping for money, with a debt due from the banker rather than a place in a strong room. This monetary asset may contribute to the making of loans to third parties. Secondly it offers a temporary investment (linked to a contract concerning notice) for those who have sums which they do not wish to tie up long term or have only small sums insufficient to invest elsewhere. Thirdly a bank provides a means of payment other than by cash via book keeping debits and credits for people trading multilaterally and, as a corollary, the use of banknotes and cheques or their historical equivalent.<sup>3</sup>

### EARLY BANKERS

No evidence has been found to suggest that bank notes were ever issued in Sheffield

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<sup>1</sup> SCL Local Pamphlets Vol 65 Nos 12 & 13

<sup>2</sup> This was the common pattern in the provinces noted by L.S. Pressnell in: *Country Banking in the Industrial Revolution* (Oxford) 1956 p12.

<sup>3</sup> G.F. Stanlake: *Introductory Economics* (Harlow) 4th edn 1983 Ch 23. In respect of payments other than in cash it is useful to know that by 1710 the foundations were already in place for the full acceptance and operation of negotiable instruments - the rights and liabilities of parties laid down, goldsmiths' and bankers' notes, Bank of England notes and Exchequer Bills in circulation and promissory notes (from 1704) transferable (J. Milnes Holden: *The History of Negotiable Instruments in English Law* (London) 1955 Ch V).

before 1770, but promissory notes of similar "on demand" nature must have been written. Benjamin Greaves took on deposit from Francis Sitwell, attorney, £2130 in 1731, £900 in 1736 and £800 in 1737. Interest rates paid to the depositor were two and a half per cent per annum for money *on demand* and four and a half for money at six months' notice. By 1739 Greaves was dead and Sitwell deposited under similar terms with John Dale, mercer.<sup>4</sup> A contemporary clearly felt that at least one of these men was fulfilling the role. Vincent Eyre in a letter to William Archer wrote of ". . . Mr. Ben Greaves, A great Banker at Sheffield . ." in a comments about four Bills of Exchange totalling £206 received from Greaves at the end of 1734, although elsewhere the same man is called mercer or linen draper.<sup>5</sup>

Richard Dalton, timber and iron importer, had already used Dale to draw a Bill of Exchange on Wyld & Crisp of Cheapside in order to pay his (Dalton's) dues to a London merchant in 1736. Subsequently he used Godfrey Wigfall, factor, for four years from October 1736 to October 1740 during which period Wigfall drew 50 Bills value c£2750 on the London house of Whitebread & Hodgkin, later Whitebread, Hodgkin & Edwards to pay (predominantly) Hull timber and iron accounts.<sup>6</sup> In August 1740 Dalton reverted to John Dale, using him almost exclusively for the four years to November 1744. Over that time Dale or his assistant Joseph Mayer (and on one occasion Sarah Dale) drew 76 Bills of Exchange value £3640-13-6 on Wyld & Denison of Cheapside. What is particularly interesting is that Dalton noted the numbers of the Bills issued to him by the Dale business.<sup>7</sup> This enables us to calculate the total emanating from one firm over the same period.<sup>8</sup> In that span of four years at least 611

<sup>4</sup> Sir G.R. Sitwell: *The Hurts of Haldworth* (Oxford) 1930 f264 quoting Francis Sitwell's notebooks which are probably at Renishaw. Correspondence with Sir Reresby Sitwell has not yet led to access.

<sup>5</sup> Scarborough Library: "Original Documents relating to Yorkshire 20/12/1734"; Sir G.R. Sitwell *op cit*; S377 f83.

<sup>6</sup> Bagshawe Colln 5/4/1& 2 (John Rylands Library, Manchester). During the last of these years Dalton also used Joseph Matthewman factor for nine Bills value £569.

<sup>7</sup> Bank of England note numbers were noted by Dalton. No other Bills originated in Sheffield or elsewhere have numbers noted by him, so it seems likely that none were in fact numbered.

<sup>8</sup> The assumption seems reasonable in that the numbers are consecutive or close when Dalton has several Bills over a short period and more spaced when weeks elapse between Dalton's Bills.

are enumerated of which Dalton had approximately one eighth. If we extrapolate from his (Dalton's) total outlay, it is possible to suggest (and no more than that) that John Dale may have turned over some £30,000 in Bills of Exchange over those four years.<sup>9</sup> On the other hand 600 Bills over the same years averages only three per week. Herein lay the anomaly - banking business in the 1740's could entail large sums, but there was not enough activity to warrant more than part-time involvement.

Other contemporary individuals were issuing Bills - Godfrey Wigfall, already noted, and Matthew Lambert linen draper, who was responsible for forty-eight of them for Dalton between October 1744 and March 1748/9, perhaps drawing two per week each and Joseph Matthewman factor, John Roebuck merchant and factor, Joseph Broadbent merchant and Elizabeth Parkin merchant drawing Bills only occasionally, at least according to evidence in Richard Dalton's letter books.<sup>10</sup> Elizabeth Parkin's sole surviving account book corroborates this, but shows that she at times took money on short-term deposit at three and a half or four per cent interest and lent out in excess of £40,000, mainly on mortgage at between four and five per cent.<sup>11</sup> The biggest loan was of £11,000 to John Spencer in 1749 and secured on Cannon Hall estate; the principal was still owing in 1760. She was also mortgagee of Tofields' estate at Welling Common near Tickhill in 1741 secured for £2000 and risen to over £5050 when assigned to a third party in 1752.<sup>12</sup> Such outward loans were cumulative over three decades, but interest margins between them and deposits were too small (and the latter too infrequent) for the business to be truly bank-like in this respect. The fact that Elizabeth Parkin invested a reputed £28,000 in the purchase of Ravenfield estate in 1749 and then more in its renovation as well as large sums in the sound mortgages above perhaps indicates that she was a cautious person putting her profits into property.<sup>13</sup> Very few of her debtors left her with a bad debt. Most were well secured. Ironically the one outstanding failure was one John Dale, mercer, who went bankrupt

<sup>9</sup> The numbers break at or just above 1006 (on or after 4th June 1743) and begin again at or just below 268 (on or before 14th June 1743). The total could be a little more than 611.

<sup>10</sup> If we multiply by a notional eight the business of each with Richard Dalton as was possible with the output of John Dale (Bagshawe Colln op cit 5/4/1, 2 & 3).

<sup>11</sup> OR 1 f2, f4, f22.

<sup>12</sup> *ibid.* f27, f10

<sup>13</sup> B.A. Holderness: "Elizabeth Parkin and her Investments 1733-1766" *THAS* Vol 10.

owing her £854 in 1753.<sup>14</sup>

Collectively the men and woman discussed above fulfilled many of the functions of a bank as defined. At the least they fulfilled those functions which were essential in the structure of the trade and commerce of their day, dominated as it was by merchants in Hull and in London. Banking existed in Sheffield, but it was still only partly developed and not yet ready for an entrepreneur to give it his full attention. As greater autonomy emerged with increasing expansion of trade so it was more likely that such a person or persons would appear.

#### ROOTS OF THE FIRST FULL-TIME BANKERS

John Roebuck and Joseph Broadbent, already briefly mentioned above, were, according to available evidence, only marginally involved in banking activities, but from 1736 to 1744 they were the biggest customers of Attercliffe Slitting Mill for iron and steel and still big buyers from the same partnership in the early 1750's.<sup>15</sup> In 1750 Roebuck went into partnership with his sons Benjamin, Thomas and Ebenezer buying and selling iron and steel and cutlery wares.<sup>16</sup> They had a furnace at Kimberworth and a shop and warehouse in Church Lane.<sup>17</sup> Broadbent held freehold property at various times in Pea Croft, Prior Row and the Hartshead and was mortgagee of land at Wadsley, Skargell Knowle, Gill Carrs and High Storrs.<sup>18</sup> He held leasehold property in North Yorkshire, in the parish of Darfield and in Campo Lane, as well as taking numerous Norfolk leases including a public house in the Market Place, tilts at Beeley Wood, wheels at Owlerton and Sandbed, and a half share in Sheffield Waterworks.<sup>19</sup> Both families had been taxed on their ownership of a chaise (1754-56) and of silver plate (1757-62).<sup>20</sup> Such were the backgrounds of their respective sons Benjamin Roebuck and Thomas Broadbent, two of Sheffield's first full-time bankers.

<sup>14</sup> OR 1 f17. Dale's assets eventually raised 10 shillings in the £.

<sup>15</sup> SIR 22 f 189, f200; SIR 10 f122 Rotherham Slitting Mill.

<sup>16</sup> WC 2529, 2530.

<sup>17</sup> WRRD BO 469 678, WC 1840

<sup>18</sup> MD 538, WC 1615, WRRD YY 391 473, AE 520 675, AF 268 348, AE 656 857.

<sup>19</sup> Will of Joseph Broadbent 1757 (WC 1588), ACM S377 f109, f149, f154, f167, f185, f89 rear (this volume has 21 year leases at one end and "at will" leases at the other). See also ACM S158. SDR 959 (in the Town Hall)

<sup>20</sup> PRO T47/2 & 5

Benjamin Roebuck perhaps gave some indication of his future financial career when in 1760 he, with others, raised a £4500 loan for the Treasurer of the Little Sheffield to Sparrowpit Gate Turnpike.<sup>21</sup> He was already sufficiently affluent to be able to build an "out-of-town" residence at Meersbrook in 1759/61 and was still involved with the steel and cutlery business of the previous decade.<sup>22</sup> Kimberworth furnace was only conveyed to his sons in 1771, and in 1764 he covenanted with five local cutlers to employ them for life in return for exclusive rights to their output of knives at standard Sheffield prices.<sup>23</sup> His brother Thomas, with whom he jointly owned the furnace above and who was one of the family partners, had been in London since 1756, suggesting a permanent link with the largest home market.<sup>24</sup> He also increased his property assets with the purchase of four freehold closes in Little Sheffield in 1766 and took a 21 year Norfolk lease of four acres in Old Sheffield Park near to Sheffield Moor in May 1769.<sup>25</sup> Roebuck had now some twenty years' industrial and commercial experience plus the expertise gained from his father, a successful merchant and factor. He possessed inherited and accumulated wealth and property, and had a firm London family connection. In addition he had been a Town Trustee and had held the position of Collector in 1753/54.<sup>26</sup> He was ideally poised to take the next step into full-time banking, leaving his sons to carry on the industrial activities.<sup>27</sup>

Roebuck's partner-to-be, John Shore, came from an established family of steelmakers and merchants whose roots in hardware went back nearly a century.<sup>28</sup> His father, Samuel, held two steel cementation furnaces at the Dole near West Bar and a considerable amount of both freehold and leasehold land in and around the town.<sup>29</sup> By

<sup>21</sup> TC 362

<sup>22</sup> Fairbank FB 15 f8, FB 17 f30, AB 4 f42 This contradicts R.E. Leader SCL Local Pamphlet No. 65 (12) in which he claims the house was built from banking successes post 1770.

<sup>23</sup> WRRD BO 469 678; WC 1181 to 1184

<sup>24</sup> WRRD AO 298 380, BO 469 678.

<sup>25</sup> WC 1837, ACM S379 (280)

<sup>26</sup> TC 350

<sup>27</sup> L.S. Pressnell op cit p18ff cites the iron and steel trades, along with textiles, as the most common industrial origins of country bankers.

<sup>28</sup> D. Hey: *The Fiery Blades of Hallamshire: Sheffield and its Neighbourhood 1660-1740* (Leicester) 1991 pp188ff

<sup>29</sup> WRRD AG 626 826, AN 445 596 & 447 600, AP 662 832, AQ 301 374, AX 224 262, BD 641 799; ACM S378 f176; YWD 1787

mid-century the family had established themselves as local gentry and Samuel, resident at Broadfield, was described as "esquire" in a conveyance of 1762.<sup>30</sup> John, a second son, was only twenty-five in 1770 and apparently without personal assets other than the family name and reputation. He only came into his inheritance five and six years later when he received the Shore furnaces on a three-quarter acre site, a house in Church Lane and several others at the Irish Cross and Snig Hill including the Gosnock Hall property, later to become Bank Street.<sup>31</sup>

The second future partner was John Parker of Woodthorpe.<sup>32</sup> In 1749 his father had been bequeathed farms at Woodthorpe, Graystones and Stannington, four acres of land at Brockow Bank, eight at Lidgate and houses at Crookes and in Sheffield High Street, all by the Will of John Woodrove.<sup>33</sup> Parker junior was, therefore, like John Shore, heir to a considerable estate. During the 1760's a number of purchases and mortgages had further added to family assets in the town.<sup>34</sup>

It is important to pause at this point to review the wider scene. The banks of 1770/1771 were founded by individuals, perhaps not so different from those of twenty or thirty years earlier, yet these individuals were responding to a new set of circumstances. Industry was so far developed that almost all available riverside sites had been taken for the operation of water-powered activities, local silversmiths were close to seeking an autonomous assay office, the need for larger capital outlay in manufacture and commerce was causing a sharp rise in the number of partnerships, and home and overseas markets had further developed for the consumption of the growing output. As Sheffield's trade gathered momentum, so its need for cash, for notes and for

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<sup>30</sup> D. Hey op cit p191; WRRD AX 224 262 The Shores were wealthy enough at this time to be taxed on a two and a four wheeled carriage and on a rising quantity of silver (PRO T/47 2, 3, 4 & 5).

<sup>31</sup> WRRD BX 477 659 & 477 660 In the latter conveyance, John Shore is noted as a partner of Joseph Roberts as well as being described as "banker".

<sup>32</sup> The choice of the younger Parker rather than his father as the banker appears to be correct. No inheritance of a share in the bank has been found, and John jnr carried on for some three years after his father's death in 1779.

<sup>33</sup> WRRD AC 421 571 Woodrove, formerly of Norton and later of Woodthorpe, first yeoman and later gentleman, was related to the Parkers via the marriage of Ann Woodrove to Rowland Parker in the 1660's (J. Hunter: *Hallamshire* (London) Gatty edn1859 Parker pedigree).

<sup>34</sup> WRRD AS 556 756, AT 288 372, AY 552 713, BC 76 103 & BD 548 677

professional issuing and discounting of bills increased, along with its traders' desire for greater financial independence.<sup>35</sup> The time was now ripe for a town bank.

#### SHEFFIELD'S FIRST FULL-TIME BANKING ESTABLISHMENTS

*Sheffield Local Register* gives the date of Benjamin Roebuck's debut as a banker as 28th August 1770.<sup>36</sup> Unfortunately, the source of this information is not cited and no contemporary newspapers are extant. A corroborating entry in a Fairbank Building Book for the appraisal of painting at the bank is dated 1770, without day or month, but apparently between 10th August and 1st September.<sup>37</sup> Roebuck was definitely in business by May 1771, yet it is possible that he was taking in deposits more than two years earlier - an item in a Will dated 30th January 1769 refers to the testator's father having left £180 "in the hands of Mr. Roebuck merchant of Sheffield".<sup>38</sup> As this does not state "in the bank of" or "Mr. Roebuck banker" it may well be a late example of what was by then traditional part-time banking activity. There is another aspect, however. The May 1771 mortgage cited above has Roebuck already partnered by John Parker and John Shore. The partnership is affirmed in a memorial of March 1772, by a receipt for a Bill of Exchange in April 1773, by a Bank Note dated 16th July 1774 and by the 1774 Directory.<sup>39</sup> Leader states that Roebuck was the founder (rather than joint founder) of the first bank. Was he misled by the *Local Register* and by the fact that the bank building was in Church Lane, in Roebuck property?<sup>40</sup> It seems very unlikely that an experienced man would found such an establishment on his own, only to hurry into a partnership in eight months or less if the *Local Register* date is correct. The most logical explanation is that the business was a joint venture from the outset, launched by Parker, Roebuck & Shore.

The case of Thomas Broadbent is very different. He appears to have had little experience of industrial or commercial life in Sheffield, although he did have a long

<sup>35</sup> See the relevant chapters.

<sup>36</sup> *Sheffield Local Register* Vol. 1 - a 19th Century publication listing highlights of the town's history. Some of the entries have their primary source indicated.

<sup>37</sup> Fairbank BB42 f14 The limiting dates are for the preceding and following jobs.

<sup>38</sup> WRRD BN 141 185; Borthwick Wills Jan 1770

<sup>39</sup> WRRD BO 689 908; TC 523 (461) & 523 (712)

<sup>40</sup> SCL Local Pamphlets Vol. 65 No 12; LC 152 f4 Leader admits he has no documentary support other than the *Sheffield Local Register*; 1774 Directory

industrial and mercantile pedigree and the benefit of a very reputable Quaker family which had been one of the most successful in the town.<sup>41</sup> Broadbent may have had training from his father's partner, John Cockshutt, who carried on the business with the executors from 1761.<sup>42</sup> He was certainly a minor in his father's grant of probate in February 1762, and a letter relating to his affairs describes him as coming of age in or around 1768.<sup>43</sup> This letter also states that after reaching his majority he became a banker. Unfortunately, it does not make it clear how soon afterwards. The traditional date is 1771 which is broadly supported by a reference in an assignment of bankruptcy in 1782 that he had been a banker "for eleven years and upward".<sup>44</sup> The earliest firm reference to Thomas Broadbent, banker, is a conveyance of April 1771, after which there is adequate corroboration.<sup>45</sup>

During this first decade of more overt banking there emerged a third force, again with associated difficulties for the researcher *vis-à-vis* its launch. Hannah Haslehurst, widow, and son George, Quakers and grocers, may have evolved as bankers rather like the mercers of the 1730's.<sup>46</sup> Their property ownership appears limited with a leasehold house and a shop in the Market Place inherited from George Haslehurst senior, grocer and tallow chandler, but still mortgaged to John Heald of Beighton, and two gardens in Broad Lane leased from the Duke of Norfolk from 1766.<sup>47</sup> In the 1774 Directory they are classed as "Merchants, Market Place", already an elevation in their status. What is known is that from before August 1776 to August 1784 they discounted platers and silversmiths Fenton, Creswick & Co's Bills of Exchange mainly for cash, only twice falling below an annual total of £2000.<sup>48</sup> George was first named as a banker in 1779, Hannah consistently as 'widow' until their bankruptcy in 1785.<sup>49</sup> It may be of some significance that they named their business the "Sheffield Old Bank", suggesting a

<sup>41</sup> D. Hey op cit p178

<sup>42</sup> WC 2238

<sup>43</sup> WC 1588 & WC 2238

<sup>44</sup> WC 1314

<sup>45</sup> WRRD BN 83 107, WC 1632, WRRD BQ 146 189ff (1772), TC 523 (712) (a 1774 banknote) and the Directory of 1774, MD 4069(11) & WC 2491ff (1776)

<sup>46</sup> Otherwise Haslehurst or Hazlehurst

<sup>47</sup> WRRD AG 227 301/2 & CP 319 481, Fairbank AB 4 (10), ACM S158 (Mich 1766)

<sup>48</sup> Bradbury Records 247 f39 The first entry is brought forward from an earlier [missing] book.

<sup>49</sup> WRRD CG 190 233

longer experience of the provision of financial services.<sup>50</sup>

What the three firms have in common is a total dearth of extant accounts to allow us to assess their progress and development. Yet for three of them to emerge within the space of a few years does suggest at least an acceleration in the growth of Sheffield's economy and the probability of enough business for them all. Mortgages of property to banks registered at WRRD are very few indeed during the 1770's. Little help is received there. Some hint of the volume of Bills of Exchange drawn may be gained from a Sheffield Bank (Parker, Roebuck and Shore) Bill of 18th October 1775 no. 4366.<sup>51</sup> If the Bills had consecutive numbering from the suggested start date of the partnership in August 1770, they had issued an average of seventeen per week, not a huge amount numerically speaking. On the other hand a few firms with the throughput of Fenton, Creswick & Co (above) would soon raise discounting revenue. Letter and number combinations of extant banknotes give little scope for calculation, but the values of the examples (£150 and £100 respectively), if commonplace, indicate the potential for huge credit expansion with its attendant profit and risk.<sup>52</sup>

The first casualty, if he can be called that, was Benjamin Roebuck. In the period between April and November 1778, he withdrew from the partnership with Parker and Shore.<sup>53</sup> There is no indication that he was bankrupt. On the contrary he was described as "late Banker and Copartner, but now Merchant" in June 1779 and apparently still in Sheffield.<sup>54</sup> Even as late as 1783 he was on the list of Town Trustees and in 1784 and 1785 was a subscriber to the Sheffield Assembly.<sup>55</sup> Leader suggests he may have decided to support his brother Dr. John Roebuck of Carron Ironworks fame who was already in difficulties in 1773 because of disastrous speculation in collieries and subsequently gave up his controlling interest in James Watt's patent.<sup>56</sup> A series of letters to Joseph Matthewman from Dr. John during the latter year and up to 1782

<sup>50</sup> LC 152 f5 Name on a dishonoured banknote issued 1783.

<sup>51</sup> TC 523(608) Drawn on Messrs Smith, Payne & Smith, bankers, London.

<sup>52</sup> TC 523(712) J 305 (Parker, Shore & Roebuck) and S 127 (Broadbent)

<sup>53</sup> WRRD CB 437 675, CD 677 886

<sup>54</sup> *ibid* CF 222 275

<sup>55</sup> *ibid* CN 134 158; MD 3147 (1)

<sup>56</sup> LC 150; J. Tann ed: *The Selected Papers of Boulton and Watt* Vol. 1 (London) 1981 pp12, 29 & 34.

make it clear that at least some of his creditors were in Sheffield.<sup>57</sup> Whatever the reason, Benjamin Roebuck sold off Meersbrook House to Samuel Shore, the father of one of his former partners, possibly before 1780 and certainly by 1784.<sup>58</sup> With his wife and his two sons in 1782 he raised £1500 and £3000 on the mortgage of property in Church Lane and in Leeds with the additional security of a £9000 bond to Abel Smith and Robert Pitches, both of London.<sup>59</sup> Five years later the mortgage debt appears to be £9000 when assigned to Smith and his banker partners.<sup>60</sup> Such huge sums may have been the price for mounting the rescue of Dr. John Roebuck. A transfer of some Carron Iron Company shares between Benjamin (now of Bath) and his son-in-law Francis Fenton in 1796 is supportive circumstantial evidence.<sup>61</sup>

By contrast with Roebuck, Thomas Broadbent crashed to bankruptcy in 1782. His youth and relative inexperience, and the fact that he was a lone operator, suggest that he was much more likely to be vulnerable to errors of judgement. Yet his bank lasted for at least eleven years, a testimony to the fact that he must have enjoyed the full trust and patronage of the local business community. Indeed he became a Town Trustee and was Collector in the final months of his banking career, as well as taking his turn at this period as Treasurer of the Don Navigation.<sup>62</sup> Meanwhile he continued the metals partnership with John Cockshutt inherited from his father, but little else is known of him in this respect.<sup>63</sup> In 1772 he purchased closes at Gill Carrs and Leavy Greave and houses in Near Jeffrey Croft from relatives.<sup>64</sup> During 1776 he took a twenty-one year Norfolk lease of a small property near Trippett Lane and a long lease from the Trustees of the Shrewsbury Hospital of 5698 square yards at Hickstile Field near to his late father's Broadbent's Buildings, dividing the parcel into seventeen for subletting.<sup>65</sup> Similarly he let parcels of freehold in Furnace Hill on 99 year leases in 1779.<sup>66</sup> Loans

<sup>57</sup> WC 1201 ff4, 5 & 11

<sup>58</sup> Meersbrook House was in Derbyshire and its conveyance was therefore not recorded in WRRD, but Samuel Shore is described as "of Meersbrook" in WRRD CO 565 779

<sup>59</sup> *ibid* CL 205 282

<sup>60</sup> *ibid* CW 323 420

<sup>61</sup> WC 2537 and 2538

<sup>62</sup> TT 14; PRO RAIL 825-1 (25 Sept 1782)

<sup>63</sup> Rotherham Archives Parker-Rhodes Collection 063/22a(18); WC 1314

<sup>64</sup> WRRD BQ 146 189, 147 190 & 148 192

<sup>65</sup> ACM S380(103); WC 2491; MD 4069(11) 500 years; Fairbank AB 4 f81

<sup>66</sup> PC 232, Bagshawe 4

which he is likely to have made on the security of a mortgage are not reflected in the WRRD Memorials, although one mortgage record from a different source is extant: in 1774 Samuel Capper, cutler, secured £270 and an additional £65 on two front houses and five back tenements in Bullstake. With Capper unable to redeem the property it reverted to the mortgagee in 1777.<sup>67</sup> In broad terms Broadbent's known business and property activities during the 1770's appear quite normal for a person of his status and in no way dangerously speculative.

Thomas Broadbent's career did not end overnight, nor is it clear why he became so fatally weakened. Already by December 1780 he was indebted to Banbury, Taylor, Lloyd and Bowman of London, bankers, in the sum of £8000 "in hand" for which he had mortgaged his properties in Ecclesfield, Wadsley, Gill Carrs, Near Jeffrey Croft and the Hartshead, some of them apparently for more than three times their real value.<sup>68</sup> Then in March 1782 he "pledged" all his Norfolk leasehold to Vincent Eyre, the Duke's Steward, and in July and August transferred his freehold in Leavy Greave and leasehold in Paradise Row to his brother Joseph.<sup>69</sup> In the same two months he mortgaged Norfolk leasehold (separately) to James Wheat, Mr. Leader and Joseph Matthewman for sums totalling £966.<sup>70</sup> Declaration of bankruptcy came at the end of August or early September 1782.<sup>71</sup> Just how much property Broadbent owned and the relative size of his failure is revealed by the sales which followed.<sup>72</sup> Industrial sites (Sandbed Wheels, Owlerton Snuff Mill, Owlerton Upper and Lower Wheels, Limerick Wheels and Nova Scotia Tilts) and mainly out-of-town parcels and dwellings (Beeley Wood, Owlerton, Hill Bridge, Red Croft, Pye Bank and Pitsmoor) went to auction one year later, the property divided into fifteen lots.<sup>73</sup> More valuable central holdings had been disposed of separately by assignment and conveyance at the end of March 1783.<sup>74</sup> They were three houses in Paradise Square, a property adjoining the Market Place and

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<sup>67</sup> WC 1633

<sup>68</sup> WRRD CI 538 801; MD 5749

<sup>69</sup> ACM S158 (Mich 1781); WRRD CK 564 763 & 585 794

<sup>70</sup> ACM S158 (LD 1782)

<sup>71</sup> PRO RAIL 825-1

<sup>72</sup> His father's Will (WC 1588) bequeathed him, as the eldest son, the residue after his mother, brother and sisters had been named as devisees. There is nothing detailed of that residue.

<sup>73</sup> British Museum Addnl MSS 27538 f309

<sup>74</sup> WRRD CM 688 985 & CN 174 211 to CN 180 218

a house on Campo Lane, together with eight acres at Gill Carr, half an acre near Allen Lane and two and a half at Wadsley. Yet more properties were sold off in 1784 and 1785 at Crabtree Close near Scotland Street, at Furnace Hill and Wadsley.<sup>75</sup> The ramifications were considerably wider. Creditors were still waiting for a final dividend in March 1798.<sup>76</sup>

After Broadbent, the failure of the Haslehursts' bank must have been a relatively small affair by comparison.<sup>77</sup> Their property in Sheffield was quite limited with only an additional lease of Market Place houses and shops in 1780.<sup>78</sup> What further assets they had besides their Quaker integrity is not clear. Unlike the Broadbents and Roebucks they show no evidence of inherited affluence of the kind demonstrated by ownership of a carriage or of silver.<sup>79</sup> It may be that they had property outside the West Riding, in North Derbyshire for example, in which case it would not show in the Registry of Deeds.<sup>80</sup> When bankruptcy struck, only their two Market Place leaseholds were disposed of.<sup>81</sup> That appears to be the total of their Sheffield holdings. No others were sold off in the preceding years and only one of the above leaseholds was recorded as having been mortgaged.<sup>82</sup> The actual year of declaration is not clear. Hannah and George Haslehurst were solvent in June 1784, the date of the above mortgage. They were bankrupt by April the following year, the month of the first disposal. Whatever their assets or lack of them, it took another decade before the final dividend was paid.<sup>83</sup>

The demise of the Sheffield Old Bank left only one surviving banking business in the

<sup>75</sup> *ibid* CP 34 40, 487 711ff, 491/2 718/9, 738 1076 & CR 254/5 394/5

<sup>76</sup> *Iris* 30 March 1798 The reference is to Thomas Broadbent banker. The final dividend paid later that year (*Iris* 7 December 1798) appears to be that of his two nephews.

<sup>77</sup> As for Broadbent's bank, no explanation of failure has been found.

<sup>78</sup> WRRD CF 722 917

<sup>79</sup> PRO T 47/2 (1754-56), T 47/5 (1757-62)

<sup>80</sup> WRRD CP 319 481 Benjamin Hazlehurst, an executor of the bankers' deceased mortgagee of their Market Place premises, is described as from Beighton parish, then in Derbyshire. He may have been a relative.

<sup>81</sup> WRRD CR 217 324 & CR 417 606

<sup>82</sup> *ibid* CP 319 481 (1784) The second part of this memorial was the remortgage of their Market Place property.

<sup>83</sup> *Courant* 2 August 1794 f3 No rate is recorded.

town - that of John & William Shore. At the time of Roebuck's withdrawal in 1778, his partners had been John Parker and John Shore.<sup>84</sup> These gentlemen continued as a twosome to at least 1781.<sup>85</sup> At a point between October that year and early March 1783 Parker was replaced by William Shore, younger brother of John.<sup>86</sup> Circumstantial evidence from a ledger of Fenton, Creswick & Co suggests that 1782 may have been the year of change.<sup>87</sup> From 1785 to 1798 the Shores discounted Bills for cash for this company, only once (1795) falling below £2000 and reaching a high point of £3153 in 1796.<sup>88</sup> The coincidence of date with the failure of the Haslehursts and the start of the above Bill account series indicates that, as might well be expected, the Shores benefited from the downfall of their rivals. Indeed they were alone in the banking business for seven years in a town which had had three establishments up to 1782. Their customers included the Town Trust, Hollis Hospital Trust and Don Navigation, as well as the local firms and professional figures.<sup>89</sup> For example, William Fairbank deposited money and Bills from 1783 at two per cent on demand and at two and a half at one month's notice, with nearly £300 placed on demand in 1791. It was redeemed cash in hand.<sup>90</sup> Relatively few mortgages to the bank were registered at WRRD in this period, a pattern which was repeated later. It appears to belie the amount of business which the Shores must have been doing, not least in the securing of bank accounts. Perhaps mortgages were made, but not registered. There was no compulsion. More likely, established firms and individuals were accepted with less formal security.<sup>91</sup>

#### THE SHEFFIELD AND ROTHERHAM BANK

Activity in the growing town eventually attracted a competitor, as was almost inevitable given the circumstances. On 2nd December 1791 the *Sheffield Register* printed an advertisement that the Sheffield and Rotherham Bank would open in both towns at the beginning of the New Year. The proprietors, a powerful alliance of South Yorkshire entrepreneurs, were five members of the Walker family of Rotherham, iron

<sup>84</sup> WRRD CB 437 675 & CD 667 886

<sup>85</sup> *ibid* CL 75 101

<sup>86</sup> Fairbank AB 2 f34

<sup>87</sup> Bradbury Records 247 f196 "Parker Shore" is crossed out and replaced by "John & William Shore".

<sup>88</sup> *Ibid* & Brad R 248 ff38-40

<sup>89</sup> TT 14 (30th Aug 1782), LD 1164 f176ff, PRO RAIL 825-1

<sup>90</sup> Fairbank AB 2 f34 ff

<sup>91</sup> See evidence for this with the Sheffield & Rotherham Bank.

and steel manufacturers, William Stanley, merchant, of Rotherham and Vincent Eyre, the Duke of Norfolk's Steward in the Manor of Sheffield. Their premises were at the junction of Fargate and Norfolk Row, adjacent to the "Lord's House", Vincent Eyre's residence.<sup>92</sup> The Walkers, four sons of Samuel Walker, a founder of the Masbrough ironworks, Samuel, Joshua, Joseph and Thomas, and their cousin Jonathan, were already extremely affluent.<sup>93</sup> Annual output from their blast furnaces had reached 800 tons by the early 1780's, and, besides this, gun casting for the government had been especially remunerative.<sup>94</sup> In the manner akin to that of Benjamin Roebuck, Joshua Walker had already built Clifton House.<sup>95</sup> Other members of the family built Eastwood House, Ferham House and Masbrough Hall.<sup>96</sup> Wealth had enabled them to establish themselves as local gentry, and besides this their integrity was enhanced by their practical adherence to the nonconformist Independent tradition.<sup>97</sup> William Stanley was principal agent of the Don Navigation.<sup>98</sup> From such a vantage point he was in an unrivalled position for knowing the business activity of most of both Rotherham's and Sheffield's manufacturers and merchants. Similarly, Vincent Eyre, in his capacity as the Duke's Steward, had a broad over-view of the region and of its industrial and commercial development, not least because all administrative and legal transactions involving the Duke's property required Eyre's participation.<sup>99</sup> In addition he had family connections at Hassop in North Derbyshire, interests in Sheffield Waterworks, a number of leasehold properties in the town and freehold in the Market Place and Hartshead.<sup>100</sup> This seven man partnership must have been a formidable force, backed by such assets and experience.

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<sup>92</sup> ACM S383 (195), WRRD GN 202 164

<sup>93</sup> David Hey "The Nailmaking Background of the Walkers and Booths" *JHAS* 10 1971; J. Hunter: *South Yorkshire* (London) 1831 Vol II p12 note

<sup>94</sup> A.H. John ed: *The Walker Family 1741-1893* (London) 1951; H.G. Baker (Index of Iron and Steel Records in Sheffield Archives). No statistics are available for 1784ff.

<sup>95</sup> His portrait painted c1785 includes Clifton House (and is now displayed there).

<sup>96</sup> Royal Bank of Scotland Archive Section London (RBSAS) Booklet: *Sheffield and Rotherham Bank: a Banking Bicentenary* 1992

<sup>97</sup> *ibid* The family inaugurated an Independent chapel and theological college.

<sup>98</sup> PRO RAIL 825-1 (8 Aug 1793) Stanley had died. His son Richard joined the bank.

<sup>99</sup> Eyre is invariably "of the second part" in Norfolk leases and assignments of lease.

<sup>100</sup> ACM S383 f84; CB 181 (244) and subsequently CB 886, CB 1081ff & CB 1127ff; WRRD CQ 685 977

Even so, entering an established banking sphere of more than twenty years' standing must have posed some tactical problems for the new arrival (as well as provoking a reaction).<sup>101</sup> Besides the influence exerted by the high profile and authority of the partners, and perhaps some lobbying before the launch, it is evident that they used other ways of tempting clients away from the Shores. The Fairbanks had moved their longer term deposit account by 1794, receiving a three per cent return, half of one per cent more than with their former bankers.<sup>102</sup> By the end of the first year (1792) some sixty clients had opened accounts at the Fargate branch, including a wide cross-section of Sheffield business people and professionals.<sup>103</sup> In December 1793 the total had reached about a hundred, and the two hundred mark was passed in the latter half of 1796. It is very striking how many accounts were allowed to run in overdraft year after year, but paying interest for the privilege.<sup>104</sup> Other bank income came from commission and discounting.<sup>105</sup> The Sheffield branch's own end of year account for profit or loss does not exist as such. Funds were transferred regularly to and from Rotherham, grossing around £40,000 initially and reaching over £90,000 in 1800. Gross movements of this kind obscure the overall picture. Vincent Eyre put in large sums, typically cash, at times, perhaps to defray short-term demands for liquidity. Again gross figures are the ones given: c£10,000 in 1793, rising to c£30,000 in 1798 and c£39,000 the following year. A fall to c£13,000 in 1801 was followed by another rise to c£34,000 and then over £40,000 in 1803. In view of the lack of net data, perhaps the best indicator of the vigour of the Sheffield and Rotherham Bank is its account of business with its London bankers, Down, Thornton & Free. The amounts credited in

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<sup>101</sup> The Shores reacted by moving in 1793 from Church Lane to purpose built premises in Bank Street (Fairbank AB5 f13, BB66 f170, BB79 f76, & FB75 Supplement f98)

<sup>102</sup> Fairbank AB2 ff43 & 46

<sup>103</sup> RBSAS SR/38/1 1792-1797 for example Thomas Sambourne (attorney), John Curr (engineer), Joseph & Robert Unwin (carpenters and builders), William Kesteven (cutler), John Parsons & Co. (platers), Holy & Newbould (button makers and merchants), Thomas Rawson & Co. (brewers), John Ardron (grocer) and William Ibbotson & Son (saw manufacturers).

<sup>104</sup> The annual interest rate paid by the client for his/her overdraft seems to have been amalgamated with other bank charges in many cases. As a result, a large account with a small surplus may pay "interest".

<sup>105</sup> Through the ledgers an occasional page lists an account for "light gold". All the entries are for a few shillings and pence. It seemed initially to be another source of income (other pages list discounting and interest), but it may have been a debit to the bank's own account for underweight gold coin.

each of the first two years were just in excess of £70,000 and then increased progressively to £118,263 in 1798, £172,722 in 1801 and £268,939 in 1804 when the third ledger ends.

In spite of the ongoing profitability and relative soundness of both Sheffield banks in a field where failure was commonplace, suspension of cash payments by the Bank of England in early 1797 threatened both with a "run" which they would have been unable to meet. Their likely demise was averted by support from the business community voiced in an item in the local press.<sup>106</sup> In Sheffield the Cutlers' Company and principal merchants, in all more than 140 firms and individuals, resolved to accept the notes of the two banks in lieu of specie, "firmly persuaded of [their] solidity". A similar, if smaller, backing was given in Rotherham. Again in 1802, Shores' bank was in great danger from a potentially overwhelming demand for cash, and on this occasion over 250 signatories used the *Iris* to pledge their confidence and support.<sup>107</sup>

At the end of 1798 a third bank made a very brief appearance. Without giving much detail the *Iris* of 16th November announced the opening of the "Sheffield New Bank" by Messrs Coats, Smales, Barron, Smith, Green & Co. The following week a fresh announcement stated that the New Bank would be shut for one month and any Bills issued would then "be taken up by the proprietors". None of the first three names appears in WRRD registrations for Sheffield and district nor in other researched material of the period, and in the absence of Christian names for Smith and Green it is not possible to do more than suggest that the partners were outsiders.<sup>108</sup> No subsequent reference to this ephemeron has been found.

During the early nineteenth century the two Sheffield banks appear to have flourished. From October 1804 neither closed for dinner, having hours of 10am to 3pm (and 4pm on Tuesdays and Saturdays for the market). Using extant records of other firms we may gain further insight into the throughput of bank business, but not the surpluses and overdrafts. Nowills paid in annual amounts (mainly Bills for cash) from £778 (lowest) to £3271 (highest) each year from 1804 to 1812 almost exclusively to the Shores.<sup>109</sup>

<sup>106</sup> *Courant* 7th March 1797.

<sup>107</sup> *Iris* 23 Sept 1802

<sup>108</sup> A George Coates cordwainer is registered in 1816, but hardly seems a banker.

Roberts, Cadman & Co. paid in sums in multiples of ten guineas for the most part in the period commencing 1802, principally to the Shores, but occasionally to Walkers, Eyre and Stanley, (a sample annual total from 1803 is £2840).<sup>110</sup> Messrs Read, Lucas and Read, the silver refiners, used Shores in a cash account dating from 1800, changing Bills and a Note to the value of £1704 in 1801.<sup>111</sup> Fenton, Creswick & Co. moved from the Shores to Walker, Eyre and Stanley in 1799, cashing Bills and Notes worth £2869 two years later.<sup>112</sup> Thomas Ellin's deposits with Shores' bank initially and then from 1803 to 1815 with Walkers, Eyre and Stanley seem much more modest at about £40 per annum.<sup>113</sup> In total contrast the Soho Steam Grinding Wheel had an account totalling over £6000 with the latter bank in 1804.<sup>114</sup>

The two banks were involved in the Sheffield property sphere in the first decade of the nineteenth century, commonly with mortgages to secure a bank account. Walkers, Eyre and Stanley registered over forty indentures at Wakefield and more were recorded in Church Burgesses' Rentals between 1800 and 1810.<sup>115</sup> Shores appear to have been far less active in this field, perhaps confirming that the Sheffield and Rotherham Bank was still taking on more new clients. During this period, too, there were changes: Vincent Eyre died in 1801 and was succeeded by his son Vincent Henry, both in the partnership and as Steward of the Norfolk estate.<sup>116</sup> The succession was followed shortly by a move from Fargate to premises in Church Lane in 1802.<sup>117</sup> In the other camp John Shore the younger and Ralph Blakelock had joined the co-partnership by March 1805.<sup>118</sup> Blakelock had first appeared in the WRRD in 1801 (twice) as joint mortgagee with John Barlow and Francis Beardsall of properties at Shude Hill and Gibraltar.<sup>119</sup> He went on to lease considerable yardages from the Church Burgesses in 1810 and 1817, and was involved in more than twenty other property transactions in WRRD. He was

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<sup>109</sup> LD 194 f153ff

<sup>110</sup> Sissons Colln 97 f1ff and f40

<sup>111</sup> SSC 72

<sup>112</sup> Bradbury Colln 248 f40, f220 They were entered as Watson & Co in the bank ledger.

<sup>113</sup> MD 1773 - 2 f14

<sup>114</sup> MD 711 f70

<sup>115</sup> WRRD; CB 181 passim

<sup>116</sup> WRRD EI 383 518, EK 735 981 & ER 8 6

<sup>117</sup> RBSAS Booklet op cit

<sup>118</sup> WRRD ET 351 457

<sup>119</sup> *ibid* EI 383 518 & EK 334 445

described as "Gentleman" and of "Leavygreave". Nothing else emerges concerning his background other than a possible London connection, a certain Henry Blakelock, gentleman, Fleet Street, being noted in Memorials.<sup>120</sup>

In 1808 Hugh Parker joined the partnership, a step which raises the possibility that his late father's interest in the business may have been retained.<sup>121</sup> Alternatively, as Parker's arrival seems to have coincided with the departure of John Shore the elder, this development may have been a simple purchase of a share of the bank.<sup>122</sup> Hugh Parker must have been a great asset. He had inherited the Woodthorpe estate from his father which brought him property not only there, but in Gleadless, Richmond and in other parts of Handsworth parish, as well as in Graystones and Stannington. In 1798 he had married Mary Walker, daughter of Samuel Walker, Masbrough, giving him a family link with the iron and steel company and with the Sheffield and Rotherham Bank.<sup>123</sup> Furthermore he was an attorney, a West Riding JP and on a number of occasions had been a Commissioner in Bankruptcy for failed Sheffield firms.<sup>124</sup> Besides all this he had been mortgagee or otherwise connected to a dozen or more Sheffield deeds registered at Wakefield.

This first decade saw occasional incursions by other banks from the region. Messrs Moore, Maltby and Co. of Chesterfield and Mansfield were party to five mortgages in 1806 and 1807 and Geo Cooke Yarborough and co-partners of Doncaster assigned a repossessed property in Waingate in 1806.<sup>125</sup> A few years later (1814) Godfrey Wentworth Wentworth and copartners of Barnsley were mortgagees of property at Southey and former mortgagees in an Upper Hallam conveyance of 1817.<sup>126</sup> Conversely, outreach by the Sheffield banks is illustrated by a letter from a Bradwell client wishing to "advance" his account to £350 against the security of his deeds.<sup>127</sup>

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<sup>120</sup>    ibid GT 138 123

<sup>121</sup>    LD 194 f157

<sup>122</sup>    WRRD FH 523 656

<sup>123</sup>    ibid EB 251 359; J. Hunter: *South Yorkshire* op cit

<sup>124</sup>    Pedigree of Parker family (J. Hunter: *Hallamshire* op cit); WRRD EO 111 160, EP 512 632 & FB 351 457

<sup>125</sup>    WRRD EY 409 356 & 750 1018, EZ 403 595, 433 646 & 591 886, & FA 309 412

<sup>126</sup>    WRRD GC 690 817 and GO 664 628

<sup>127</sup>    MD 5652 (in 1814)

## SHEFFIELD NEW BANK

Optimism created by the end of the Napoleonic Wars, prospects of a full recovery of the economy, and anticipation of the Sheffield to Tinsley Canal which promised even more prosperity for the town, offered incentives for another bank to enter the arena.<sup>128</sup> Unlike the proprietors of the ephemeral venture of 1798 the partners of the second "Sheffield New Bank" had long local pedigrees in business and commerce. John Rimington was an attorney based in town, but living at Hillsbrough.<sup>129</sup> He had been practising in Sheffield for some thirty years and his property holdings may have rivalled those of Thomas Broadbent. He inherited money and the Hillsbrough estate from his brother James, and held a considerable acreage in Bolsterstone and Catcliffe, much of which was sold or leased before 1810.<sup>130</sup> He was lessee of nine acres of Norfolk land in the Park and four and a half acres near the White Lead Works in 1785, and of two parcels in Norfolk Street in 1787/8. With others he purchased five freehold messuages in High Street for £3500 in 1790.<sup>131</sup> During the next twenty years he was mortgagee or purchaser of thirty or more properties in the district and party to about 150 registered deeds, some of which were quite substantial estates.<sup>132</sup> For example, a valuable Church Burgesses' holding in Fargate which was assigned to him in 1809 was eventually mortgaged by his widow for £10,000.<sup>133</sup> James Rimington, son of John, was an attorney with London experience who returned to Sheffield between 1812 and 1815.<sup>134</sup> By 1817 he was resident at Broomhead Hall in Bradfield with the title "Esquire".<sup>135</sup>

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<sup>128</sup> WRRD GK 614 679

<sup>129</sup> WRRD FU 612 684

<sup>130</sup> Borthwick Wills April 1787 Unfortunately James died intestate so only his personal estate (not more than £2900) is recorded. WRRD EN 707 964 (1802), EQ 254 221ff, 377 432 & 380 436, ET 268 337, 271 343, 279 358 & 280 360ff, FG 258 359

<sup>131</sup> ACM S381ff1 & 107, S383 ff26 & 42; Broomhead Hall Records 222

<sup>132</sup> WRRD. The nature of the summary form of the registrations can make it difficult to distinguish between a purchaser or mortgagee if the transaction is not specified. The subsequent indenture is usually the key, but if mortgages or acquisitions are long term the forward/backward link may prove impossible within a defined period.

<sup>133</sup> CB 181(337)

<sup>134</sup> WRRD GH 451 499 & 454 502 John Rimington was also brother of Elizabeth, Henry Tudor's second wife (WRRD CL 718 919 & Borthwick Wills Apl 1787).

<sup>135</sup> WRRD GU 548 580

The other partners, William and George Younge, ironmongers and hardwaremen in High Street, were the eldest surviving sons, heirs and successors of Simon Andrews Younge. He had been in hat haberdashery (like his own father) and in several merchanting and steelmaking partnerships, and had died in 1813.<sup>136</sup> As well as inheriting part of their father's long-term urban holdings at Portobello, Orchard Lane, High Street and Hartshead, the sons had purchased twelve houses at Barkers Pool and two shops in High Street in 1807 and 1812 respectively, and were jointly or separately mortgagees of a dozen or so local properties.<sup>137</sup> William had been a partner with his father and Henry Whitelock as merchants up to 1810, but it is not clear if they were still operating the former Osborne furnaces run by Younge & Whitelock in 1797.<sup>138</sup> Indeed, no firm reference has been found to link William and George directly to the Blind Lane or Townhead steel-making sites. Evidence from Hunter suggests that the Younges were somewhat older than Thomas Broadbent or John Shore at the beginning of their banking careers (Younge senior had died in 1813 aged c80), but it is difficult to avoid the conclusion that they were very much secondary to the Rimingtons in both wealth and experience. Even so, together they provided the town with a third bank from 1816.<sup>139</sup> The history of this partnership has little to illustrate it, although a mortgage of a Silver Street house to secure a bank account in 1824 confirms that it was still active after our period.<sup>140</sup> Only four mortgages in the four years after its foundation have come to light hitherto, the largest one of £1800 on the property of Samuel Kirkby in Norfolk Street, Cheney Square, Catcliffe and Ecclesfield transferred from Walkers, Eyre and Stanley in 1818.<sup>141</sup> As the junior bank competing against established and trusted businesses it was likely to face an uphill task.

<sup>136</sup> According to Joseph Hunter's *Familiae Gentium Minorum* ed J.W. Clay (London) 1895 p716, S.A. Younge's two children of his first marriage had died in infancy. William and George were the eldest sons of a second marriage to Jane, daughter of William Hall, raff merchant. This line of the Younge family was related to John Trevers Younge, an even more successful entrepreneur. The common ancestor seems to have been a seventeenth century incomer from Grindleford.

<sup>137</sup> CB 722 & 181 (185), ACM S382 f114, Fairbank SheS 949s, WRRD CR 553/4 817/9 EN 443 595; FB 308 402 & FS 340 380; FH 614 761, FM 507 628, FQ 405 515 & GB 454 504

<sup>138</sup> *Iris* 20 Feb; Directory 1797

<sup>139</sup> WRRD GK 614 679

<sup>140</sup> MD 4064 (5); Charles Frederick Younge, banker, was alive in 1837 (J. Hunter op cit)

<sup>141</sup> WRRD GR 580 567

Sheffield's banking history to 1820 is almost completed. The locality again had three banks, one with fifty years' experience, another with twenty-eight, the third almost new, providing financial services in both town and neighbourhood. For at least ninety years there had been bankers. They may not have called themselves such or even thought of themselves in that light; nevertheless they provided essential support in monetary affairs that were appropriate to their time.

A brief postscript needs to be appended to tie up a loose end which remains from the original definition. One of the functions of a bank is to accept sums which are too small for other forms of investment. There is no evidence to show that any of the concerns described above ever provided this facility for very small amounts. In 1803, a step was taken to accommodate small savers via a "funding society". By paying in five shillings per month each towards a £50 share two hundred people could make a substantial long-term investment. At least a dozen more societies were floated during the following decade with both bigger and smaller outlays. Most seem to have been fully subscribed within weeks.<sup>142</sup> However beneficial, they did not have the flexibility of a bank account for varied deposits and withdrawals. Perhaps circumstances were not favourable - until 1819. In that year the Sheffield and Hallamshire Savings Bank was founded.<sup>143</sup> Resolutions of a public meeting in the town had been conveyed in a letter from Hugh Parker to Earl Fitzwilliam requesting him to be president.<sup>144</sup> Parker, as partner in his own bank, clearly felt no clash of interests as the new institution was for small savers only. Samples of deposits in the early accounts show amounts ranging from one shilling to four guineas with accumulations rarely exceeding £10.<sup>145</sup> The full range of services as defined was now available in Sheffield for all who wished to make use of them.

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<sup>142</sup> *Iris* 14 Apl 1803, 23 Aug 1804, 24 Jan, 21 Mar, 18 Apl, 9 May & 3 Oct 1805, 23 Jan & 18 Dec 1806, 25 June 1811, 4 Apl 1815 Montgomery, the editor, comments on their success (10 Oct 1805).

<sup>143</sup> *Iris* 1 Dec 1818, 9 Feb 1819, 2 Mar 1819 & 6 April 1819

<sup>144</sup> WWM F122 (44) & *Iris* 19 Jan 1819

<sup>145</sup> Microfilm A140 (1819ff)