Economic and social change in Wensleydale and Swaledale in the nineteenth century

Thesis

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ECONOMIC AND SOCIAL CHANGE IN WENSLEYDALE AND SWALEDALE IN THE NINETEENTH CENTURY.

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CHAPTER 12
QUARRYING AND COALMINING

While the lead industry was the dominant extractive industry in Swaledale and Wensleydale in the nineteenth century, the sub-soil contained other raw materials which were exploited when economic conditions were opportune. These raw materials included sandstone, limestone, ganister, chert and coal, all of which occurred in economically-significant quantities (see Maps 8 and 9). The utilization of these resources has at times assisted with the maintenance of a viable community in an area which suffers from substantial physical disadvantages. As in the case of the lead industry, it was the demands of a rapidly industrializing nation that resulted in the development of these resources which formerly had been exploited for a predominantly local market. In contrast, industrialization had a negative effect on the local coal industry which declined as the railway enabled cheaper, better quality coal to be imported into the area.

I

Many of the numerous beds of sandstone in the Yoredale series and several of those in the lower part of the Millstone Grit are suitable for use as building stone. It was the finely-bedded flagstones which made the best building stone. They could be split easily along the
bedding plane to form either regularly-sized blocks for the walls of buildings or relatively-thin roofing 'slates'. A large proportion of the quarried stone was used as wall stone but the best quality was used as flags, 'slates', sills, lintels, jambs, mullions, setts, engine beds and monumental stone. The best quality sandstones were worked extensively in Hawes and High Abbotside townships in upper Wensleydale. Other, coarser sandstones were worked elsewhere in Wensleydale and in parts of Swaledale for heavy flags and building components which required particular strength, such as lintels.

The sandstones of Wensleydale and Swaledale have been quarried for several hundred years for use in the construction of major buildings. It was not until the seventeenth century, however, that local stone began to be used on a substantial scale. By the early eighteenth century, small quantities of the best quality stone were exported over relatively-short distances for use in the construction of important buildings, while the coarser stone was retained for vernacular buildings within the area. In the nineteenth century local demand increased with the expanding population and rising prosperity, and several commercial companies were established. The rapidly-growing population nationally led to a high demand for building materials and good quality stone was exploited if it was sited near urban areas or within easy reach of a canal or railway. For most of the nineteenth century the local quarry industry was at a relative disadvantage on
both counts. As early as 1846 it was predicted that the construction of a railway in Wensleydale would lead to the expansion of the local industry. 10 With the coming of the railway in the late nineteenth century, the local quarry industry entered a period of prosperity and substantial tonnages of stone were extracted both by conventional quarrying and underground mining. 11 The existence of quarrying as a major industry was brief, however, and by the early twentieth century it was in rapid decline.

The most important quarries were centred on Burtersett and Staggs Fell, near Hawes in upper Wensleydale. The Burtersett quarries had been worked on a small scale probably from at least the eighteenth century. As the nineteenth century progressed, demand for stone increased and in 1867 the two quarry owners who were to guide the Burtersett industry through its heyday in the 1880s and 1890s took leases. 12 In 1878, after the railway had opened, it was reported that:

The flagstone quarries at Gayle and Burtersett and also on Abbotside have been more extensively utilized since the opening of the line; giving employment to a considerable number of men. 13

The quarry industry was short-lived and, even during the last two decades of the century, the Burtersett quarry owners on several occasions experienced financial difficulties as the price and demand for stone fluctuated.
from year to year. By the early twentieth century demand had fallen to such an extent that the Burtersett quarries were worked only intermittently and in 1908 neither of these two quarries was returned in the list of quarries in operation in the U.K. The Staggs Fell quarries were in operation from at least the 1860s, at which time stone was exported by being carted westwards to the nearest railway station. These quarries continued in operation into the early twentieth century.

Commentators in the 1840s predicted that the opening of a railway in Wensleydale would give access to valuable export markets. It was anticipated that local stone would be sent into Lancashire as well as to the North East. The early commentators were largely correct in this forecast. Oral tradition suggests that the destination of most of the exported stone was Burnley and the other expanding textile towns of north-east Lancashire. This market became accessible when the opening of the Midland Branch line in 1878 enabled a rail connection to be established from Hawes, via Hellifeld, to the Colne valley. The period of high output from the Wensleydale quarries coincided with a building boom in north-east Lancashire and the subsequent decline in the local quarrying industry followed the slowing down of building activity in that area (see Appendix XVI). It is interesting to note, however, that the predicted large-scale export of stone to the North East did not materialize.

Output figures are available from 1882 and show that at
the height of the sandstone quarrying industry five quarries were in commercial operation in upper Wensleydale and one quarry each in lower Wensleydale and Swaledale.

TABLE 12.1
OUTPUT OF STONE FLAG AND SLATE QUARRIES, UPPER AND LOWER WENSLEYDALE AND SWALEDALE, AND THE NORTH RIDING OF YORKSHIRE,

1882-1900.  

<table>
<thead>
<tr>
<th>Year</th>
<th>Upper W/d</th>
<th>Lower W/d</th>
<th>S/d</th>
<th>Tot.</th>
<th>N.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1882</td>
<td>6,180</td>
<td>300</td>
<td>234</td>
<td>6,714</td>
<td>6,744</td>
</tr>
<tr>
<td>1883</td>
<td>4,270</td>
<td>700</td>
<td>68</td>
<td>5,038</td>
<td>5,268</td>
</tr>
<tr>
<td>1884</td>
<td>3,950</td>
<td>575</td>
<td>80</td>
<td>4,605</td>
<td>4,605</td>
</tr>
<tr>
<td>1885</td>
<td>3,887</td>
<td>463</td>
<td>90</td>
<td>4,440</td>
<td>4,440</td>
</tr>
<tr>
<td>1886</td>
<td>16,811</td>
<td>220</td>
<td>60</td>
<td>17,091</td>
<td>17,161</td>
</tr>
<tr>
<td>1887</td>
<td>6,242</td>
<td>700</td>
<td>65</td>
<td>7,007</td>
<td>7,047</td>
</tr>
<tr>
<td>1888</td>
<td>12,350</td>
<td>528</td>
<td>50</td>
<td>12,928</td>
<td>12,975</td>
</tr>
<tr>
<td>1889</td>
<td>11,963</td>
<td>495</td>
<td>58</td>
<td>12,516</td>
<td>13,602</td>
</tr>
<tr>
<td>1890</td>
<td>13,280</td>
<td>640</td>
<td>65</td>
<td>13,985</td>
<td></td>
</tr>
<tr>
<td>1891</td>
<td>13,138</td>
<td>400</td>
<td>65</td>
<td>13,603</td>
<td></td>
</tr>
<tr>
<td>1892</td>
<td>13,530</td>
<td>300</td>
<td>50</td>
<td>13,880</td>
<td></td>
</tr>
<tr>
<td>1893</td>
<td>13,160</td>
<td>250</td>
<td>65</td>
<td>13,475</td>
<td></td>
</tr>
<tr>
<td>1894</td>
<td>12,239</td>
<td>310</td>
<td>25</td>
<td>12,574</td>
<td></td>
</tr>
<tr>
<td>1895</td>
<td>4,030 ²</td>
<td>310</td>
<td>4</td>
<td>440 ²</td>
<td></td>
</tr>
<tr>
<td>1896</td>
<td>220³</td>
<td>200</td>
<td>20</td>
<td>440 ²</td>
<td></td>
</tr>
<tr>
<td>1897</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2,160</td>
<td></td>
</tr>
<tr>
<td>1898</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2,760</td>
<td></td>
</tr>
<tr>
<td>1899</td>
<td>2,895</td>
<td>225</td>
<td>12</td>
<td>3,132</td>
<td>3,150</td>
</tr>
<tr>
<td>1900</td>
<td>2,512</td>
<td>230</td>
<td>6</td>
<td>2,748</td>
<td>2,754</td>
</tr>
</tbody>
</table>

¹ In tons.
² Returns for these years include other categories of stone.
³ Incomplete.
⁴ Not recorded.
¬ No Return.


Output in lower Wensleydale and Swaledale was small compared to that in upper Wensleydale.
In the late nineteenth century most of the sandstone production recorded in the North Riding of Yorkshire was from upper Wensleydale. In the years for which comparative data are available, upper Wensleydale produced not less than 81 per cent and as much as 95 per cent of the recorded North Riding output. The production of sandstone in the two dales fluctuated considerably from year to year, although a high level of output was maintained from 1888 to 1894. Output in upper Wensleydale reached a peak of 16,811 tons in 1886 when, although there were five quarries in operation, 77 per cent of output came from just two quarries at Burtersett. Production in lower Wensleydale peaked at 700 tons in 1883 and again in 1887, and production in Swaledale was at its height in 1882 when it was a mere 234 tons.

Returns available for the Midland Railway reinforce the information provided in the mineral statistics and confirm that not only was the growth of the upper Wensleydale sandstone industry rapid but its subsequent decline was equally swift (see Table 12.2). Stone exports from Hawes station rose from 2664 tons in 1879 to 13,170 in 1889 (see Appendix XVII). Stone exports appear to have always lagged behind stone production and when markets were depressed the quarrymen are reputed to have continued to extract and dress stone in anticipation of subsequent demand and attendant exports.
TABLE 12.2
STONE FREIGHT FORWARDED ON THE MIDLAND BRANCH FROM HAWES (IN TONS), 1881-1916. ¹

<table>
<thead>
<tr>
<th>1881</th>
<th>1886</th>
<th>1891</th>
<th>1896</th>
<th>1901</th>
<th>1906</th>
<th>1911</th>
<th>1916</th>
</tr>
</thead>
<tbody>
<tr>
<td>4541</td>
<td>6005</td>
<td>10,883</td>
<td>6654</td>
<td>3640</td>
<td>2279</td>
<td>2400</td>
<td>779</td>
</tr>
</tbody>
</table>

¹ Three year moving average

Source: PRO, RAIL 491/671-2,674-5, Midland Railway Company, Traffic and Expenses at Stations, 1881-1916.

The value of the Wensleydale stone raised in the late 1880s and 1890s was high as Table 12.3 shows. Because of the abundance of good building stone and the comparative ease with which it could be worked, it was able to command only a low unit price. Conversely, by reason of its weight and bulk, the cost of transport was high relative to the cost of production. Consequently the market was limited by the distance which stone would travel and still be sold at a profit. This distance reflected production cost, profit expectation, quality and the availability of comparable alternatives. The large-scale commercial exploitation of building stone in upper Wensleydale in the late nineteenth century was based on high quality reserves which were easily worked and which were conveniently located in relation to the railway. The average quarry price of stone in upper Wensleydale in the last two decades of the nineteenth century fluctuated slightly, with no obvious trend. ²²
### TABLE 12.3

VALUE OF OUTPUT OF STONE FLAG AND STONE SLATE QUARRIES OF UPPER AND LOWER WENSLEYDALE AND SWALEDALE, 1882-1900.

<table>
<thead>
<tr>
<th>Year</th>
<th>W/d per ton</th>
<th>Pr.</th>
<th>L W/d per ton</th>
<th>Pr.</th>
<th>S/d per ton</th>
<th>Pr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1882</td>
<td>2,181</td>
<td>0.4</td>
<td>150</td>
<td>0.5</td>
<td>136</td>
<td>0.6</td>
</tr>
<tr>
<td>1883</td>
<td>2,315</td>
<td>0.5</td>
<td>250</td>
<td>0.4</td>
<td>53</td>
<td>0.8</td>
</tr>
<tr>
<td>1884</td>
<td>1,668</td>
<td>0.4</td>
<td>325</td>
<td>0.6</td>
<td>54</td>
<td>0.7</td>
</tr>
<tr>
<td>1885</td>
<td>2,405</td>
<td>0.6</td>
<td>289</td>
<td>0.6</td>
<td>56</td>
<td>0.6</td>
</tr>
<tr>
<td>1886</td>
<td>8,141</td>
<td>0.5</td>
<td>145</td>
<td>0.7</td>
<td>34</td>
<td>0.6</td>
</tr>
<tr>
<td>1887</td>
<td>3,850</td>
<td>0.6</td>
<td>335</td>
<td>0.5</td>
<td>52</td>
<td>0.8</td>
</tr>
<tr>
<td>1888</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1889</td>
<td>6,545</td>
<td>0.5</td>
<td>277</td>
<td>0.6</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1890</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1891</td>
<td>7,206</td>
<td>0.5</td>
<td>180</td>
<td>0.5</td>
<td>52</td>
<td>0.8</td>
</tr>
<tr>
<td>1892</td>
<td>7,010</td>
<td>0.5</td>
<td>150</td>
<td>0.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1893</td>
<td>6,521</td>
<td>0.5</td>
<td>125</td>
<td>0.5</td>
<td>52</td>
<td>0.8</td>
</tr>
<tr>
<td>1894</td>
<td>5,964</td>
<td>0.5</td>
<td>150</td>
<td>0.5</td>
<td>20</td>
<td>0.8</td>
</tr>
<tr>
<td>1895</td>
<td>1,836</td>
<td>0.5</td>
<td>150</td>
<td>0.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1896</td>
<td>130</td>
<td>0.6</td>
<td>90</td>
<td>0.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1897</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1898</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1899</td>
<td>1,467</td>
<td>0.5</td>
<td>125</td>
<td>0.6</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1900</td>
<td>1,306</td>
<td>0.5</td>
<td>128</td>
<td>0.6</td>
<td>3</td>
<td>0.5</td>
</tr>
</tbody>
</table>

1 Value in £.
2 Not recorded
3 Incomplete
4 No return

Source: see Table 12.1.

The quality of the production and the accessibility of the railway explains why upper Wensleydale stone was for a time sold in large quantities outside the area, particularly in north-east Lancashire. The annual value of upper Wensleydale stone output varied considerably in line with fluctuating production and price. The peak value
of more than £8000 achieved in 1886 coincided with peak output. The value of stone produced in both lower Wensleydale and Swaledale was modest, reflecting the low output of the two areas. Although the price per ton of Swaledale stone was high, this probably reflects the fact that the local market was isolated from external competition and does not imply that the local stone was of a particularly high quality.

Following its brief period of high output in the 1880s and 1890s the upper Wensleydale sandstone industry suffered a rapid decline leading to its virtual extinction immediately following the First World War. Price was a significant factor in the falling demand for building stone and as cheap manufactured bricks became more widely available these captured an increasing proportion of the building market. Other factors affecting output were the decline in building activity in those areas which had been major users of Wensleydale stone and the exhaustion of the most accessible seams.

II

Prior to the nineteenth century limestone was quarried in Wensleydale and Swaledale only to satisfy local requirements. One of the principal uses was for agricultural lime and the large number of lime kilns, dating mainly from 1750 to 1850, which still survive attest to the former importance of lime burning in the
agricultural economy. Limestone was also used extensively as a constructional material, both in buildings and in the many hundreds of miles of enclosure walls. The stone for both lime burning and building was obtained from innumerable small and often short-lived field quarries, many of which are scarcely discernible in the present day landscape. With the arrival of the railway at Leyburn in 1856, however, a new phase in the history of limestone quarrying in the area dawned and large-scale commercial exploitation of the area's limestone resources for road aggregate, rail ballast and for use as flux in the iron and steel industry began (see Map 8). The new industry was restricted to Wensleydale, and in Swaledale, where there was no easy rail access and where the workable limestone beds were less extensive, quarrying continued to serve only local needs.

The most accessible of the high quality limestone occurred north of the River Ure in the lower dale and it was here where, by local standards, a substantial quarrying industry developed. Some of the limestone produced in the lower dale was used as aggregate but most was used as flux in the Teesside iron and steel industry, which developed after 1846 using iron ore from the nearby Cleveland Hills. The Teesside iron industry expanded rapidly, particularly after Middlesbrough's first blast furnace went into production in 1852. For example, the number of puddling furnaces on Teesside rose from under 200 in 1864 to 1000 in 1872 and by the mid-1870s annual output
of pig iron in the area, at two million tons, accounted for a substantial part of Great Britain's production. This rapid growth of output in the early 1870s was in response to both increasing home demand and, in 1871-3 when the Franco-Prussian War adversely affected continental competition, to growing exports. Prices for pig iron rose from 45s 5d per ton in 1871 to 122s 6d per ton in 1873 but then the industry entered a period of depression and by 1879 pig prices had fallen to 32s 6d per ton. However, the iron industry quickly revived and continued to expand into the twentieth century.

Steel production on Teesside commenced in 1877, after the introduction of the Bessemer process lowered the cost of steel, and output increased steadily throughout the rest of the century. The South Durham Steel and Iron Company was established in 1898, and built the first integrated steel works on Teesside in the early twentieth century. The steel industry continued to expand and by the First World War there were three major steel works on Teesside. Production from these works was high and in 1913 the blast furnaces of the North East produced nearly four million tons of pig iron and two million tons of crude steel.

The exploitation of the lower dale limestone for commercial use commenced as early as 1856, when a rail siding was constructed to serve Harmby Quarry immediately east of the new Leyburn terminus. The potential of quarries further west was recognized and it was noted in 1866 that there were large quantities of good quality...
limestone in Wensleydale which could be exploited if there was a railway. In the late 1860s, shortly after this assessment, limestone was being exported via the railway from the quarries on the western outskirts of Leyburn. As the railway progressed westwards from Leyburn, further quarries at Wensley, Preston-under-Scar and Redmire were developed.

There is no official record of the local limestone output for the late nineteenth and early twentieth centuries but the quantity of limestone exported by rail from two quarries (West Quarry, Leyburn, and Harmby Quarry) was recorded intermittently from 1868 (see Table 12.4).

**TABLE 12.4**

LIMESTONE FREIGHT FORWARDED FROM HARMBY QUARRY AND WEST QUARRY (IN TONS).

<table>
<thead>
<tr>
<th>Year</th>
<th>Harmby Quarry</th>
<th>West Quarry</th>
</tr>
</thead>
<tbody>
<tr>
<td>1868</td>
<td>971</td>
<td>12,101</td>
</tr>
<tr>
<td>1869</td>
<td>942</td>
<td>25,430</td>
</tr>
<tr>
<td>1871</td>
<td>1,343</td>
<td>20,462</td>
</tr>
<tr>
<td>1874</td>
<td>30,686</td>
<td>11,111</td>
</tr>
<tr>
<td>1876</td>
<td>16,712</td>
<td>44,270</td>
</tr>
<tr>
<td>1879</td>
<td>15,973</td>
<td>18,973</td>
</tr>
<tr>
<td>1881</td>
<td>47,655</td>
<td></td>
</tr>
</tbody>
</table>

1 By agreement direct with the NER minerals office and, therefore, not invoiced officially through the station.


Although it is difficult to draw conclusions on the basis of these limited data, they do provide an indication of the scale of the industry in the lower dale at this time. Also the data suggest that the output of limestone responded to increasing demand from the iron and steel industries,
particularly in the boom conditions of the early 1870s and again during the years of recovery and increased demand in the 1920s.

Intermittent returns available for other quarries further demonstrate the violent fluctuations as production moved in response to demand. In 1908 the NER exported only 820 tons from Leyburn Moor Quarry but in 1913 and 1914 41,715 and 43,177 tons respectively were moved from the quarry sidings.\(^4\) By the late nineteenth and early twentieth centuries, the Wensleydale limestone industry was considered to be so important to the iron and steel industry that some of the lower dale quarries were being worked by large Teesside companies. Ord & Maddison managed the large West Quarry near Leyburn, and the South Durham Steel & Iron Company owned Wensley Limestone Quarry Ltd.\(^4\)

Limestone for aggregate, which was frequently used as roadstone, was also quarried at Leyburn. The output of aggregate fluctuated less wildly than the limestone supplied to the iron and steel industry but on occasions, when demand fell, it also declined markedly as Table 12.5 demonstrates.

**TABLE 12.5**

<table>
<thead>
<tr>
<th>Year</th>
<th>Roadstone Exported (in tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1906</td>
<td>3581</td>
</tr>
<tr>
<td>1907</td>
<td>3420</td>
</tr>
<tr>
<td>1908</td>
<td>3321</td>
</tr>
<tr>
<td>1909</td>
<td>3270</td>
</tr>
<tr>
<td>1910</td>
<td>2749</td>
</tr>
<tr>
<td>1911</td>
<td>3035</td>
</tr>
<tr>
<td>1912</td>
<td>2337</td>
</tr>
<tr>
<td>1913</td>
<td>1542</td>
</tr>
<tr>
<td>1914</td>
<td>655</td>
</tr>
</tbody>
</table>

\(^1\) In tons

Source: PRO RAIL 527/2146, NER Station Traffic Index, 1906-14.
Predictably, the lower dale limestone industry enjoyed its greatest sustained expansion in the early twentieth century and in a limited form it survives to the present. For example, at Redmire Quarry, which had recorded only a small output in the early twentieth century, the operators signed an agreement with the NER in 1920 for the installation of a siding and production then rose rapidly from 11,478 tons in 1921 to over 33,000 tons in 1923. This quarry continues to operate and is at present the only Wensleydale quarry supplying the Teesside steel industry.

Although there are no extant data on the value of the Wensleydale limestone output, the development of this industry in the late nineteenth century provided a boost to the economy at a time when other local industries, particularly lead mining and agriculture, were suffering. The continuance and growth of this industry was one of a number of factors which helped to arrest rural decline in the lower dale so that in the early twentieth century, of the three areas under study, lower Wensleydale was losing the smallest proportion of its population. (see Chapter 15).

III

Two other types of stone which have been extracted in small quantities are ganister and chert. Because of its hardness and wearing properties, ganister was formerly used as a roadstone but its principal use has been in the iron and steel industry, where its heat resistance and purity
from material which might act as a flux made it important as a refractory for furnace linings. Crushed ganister was also used for making sand beds for casting pig iron. Demand for ganister grew in the late nineteenth and early twentieth centuries in response to national demand for open hearth linings in blast furnaces as the iron and steel industries expanded. However, as Table 12.6 demonstrates, high output in Wensleydale was limited to a period of a few years and although there was some output in the 1920s it was insignificant. The short duration of ganister quarrying in Wensleydale was probably due to the increasing inaccessibility of the seams.

TABLE 12.6
OUTPUT OF GANISTER IN UPPER WENSLEYDALE, 1887-1893.

<table>
<thead>
<tr>
<th>Year</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>1887</td>
<td>2000</td>
</tr>
<tr>
<td>1888</td>
<td>5000</td>
</tr>
<tr>
<td>1889</td>
<td>1200</td>
</tr>
<tr>
<td>1890</td>
<td>1500</td>
</tr>
<tr>
<td>1891</td>
<td>496</td>
</tr>
<tr>
<td>1892</td>
<td>300</td>
</tr>
<tr>
<td>1893</td>
<td>nil</td>
</tr>
</tbody>
</table>

In tons.


Ganister was also quarried near Reeth in Swaledale by the Boulder Flint Company and for a brief period in the early twentieth century output was about 1200 tons per annum. In 1912 it was suggested that the proposed Swaledale Light Railway might enable ganister output to be increased but the railway project did not proceed and the absence of efficient transport was probably a contributory factor in
the industry's subsequent demise.  

Chert was quarried commercially from about 1896 until at least the 1920s, first near Reeth in Swaledale and later near Leyburn in lower Wensleydale. Because of its hard, abrasive qualities it was for a time in demand in the Potteries where it was used as millstones for grinding the calcined flints from which the harder varieties of china were made.

As both ganister and chert output was neither high nor sustained the impact of these two industries on the economy of the two dales was limited. However, their existence does demonstrate the exploitation of local materials in response to a highly specialized demand.

IV

Coal, generally of poor quality, has been mined within the area since at least the thirteenth century. The coal pits were concentrated in three main areas. These were Tan Hill, Cotterdale, and the Preston and Leyburn Moor area (see Map 9). The earliest workings were by means of bell pits, many hundreds of which are still discernible on the ground, but in the nineteenth century, as the more accessible seams were exhausted and as demand grew, the coal was increasingly obtained from levels and shafts. Apart from local domestic use, coal was used in large quantities for lime burning and lead smelting. There was also an export market for dales' coal and it is known that from the seventeenth century coal from the Tan Hill pits
was supplied to Appleby, Penrith, Brough and Kirkby Stephen in Westmorland. 27

Other than occasional references in narrative sources, there is a dearth of information on output, production costs, prices, sales and profits. It is clear, however, that at the start of the nineteenth century coal mining was a thriving industry in both Wensleydale and Swaledale. An observer, writing in 1805, commented on the importance of local coal to dales' people:

Amongst the dales during this time of the year the teams and carriages are very much employed in leading coals and peat to the houses for winter fuel, a business altogether necessary as it cannot be performed in the depth of winter. 28

The cartage of coal from the pits, which were generally remote from the centres of population in the two dales, added significantly to its price. It is said that in the late eighteenth century the cartage of coal to the lead smelt mills, mainly by packhorse, resulted in a threefold increase in the pithead price at a distance of only ten miles. 29 Coal was carted both by professional carriers and by individuals for their own use. 30 Francis Garth, a yeoman farmer in Swaledale, who had an interest in the Tan Hill pits, sold coal to other people including lead miners. The coal was usually sold on account and Garth visited the lead miners on their pay day, usually in January, to collect his money. 31 Some farmers sought to defray part of the cost of the often long journey to and from the coal
pits by selling farm produce in the villages they passed through on the outward journey.  

As the nineteenth century progressed demand for coal increased, encouraging the further development of the local mines. The lead industry was a major user of coal. Although supplemented by peat and wood, coal became the principal fuel used in the smelt mills. The large C.B. Mill, built in 1822-4, had six reverberatory furnaces fired by coal, although peat was still used in the ore hearth. To meet the buoyant demand the Tan Hill Colliery Company, in 1858, constructed a new level and a new road to the level mouth. Even later in the century it was said to be not unusual for in excess of thirty carts to be waiting at the pithead for coal.

By the late nineteenth century the heyday of the Wensleydale and Swaledale coal-mining industry was passed and the industry was in general decline. The decline was due largely to increased competition from good quality coal, facilitated by the arrival of the railway, but in some cases was due to the exhaustion of the most accessible seams. This was the case at the Preston and Leyburn Moor pits, which had a substantial output in the eighteenth and early nineteenth centuries but which by 1875 had ceased production. At that date only three pits remained in production in Wensleydale, all of them in the upper dale.

Eight years later, in 1883, one of the remaining upper Wensleydale pits closed. The extent of the decline is evidenced not only by the closure of pits but by the
reduction in rental value of those pits remaining in production. For example, one of the surviving pits paid an annual rental of £170 in 1877 but by 1890 this had fallen to £18. The course of decline was somewhat different in Swaledale where, after the initial adverse impact of the opening of the railway to Richmond in 1846, the Tan Hill pits were isolated from the worst of the competition from imported coals. From 1886, however, even production at Tan Hill was being curtailed and by the early years of the twentieth century good quality Durham coal was undercutting the price of the local product other than in the upper dale. Nevertheless, the Tan Hill pits were able to struggle on and were still producing coal for local consumption well into the twentieth century. While the lack of rail transport in Swaledale had limited the development of ganister and chert resources, it enabled the local coal industry to survive for longer, sustaining employment opportunities in the remotest part of the dale.

The statistical basis for attempting to quantify the contribution of the coal industry to the economy of the two dales is insubstantial. It is possible, however, to make a relatively crude estimation of the value of the local coal output. Table 12.7 presents the limited information which is available on the local price of coal and Table 12.8 sets out tentative estimates of the value of local production at three dates in the mid-nineteenth century. It is clear that the figures in Table 12.8 seriously understate the actual value of coal production in the two.
dales, as they relate solely to domestic consumption and do not reflect the large quantities of coal consumed by local industry, particularly the lead industry, in this period. The information does not exist, however which would permit these figures to be upgraded to reflect industrial consumption.

TABLE 12.7

LOCAL COAL PRICES.¹

<table>
<thead>
<tr>
<th>Year</th>
<th>At Pit</th>
<th>Transport</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1841²</td>
<td>10s 7d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1858</td>
<td>5s 6d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1871³</td>
<td>9s 5d</td>
<td>5s 7d</td>
<td>15s</td>
</tr>
<tr>
<td>1880</td>
<td>8s</td>
<td>11s 3d</td>
<td>19s 3d</td>
</tr>
<tr>
<td>1900s</td>
<td>6s 8d</td>
<td>6s 8d</td>
<td>13s 4d</td>
</tr>
</tbody>
</table>

¹ Per ton.
² The 1841 figure is estimated. In 1880 when the price of coal locally was 8s per ton the average annual price for the decade for best coal at the ship's side in London was 16s per ton. The ratio of the local price to the London price has been used to calculate the local price in 1841 when the London price was 21s 3d per ton, B.R. Mitchell & P. Deane, Abstract of British Historical Statistics, Cambridge, 1962, p482
³ Estimated on the basis of a cartload holding 8 cwt. (or 6 corves) at 3s 9d per cart at the pit and selling at 1s per corve.

Source:
1858 - Richmond and Ripon Chronicle, 4 December 1858.
1900s - E. Pontefract & M. Hartley, Wensleydale, 1936, p79.

In upper Wensleydale between 1841 and 1871, while coal output increased by 11 per cent, the value of the output declined slightly reflecting a fall in price. However, by
TABLE 12.8  
OUTPUT AND VALUE OF COAL IN UPPER AND LOWER WENSLEYDALE AND SWALEDALE, 1841-81.¹

<table>
<thead>
<tr>
<th></th>
<th>Output</th>
<th>Price</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>U W/d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1841</td>
<td>4580</td>
<td>10s 7d</td>
<td>2424</td>
</tr>
<tr>
<td>1871</td>
<td>5084</td>
<td>9s 5d</td>
<td>2394</td>
</tr>
<tr>
<td>1881</td>
<td>1237</td>
<td>8s</td>
<td>495</td>
</tr>
<tr>
<td>L W/d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1841</td>
<td>1970</td>
<td>10s 7d</td>
<td>1042</td>
</tr>
<tr>
<td>1871</td>
<td>1261</td>
<td>9s 5d</td>
<td>594</td>
</tr>
<tr>
<td>1881</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>S/d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1841</td>
<td>5406</td>
<td>10s 7d</td>
<td>2860</td>
</tr>
<tr>
<td>1871</td>
<td>3406</td>
<td>9s 5d</td>
<td>1604</td>
</tr>
<tr>
<td>1881</td>
<td>4217</td>
<td>8s</td>
<td>1687</td>
</tr>
</tbody>
</table>

¹ The dates chosen relate to railway development in the area: 1841 immediately predates the earliest local railway development; 1871 immediately predates the opening of the Wensleydale line; and 1881 immediately follows the opening of the Wensleydale line.

² These figures are based on an estimated consumption of coal in agricultural communities of one ton per head per annum. (HLRO, Minutes of Evidence, HC, 1846, Vol 70, LNY, p115, evidence of J. Allport).

³ For details see Table 12.7.

⁴ To nearest £

⁵ The 1841 output has been estimated on the basis that, prior to the development of the local railway, most of the coal consumed in the area was mined locally. For the purposes of this exercise, it has been assumed that 80 per cent of coal consumed in the area was mined locally.

⁶ It has been assumed that the output of coal per miner was constant over the period 1841-81. The 1871 and 1881 output has been estimated on the number of coal miners in 1841 (see Table 12.9). For example, in Swaledale there were 41 coal miners in 1841 and 26 coal miners in 1871. As the number of coal miners in 1871 was 63 per cent of the number in 1841, it has been assumed that coal production in 1871 was 63 per cent of the 1841 output.

Source: output based on population - PRO HO 107/1245-6, 1252-4, RG 10/4868-73, RG 11/4873-8, CEB, 1841, 1871, 1881, upper and lower Wensleydale and Swaledale; for prices see Table 12.7.

1881, following the opening of the Wensleydale railway and

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the resultant increase in competition from imported coals, output had collapsed to little more than a quarter of its 1871 level and, aggravated by a further drop in price, the value of coal had dwindled to only 20 per cent of the 1871 figure. In lower Wensleydale, reflecting the scope for increased imports offered by the opening of the railway to Leyburn in 1856, output declined by more than a third between 1841 and 1871 and its value dropped by 43 per cent, again reflecting the fall in price between the two years. By 1881 all coal consumed in lower Wensleydale was imported. In Swaledale, following the arrival of the railway at Richmond in 1846, the output of coal fell by more than a third and its value by 44 per cent between 1841 and 1871. Subsequently, output rose by almost a quarter to 1881 but, reflecting the drop in price, its value rose only slightly. Although the actual figures cannot be relied upon, the estimates of output and value contained in Table 12.8 show that the coal industry in the two dales in the mid- to late nineteenth century was not insubstantial although, in comparison with the lead industry, its contribution to the overall economy of the area was small.

The impact of the railway in hastening the demise of the local coal industry was considerable. The large-scale importation of good quality coal, at prices substantially below those prevailing prior to the rail era, was a force which the local industry could not withstand. Coal imports, whilst being welcomed by the majority of the local consumers, had an overall adverse effect on the economy of
the two dales in reducing employment opportunities and in losing the benefit of the multiplier effect of earnings and profits previously expended largely within the locality (see Chapter 14 for a further discussion of coal imports). However, the loss of employment and revenue which the industry had generated within the area should not be overstated. Even at its height the industry was relatively small in comparison with other local industries and the impact of its loss was, therefore, limited.

V

The sandstone, limestone and coal industries in the two dales, while not dominant within the local economy, had a beneficial impact on the area in providing employment opportunities. These industries reached their peaks at different times and provided alternative employment when other elements of the local economy were in decline.

Table 12.9 shows that the number of workers employed in the quarrying and coal industries comprised only a small proportion of the occupied population of the two dales in the period 1841-81. Upper Wensleydale had the highest proportion of its occupied population in quarrying and coal mining but this constituted only 2.7 per cent of the total workforce at the peak in 1871 and 1881. The upper dale sandstone quarrying industry expanded rapidly after the extension of the Wensleydale railway to Hawes in 1878 although the heyday of the industry was still to come.
TABLE 12.9
NUMBERS EMPLOYED IN QUARRIES AND COAL MINES IN UPPER AND LOWER WENSLEYDALE AND SWALEDALE, 1841-1881.

| Year | Upper W/d | | | | | | Lower W/d | | | | | | Swaledale | | | | | |
|------|------------|---|---|---|---|---|---|------------|---|---|---|---|---|---|------------|---|---|---|---|---|
|      | Quiries    | % | 1851 | % | 1861 | % | 1871 | % | 1881 | % | | | Quiries | % | 1851 | % | 1861 | % | 1871 | % | 1881 | % | | Quiries | % | 1851 | % | 1861 | % | 1871 | % | 1881 | % |
| 1841 | 3          | 7 | 12  | 55 | | | 22  | 12 | | | | | 11  | 26 | 2.2 | 90 | | | 22  | 1.9 | 7 | 0.6 | | | 41  | 2.2 | 42 | 1.5 | 64 | 2.4 | 29 | 1.2 | 39 | 1.9 |
| 1851 | 2          | 8 | 5   | 7 | | | 15  | 7  | | | | | 18  | 26 | 2.2 | 9  | | | 22  | 1.9 | 7 | 0.6 | | | 41  | 2.2 | 42 | 1.5 | 64 | 2.4 | 29 | 1.2 | 39 | 1.9 |
| 1861 | 7          | 1 | 6   | 3 | | | 3   | 7  | | | | | 41  | 26 | 2.2 | 9  | | | 22  | 1.9 | 7 | 0.6 | | | 41  | 2.2 | 42 | 1.5 | 64 | 2.4 | 29 | 1.2 | 39 | 1.9 |
| 1871 | 41         | 41 | 58 | 2.4 | | | 26  | 32 | | | | | 41  | 26 | 2.2 | 9  | | | 22  | 1.9 | 7 | 0.6 | | | 41  | 2.2 | 42 | 1.5 | 64 | 2.4 | 29 | 1.2 | 39 | 1.9 |
| 1881 | 7          | 7 | 7   | 7 | | | 7   | 7  | | | | | 41  | 26 | 2.2 | 9  | | | 22  | 1.9 | 7 | 0.6 | | | 41  | 2.2 | 42 | 1.5 | 64 | 2.4 | 29 | 1.2 | 39 | 1.9 |

*Percentage of total occupied population.

Source: PRO, HO 107/1245-6, 1252-4, 2379-80; RG 9/3667-73; RG 10/4868-73; RG 11/4873-8; CEB, 1841-1881, upper and lower Wensleydale and Swaledale.

Despite the fact that the lower dale limestone industry began to expand after 1856, the number of workers employed in quarrying remained low and fluctuated markedly between 1861 and 1881. There may have been even greater fluctuations in individual years. For example, limestone output had increased twentyfold between 1871 and 1874 (see Table 12.4) and, presumably, the number of workers employed also increased. It was only after the mid-1880s that the limestone quarries of the lower dale were extensively developed. Unfortunately, there is little information on employment in the industry after 1881, although it appears
at times to have been quite extensive. By 1890, for example, one limestone quarry near Leyburn was employing about twenty men. If other quarries were employing comparable numbers of men, possibly in excess of 100 men were working in the lower dale limestone industry in the late nineteenth and early twentieth centuries. In Swaledale relatively few workers were involved in the quarrying industry in the period 1841-81. It is probable, as with upper and lower Wensleydale, that more people were involved in the quarrying industry but only on an occasional basis.

Further details concerning employment in sandstone quarrying are available in quarry returns intermittently from 1882. In that year a total of eighty workers were employed at three quarries in upper Wensleydale, seventy-five of them at the two Burtersett quarries. A further three workers were returned in lower Wensleydale and four workers in Swaledale. In 1883, as output declined, the number of quarrymen employed in the upper dale fell to sixty-six. Using output as a basis on which to estimate the number of workers employed in the upper dale quarries, it is possible that at their peak in 1886 they may have employed as many as 200 workers. The number of workers then declined as output fell but at the turn of the century the Burtersett quarries alone still employed about 100 workers. After this date the number of workers in the upper dale industry fell rapidly and a total of only fourteen quarrymen were employed in 1908.
The fluctuating fortunes of the sandstone quarry industry had a significant impact on the upper dale community particularly at Burtersett. The village, which formerly had a thriving textile industry (see Chapter 13), had been in decline since the 1820s, although in 1884 a writer was moved to comment:

I am happy to think that it is again flourishing, since the introduction of the railroad ... its flags, stones and mines are becoming valuable; perhaps no better stone or flags can be found in the world than it produces. 78

During the 1880s the industry had a visible impact on the small village when the quarry owners constructed two rows of workers' houses with nine houses in each row. 77 The pressure for accommodation for quarry workers increased and by the late nineteenth century, when about seventy percent of the Burtersett workforce was employed in the quarries, it is claimed that all the workers' houses in the village were tenanted by quarrymen. 80 Workers from nearby villages were also employed at the quarry. 81 However, due to fluctuations in output, employment in the upper Wensleydale stone industry was not stable and men were laid off when output fell. 82

Wages in the sandstone quarry industry, although better than those in agriculture, were not high. 83 The average weekly wage for a quarry worker in the Northern Counties at 1st October, 1886 was 19s; quarriers received between 19s 11d and 28s 9d; foremen 30s 10d; and general quarry
labourers 17s 9d. It is probable, however, that the average wages of quarry workers in the dales were not as high as in the Northern Counties as a whole. In the upper dale in the late nineteenth century a skilled quarryman may have commanded a top wage of 18s per week but a more usual wage would have been about 16s per week. The starting wage for unskilled workers was as low as 6s. On this basis the average wage bill for all quarries in the upper dale in 1886 may have been approximately £110 per week or £5720 per year. The upper dale sandstone industry provided a livelihood for a substantial number of local people (possibly totalling about 940, including dependants, in the late 1880s) who may otherwise have had to leave the area to find work.

No information is available for wages in the lower dale limestone industry but they were probably not dissimilar to those of the upper dale sandstone industry. In the absence of consistent returns of output and employees, the exercise used for the upper dale industry cannot be repeated for the lower dale. However, at different periods the output of limestone in lower Wensleydale was high enough to warrant a workforce which was probably in excess of 100 men and, taking into account the multiplier effect, this will have had a significant impact on the communities serving the lower dale quarries. Conversely, in periods of low output the number of workers would have been much lower. For example, by 1908 the number of workers employed had fallen to a total of twelve men at the three quarries.
which remained in production.®

As Table 12.9 shows, between 1841 and 1881 coal mining was much more significant in upper Wensleydale and Swaledale in terms of the number of workers employed than it was in lower Wensleydale. However, in the early part of the century, when Preston and Leyburn Moor pits were in full production, employment in the lower Wensleydale coal industry was probably higher than in the period covered by the census data. In 1831 the census enumerator noted that there were forty-eight coal miners in the Swaledale township of Grinton.® These miners probably worked on the same seams as the Preston and Leyburn Moor pits which extended over the watershed into Swaledale. Coal mining in lower Wensleydale declined early as seams were exhausted and output fell particularly quickly after the railway had opened to Leyburn in 1856. The number of coal miners in the lower dale fell steeply between 1851 and 1861. Coal mining employment in Swaledale remained stable between 1841 and 1851 but by the latter date only three of the forty-eight coal miners recorded for Grinton township in 1831 remained.® Of the other coal miners recorded in 1851, thirty lived in Muker township and were probably employed at Tan Hill pits and eight were employed at pits in Arkengarthdale.® Between 1851 and 1861 the number of coal miners in Swaledale increased but by the following decade the number had halved, although there was some recovery in 1881. By 1883 there were only fourteen miners in Swaledale, all working at Tan Hill pits.® This
decline continued and in 1890 about a dozen men were employed at the colliery. The colliery at Tan Hill remained in operation until the 1930s but by that date only two miners were employed. The number of workers employed in the upper dale coal industry remained relatively stable until 1871. However, when the newly-opened railway brought imported coal to Hawes from 1878 onwards, the numbers of coal miners fell steeply. By 1883 only nine men were employed at the two pits, both in Cotterdale, which were still in operation.

There is no information on the earnings of local coal miners for most of the nineteenth century. Many were paid at piece-work rates which makes comparison with other local employment difficult. The annual coal miners' wage was probably similar to that of the local lead miners and, therefore, local lead miners' wages can be used to estimate the wages bill for coal miners in the area.

Table 12.10 shows the estimated total wages paid to coal miners in Wensleydale and Swaledale at three dates in the mid to late nineteenth century. The estimates suggest that the total wages bill peaked in all three areas in 1871 when wages in the lead industry, and probably in the coal industry, were relatively high. Also, while it is likely that lower Wensleydale and parts of Swaledale had begun to suffer competition from imported coals by this date, coal mining in upper Wensleydale remained largely immune from this competition and the number of miners was at its highest level for the period.
## TABLE 12.10

TOTAL WAGES BILL OF COAL MINERS IN UPPER AND LOWER
WENSLEYDALE AND SWALEDALE, 1841-81.

<table>
<thead>
<tr>
<th>Year</th>
<th>Wage</th>
<th>C. Miners</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U W/d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1841</td>
<td>8</td>
<td>44</td>
<td>915</td>
</tr>
<tr>
<td>1871</td>
<td>18</td>
<td>49</td>
<td>2293</td>
</tr>
<tr>
<td>1881</td>
<td>14</td>
<td>12</td>
<td>437</td>
</tr>
<tr>
<td></td>
<td>L W/d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1841</td>
<td>8</td>
<td>11</td>
<td>229</td>
</tr>
<tr>
<td>1871</td>
<td>18</td>
<td>7</td>
<td>328</td>
</tr>
<tr>
<td>1881</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>S/d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1841</td>
<td>8</td>
<td>41</td>
<td>853</td>
</tr>
<tr>
<td>1871</td>
<td>18</td>
<td>26</td>
<td>1217</td>
</tr>
<tr>
<td>1881</td>
<td>14</td>
<td>32</td>
<td>1165</td>
</tr>
</tbody>
</table>

1 Lead miners' weekly wage to the nearest shilling. No returns are available for local coal miners' wages. As these wages were probably similar to those of lead miners', the lead miners' wage has been used. In the 1830s (there is no information for the 1840s) the average weekly wage for local lead miners was about 8s, in the 1870s the wage was about 18s and in the 1880s it was 14s.

2 Total wages bill to the nearest £. Based on a 52 week year.

Source: see Table 12.9 and Jennings, op cit, pp286,290.

It is not possible to draw meaningful conclusions from the information contained in Tables 12.8 and 12.10 concerning the profitability of coal mining in the mid- to late nineteenth century. The estimates of the value of coal output, contained in Table 12.8 relate only to likely sales to the domestic market and, specifically, do not reflect the probable large sales to the lead-mining industry. Similarly, the estimates of wages in Table 12.10 represent but one, although undoubtedly the largest, of the production costs. Superficially, however, it would seem
that profits were likely to have been greatest in 1841 as
the differential between labour costs and the estimated
value of the domestic sales was greatest at this time.

VI

Although no close estimates can be made of the total
income derived from the local quarry and coal industries,
it would appear that the coal industry, like the lead
industry, probably had its greatest impact in the first
half of the nineteenth century at a time when the local
population was expanding and demand was increasing.
Conversely, the two quarrying industries, which expanded in
response to external demands, could only be fully developed
when rail transport became available. These industries,
therefore, reached their full potential at a later date;
sandstone quarrying in the 1880s and 1890s and limestone
quarrying probably not until the twentieth century.

The output of sandstone, limestone and coal and the
number of people employed in those industries were,
relative to the major industries in Wensleydale and
Swaledale, not of great importance. However, quarrying and
coal mining provided some diversification of opportunity
which lessened the impact of decline in other elements of
the economy. The fortunes of these industries demonstrate
the negative and the positive role of the railway in the
area, for although the railway had a serious adverse impact
on the local coal industry and hastened its demise, it
enabled quarrying to flourish. In upper and lower
Wensleydale this provided additional employment and went some way towards compensating for the job losses in coal mining and other industries. However, when in due course the sandstone quarrying industry declined in upper Wensleydale, there was no alternative, rapidly-expanding local industry and people had to move out of the dale in search of employment.
NOTES - QUARRYING AND COALMINING


2 Ibid, pp13-5.


5 Raistrick, 1976, op cit, pp14-5.


7 Ibid.

8 Ibid; Smith, op cit, p362. In 1774 the quarry rights were let on Askrigg moor on condition that people in the township were served before strangers; M.Hartley & J.Ingilby, Yorkshire Village, 1953, p117; Raistrick, 1968, op cit, p37; there is some indication of the export of building stone from Swaledale occurring in the early nineteenth century. R.Fieldhouse & B.Jennings, A History of Richmond and Swaledale, 1978, p249. It was noted in 1821 that one of the advantages of the new turnpike road from Reeth to Richmond was that it would carry flags and slates in addition to lead and lime, C.Clarkson, The History of
Richmond, 1821, p411.

7 W. White, History, Gazetteer and Directory of the East and North Ridings of Yorkshire, Sheffield, 1840, p603; E.R. Kelly (ed), Post Office Directory of Yorkshire: North and East Ridings, 1857, pp1162, 1164, 1216; in 1857 there were five quarries in lower Wensleydale, three in Swaledale and one in upper Wensleydale producing enough stone to have quarry masters in charge. The type of stone at these quarries is not specified. However, it is likely that at least four of the five lower dale quarries were limestone, ibid, p1695; For example, five quarries were listed in 1875 and nine in 1886 in Wensleydale and Swaledale, PRO, POWE 7/11, Reports of Inspectors of Mines, 1875; PRO RAIL 1060/20, Mineral Statistics, 1886.


11 Hall, op cit, pp2-4.

12 Ibid, pp8-10; T.C. Calvert, Burtersett 70 Years Ago, Hawes, 1974, p2.


14 Calvert, op cit, p7.

15 HMSO, List of Quarries in the United Kingdom, 1909, p97.

16 HLRO, Minutes of Evidence, HL, 1866, Vol 17, S-C, p122, evidence of J. Rutherford.

17 HMSO, op cit, 1909, p97.

18 HLRO, LMNJ, op cit, p221.

19 HLRO, Minutes of Evidence, HC, 1846, Vol 70, YGU, p12,
evidence of P. Buck.

Although there is no written primary evidence to support this tradition, nevertheless it does appear highly probable that the towns of north-east Lancashire were the main recipients of the stone. Some Yorkshire stone was used in the building of the Town Hall in Burnley, P. Barrett, *Barrett's Directory of Burnley and District*, 1896, p11. Some stone was also reputedly sent to London for use as manhole cover surrounds. Information supplied by the late T. C. Calvert and see Raistrick, 1976, *op cit*, p13.


Returns before 1882 are at county level.

One of the factors contributing to the building boom at the end of the nineteenth century was the rise in real incomes between 1880 and 1900, E. W. Cooney, 'Long Waves in Building in the British Economy of the Nineteenth Century', *EcHR*, 2nd ser., XIII, 1960, p267. The opening of the Wensleydale railway came at an opportune moment allowing the upper dale to take advantage of this boom albeit in response to the demand of a specific area.

Calvert, *op cit*, p2; Calvert also notes that at times, in the industry's heyday, approximately eighty tons of stone were transported daily from the Burtersett quarries to the railway station; and see Tables 12.1 and 12.2.

and 1910 whereas over the same period the price of stone remained stable. The stability of prices is attributed to the low sensitivity to local markets and is also found in Portland stone prices; Maiwald, op cit, pp196-7,199.


27 See Appendix XVI and Hall, op cit, p3.


24 Fieldhouse & Jennings, op cit, pp161,461; PRO RAIL 527/391, NER Goods Department District Officers Report, Proposed Swaledale Light Railway, Richmond to Reeth, 1911.

31 T.Bulmer, History, Topography and Directory of North Yorkshire, 1890, p482.


35 North, op cit, p23.

36 Ibid, p213.


38 Ibid, pp60,213.

37 Dury, op cit, p311.
Ordnance Survey, Sheet 68, Map of Leyburn Area, six inches to the mile, 1856.

HLRO, 1866, op cit, p24, evidence of C. Other.

F. Singleton, *Industrial Revolution in Yorkshire*, Clapham, 1970, p78. Singleton notes that 1000 tons of limestone were sent through Leyburn in 1868.

PRO RAIL 527/2146, NER Station Traffic Index, 1906-21.


Blunden, op cit, p279.

Ibid, p280; Kendall & Wroot, op cit, p219; Smith, op cit, p368.

Kendall & Wroot, op cit, p219.

Blunden, op cit, p279.

Fieldhouse and Jennings, op cit, p461.

Ibid.

Kendall and Wroot, op cit, p221.

Ibid.

J. Tuke, *General View of the Agriculture of the North Riding of Yorkshire*, 1794, pp18-9; BPP, 1877, LXX, Return showing the gross estimated Rental and Rateable Value of Coal, Ironstone, and Other Mines, etc., p15. In Aysgarth
Poor Law Union 'coal is inferior and only used in the neighbourhood of the pits'; A. Raistrick, The Lead Industry of Wensleydale and Swaledale, Vol 1, Buxton, 1975, pp16,98.

Ibid, p16.

Ibid, pp16,100.

Fieldhouse and Jennings, op cit, p160; Raistrick, 1975, op cit, p98.

P. Romney (ed), The Diary of Charles Fothergill, 1805, Leeds, 1984, p196. Fothergill comments that coal was seldom burnt by the poor. Later in the century the situation seems to have improved as coal was distributed to the poor during winter. Wensleydale Advertiser, 1 April, 1845.

NYCRO, ZK pkts 1,15,17, cited in Fieldhouse & Jennings, op cit, p205. Even in the early twentieth century cartage costs doubled the price of coal, E. Pontefract & M. Hartley, Wensleydale, 1936, p79.

E. Pontefract & M. Hartley, Swaledale, 1934, p62.

Barker MSS, 2/5/1, Garth Day Book, 12 February, 1814, 'At Tanhill... when Peter Butson resigned all interference with the collieries and I began for the whole.' 26 January, 1816, 'At Reeth collecting coal bills', 27 January, 1817, 'At Old Gang Pay collecting coal bills'; 2/5/3, 28 January, 1873, 'At Tanhill Company meeting'.


Fieldhouse & Jennings, op cit, pp214-5.

Richmond and Ripon Chronicle, 4 December, 1858.
Despite the low output twenty men were still employed at these mines in 1859 but there is no return from these mines for 1875, PRO POWE, 7/11, op cit, 1875.

Ibid.

PRO ZHC 1/4622, Reports of Inspectors of Mines for 1883, 1884.

BPP, 1877, LXX, op cit, p15; BPP, 1890, LXIII, Return Relating to Coal, Ironstone and Other Mines, p57.

PRO RAIL 1060/21, Mineral Statistics, 1887; E.R. Kelly (ed), Directory of the North and East Ridings, Yorkshire, with the City of York, 1893, p215. Barker MSS, 2/5/4-6, op cit, Tan Hill was still used by the Garth family but from the mid-1880s visits became less frequent as demand fell and imported coal was more widely used. In December 1900 coal was taken into Swaledale by traction engine. By the early twentieth century visits to Tanhill had become very rare and a final reference occurs in 1908. M. Hartley & J. Ingilby, A Dales Heritage, Clapham, 1982, p124.

G. Spencer, Guide to Swaledale and Arkengarthdale, c1905, p51; Pontefract & Hartley, 1934, op cit, p52.

One of the difficulties in assessing employment figures is that some quarry workers may have been returned as stonemasons and others as unspecified labourers. Many of the quarry masters in the directories were also returned as farmers indicating that possibly the quarry was worked only
intermittently or had only a small output, Kelly, 1857, *op cit*, pp1153,1407.

73 Bulmer, *op cit*, p482.

74 PRO ZHC 1/4688, The Mining and Mineral Statistics of the United Kingdom for 1882, 1884. The following provides a rough indication of the degree of under-registration at the censuses. The fifty-five quarry workers returned in the 1881 census comprised 68.8 per cent of the eighty recorded in the 1882 Quarry Returns so there was a possible under-registration of 31.2 per cent in the censuses of 1841-1881, PRO RG 11/4876, CEB, 1881, upper Wensleydale.

75 PRO ZHC 1/4622, Reports of the Inspectors of Mines for 1883, 1884.


78 J. Chapman, Burtersett Sixty years Ago, Hawes, 1884, p12.


84 BPP, 1890-1, LXXVIII, *Accounts and Papers, Rates of Wages, Stone Quarries*, p70.


86 *Ibid*.

87 The figures are derived by estimating a nominal 100 workers at 16s per week and 100 workers at 6s per week.
Using a multiplier of 4.7.

Bulmer, op cit, pp482, 625-6.

HMSO, 1909, op cit, p97.

NYCRO, PP 19/8, Census Enumeration Abstract for the County of York, 1831.

Ibid.

PRO, HO 107/2380, CEB, 1851, Swaledale.

PRO ZHC1/4622, op cit, 1883.

Bulmer, op cit, p441.

Pontefract & Hartley,1934, op cit, p52.

PRO, ZHC1/4622, op cit, 1883.

Apart from the extractive industries, the other industry which was frequently found in the rural uplands was the domestic textile industry. This activity provided ancillary employment which could utilize the slack periods of the pastoral-farming year thus providing extra income.¹ The Pennine uplands of Yorkshire were ideally suited to this type of rural industry and, as is well documented, became a centre for the domestic wool textile industry in the eighteenth and nineteenth centuries.²

From the mid-eighteenth century, cottage industrialization of woollen and worsted manufacture in Britain increased markedly, although the greatest extension of this process did not occur until after 1780 when demand for textiles was particularly high due both to the French wars and to the rapidly increasing population. New forms of textile machinery, such as the spinning jenny, were adopted and used in the home or in mills, with the worsted producers leading the way.³ The advantage of these machines was that they were relatively cheap so that not only capitalist producers but also farmers and local businessmen could set up modest-sized, mechanized mills.⁴ In this period many clothiers established joint stock mills for preparing and spinning wool which was then woven.
locally by handloom. At the same time, the system of 'putting out' wool to be spun increased in response to high demand and, as local spinners of both woollens and worsteds in the West Riding were unable to keep weavers supplied with yarn, the wool was frequently 'put-out' quite far afield. For example, wool from Bradford was spun in Wensleydale some fifty miles away. The increasing difficulties of 'putting out' meant that the factory system, particularly in the worsted industry which was better suited to mechanization, was more attractive to textile entrepreneurs. As demand rose there was a corresponding move to centralize the manufacture. From the late eighteenth century the wool textile industry became more concentrated in the West Riding of Yorkshire. However, this did not lead to the demise of the industry in some isolated areas, such as Wensleydale and Swaledale, where, based on water-driven mills and supplied by local wool, it survived for most of the nineteenth century. In the early nineteenth century there was a further expansion in the woollen industry and in the attendant industrialization of the production process as consumption at home and abroad increased. By 1830, apart from combing and handloom weaving, all the processes had been incorporated into factory production. During the 1830s power-loom weaving was widely adopted. Although the position of the worsted handloom weaver deteriorated rapidly, even by the late 1850s handloom weaving, particularly of woollen cloth, still persisted.
However, as the power loom was further refined, handloom weaving continued to decline and by the 1870s was virtually extinct. Hand woolcombing had been declining since 1835 when woolcombing machinery was increasingly used and, after the 1847 depression in the textile industries, the hand woolcomber suffered further losses of employment as most woolcombing became factory based. By the end of the nineteenth century the industrialization and urbanization of the textile industry was virtually complete.

The dynamics of the movement of textiles from cottage to factory has been the subject of recent debate, with the discussion centring on the extent to which a separate phase, the proto-industrial phase, could be identified as occurring between the pre-industrial and industrial periods. F. Mendels, in his seminal article and subsequent comments on the subject, identified several prerequisites for a proto-industrial society. These included the growth of a rural industry which no longer served only local markets but which was orientated towards national and possibly international markets, and the adoption of cottage industry by labourers who, due to the seasonality of agriculture, were either unemployed or under-employed at different times during the year. The additional occupation meant that they could be kept in almost continuous employment at no extra opportunity cost, with consequent benefit to both aggregate and per capita output. Mendels maintained that dual occupation did not necessarily create enough capital for the labourer to rise
up the social scale whereas the urban merchant entrepreneurs, who supplied the raw materials, finished the articles, and marketed the end product, were able to accumulate capital which, when labour and distribution costs rose, was used to develop a factory-based industry using power machines.\textsuperscript{18} The nearby towns became the commercial centres for the developing industries and sometimes the nascent centres for the full industrialization of the production process.\textsuperscript{19} In the textile industry this development came when, as a result of greatly increased demand for English textiles in the late eighteenth century and because of the limited production capacity of the dual-occupied cottagers, workers living even further afield had to be employed.\textsuperscript{20} This inevitably led to distribution problems and increased costs and, therefore, encouraged a move into factories. Mendels makes the further point that the shift of labourers to a more industrially-based economy resulted in an increased demand for agricultural products, which in turn led to the growth of areas specializing in commercial agriculture.\textsuperscript{21} Many of the prerequisites of proto-industrialization have been identified as occurring in the development of the Yorkshire textile industry and some of them can be identified in Wensleydale and Swaledale.\textsuperscript{22}

In the pre-industrial period the inhabitants of Wensleydale and Swaledale, with their local resource of wool, had found textile production a useful addition to an economy based largely on agriculture and lead mining.
Although attempts to industrialize fully were not successful and the area, in Mendels's phrase, 'deindustrialized', the experience of the dales can be used to test whether or not the proto-industrial model is a useful framework within which to examine the mechanics of change from a rural towards an industrial society for Wensleydale and Swaledale.

II

The abundant labour supply in the pastoral upland region of Wensleydale and Swaledale was tapped by several branches of the wool textile industry and, briefly, by the cotton industry. The coarse, moderate-length staple of the local black-faced sheep was ideal for thick woollen garments and the district was renowned for its knitting industry. Local wool was also used in the area's extensive spinning and weaving cottage industries. Although Wensleydale and Swaledale were recipients of yarn 'put out' from the West Riding and Westmorland, they were also involved in the full process of worsted cloth and knitwear production. Combers, spinners, weavers and dyers as well as knitters were, therefore, all to be found in the dales, with different communities often specializing in one or more elements of the industry.

The textile industry in the dales dates back at least to the sixteenth century and by the eighteenth century there was a well-developed knitting industry in both Wensleydale and Swaledale. Tuke in 1794 noted the importance of the
'ancient' domestic industry, observing that as agriculture in the area was not giving much employment so, 'knitting makes up the deficiency'. As Dr. Joan Thirsk has noted, the growth of industries in one area as opposed to another was unlikely to be in response to only one or two factors and this was the case in the dales. One reason why the knitting industry developed in the dales was, as Tuke implies, that agriculture could not always provide a livelihood and another occupation was often needed. It was claimed that the development of the knitting industry in neighbouring Dentdale was in response to the tradition of partible inheritance but there is no evidence to suggest that this was the case in Wensleydale and Swaledale. Indeed, while Swaledale was an area of partible inheritance, much of Wensleydale followed the tradition of primogeniture (see Chapter 4) and the knitting industry was prominent in both dales. Apart from being a response to the employment deficiencies of agriculture, the development of the local knitting industry was probably due mainly to the availability of raw materials together with the expansion of lead mining. By the late eighteenth and early nineteenth centuries natural population increase coupled with the immigration of miners provided an abundant labour force. In the absence of consistent demand from lead mining and agriculture, the workforce was at times under-employed and was available for textile work, particularly knitting, at no opportunity cost. Also, the industry occupied labour which could not be used in
agriculture or lead mining. In 1805 Charles Fothergill commented that knitting in the dales was advantageous because the young and old, who 'could not work so well at other handicrafts', were employed in knitting and so could 'assist in every family towards the general purse'. He noted, for example, that girls of seven and eight years old were expert knitters.

The importance of the knitting industry to the local economy in the eighteenth and nineteenth centuries was noted by contemporary writers. When Daniel Defoe visited Richmond in 1724-5 he noted that an area which extended from Kendal in Westmorland eastwards to Richmond had a large knitting and cloth industry. He commented also that the industry in the dales, in common with many other manufacturies in England at that time, was expanding rapidly. Most of the knitted garments produced in the dales during the eighteenth century were for 'ordinary people and servants' and, while the main product was coarse stockings, other garments such as seamen's caps and jerseys were knitted. As with other branches of the textile industry, the knitting industry centred on specific communities. For example, in the early nineteenth century the inhabitants of Askrigg were reported as being chiefly employed in the knitting of stockings and the making of butter and cheese. Despite the apparent buoyancy of the local industry it had begun to be affected by exogenous factors. John Tuke, writing in 1794, observed that, although knitting in the dales was still prominent, it had
already begun its decline and that, 'since the increase of manufactures in the West Riding and in Lancashire', worsted spinning had been introduced into the area and was more popular than knitting. 33

Further reasons given for the decline of the knitting industry were that handknitted stockings had been superseded by 'the discovery of the cheap method of weaving them on frames', and 'the fluctuations of trade and the vicissitudes of war also adversely affected it'. 34 These comments were not entirely accurate. Demand for dales' hand knitwear remained high in the late eighteenth century, particularly as the army were large purchasers of worsted stockings, caps, and jerseys. 35 Hand knitting was still able to compete with frame knitting partly due to fashion, which demanded constant changes or modifications to individual designs. As long as these could not be easily produced by machine the livelihood of the hand knitters was assured. 36 The knitting industry in the dales was also affected when, in the early nineteenth century, fashion changed and the British army adopted long trousers instead of knee breeches which had required long stockings. 37 The dales' knitters attempted to compensate for changes in fashion by switching from knitting predominantly hosiery to knitting items such as guernseys and caps.

Despite competition from factories, changes in fashion and the depressions in 1815-6 and 1826-7, the eighteenth century increase in output was sustained into the nineteenth century. 38 There was, for example, a national
upturn in hosiery output between 1826 and 1828 when exports of stockings increased by 42.2 per cent.41 Much of this increase will have been from framework knitters but the dales' hand knitters benefited as well, if only by a slowing down in the rate at which the industry declined. For example, by 1830 demand for dales' hand-knitted goods had increased so much that suppliers could not keep pace.42 A similar situation pertained in 1835 when it was reported that wages for knitting had increased by 30 per cent within two months.43 However, this increase in wages and difficulty in meeting demand was not good for the industry in the long term as it acted as a further encouragement to the centralization and mechanization of production.

The woollen industry nationally remained buoyant until the 1866 financial crisis after which it suffered for several years.44 During 1868-70 the price of wool was particularly low and, although the knitting industry partly recovered, by this time the process was almost completely factory based and the dales' hand-knitting industry, while not totally insignificant, had entered its final decline.45 In Wensleydale the industry was reduced to a shadow of its former self as:

since the invention of machinery and its adoption for purposes of manufacture the hosiery knitters of Wensleydale have either been thrown out of employment, or been obliged to work for extremely low wages.46
Knitwear was only one element in the output of the woollen industry in Wensleydale and Swaledale. Several communities in the two dales were involved in spinning and weaving cloth in the eighteenth and early nineteenth centuries. For example, the production of cloth in Askrigg was still increasing in the early nineteenth century. Fairs for the sale of woollen cloth in Askrigg were recorded as being held twice a year in 1770 but by 1812 their frequency had risen to three times a year. At this latter date, Hawes, which was later to become dominant in the local textile industry, had only one annual fair for cloth. A small handloom-weaving industry was centred on Hawes in the nineteenth century but geographical isolation had placed this industry at a disadvantage relative to handloom weavers situated near the large textile centres. Inevitably, the industry did not prosper and by the mid-nineteenth century was virtually defunct.

Woolcombers suffered similarly. For example, there was a strong tradition of woolcombing at West Burton and in 1823 this was noted as being the main manufacture in the village. This activity declined rapidly after the 1830s, when efficient woolcombing machinery was developed in the West Riding mills, although it lingered on in West Burton until at least the 1840s.

As the nineteenth century progressed the manufacture of cloth locally declined, mainly due to increased population and concentrated factory production in the West Riding where, if he wished, the manufacturer could 'put out' close
By the 1870s almost all the worsted trade was in factories, the cottage yarn spinners could not compete against 'the precise and rapid machinery' of the towns, and the handloom weavers had entered their final, inevitable decline.

The extent of the whole local wool textile industry in the late eighteenth and early nineteenth centuries can be gauged from the output of wool prepared for worsteds. During this period woolcombers were able to claim a drawback on the tax paid on soap used in the preparation of wool for combing. The intermittent extant returns in respect of this drawback provide an indication of the importance of the local wool textile industry. In 1792, for example, drawback was allowed to forty-four woolcombers in Wensleydale whereas by 1851 there were only six woolcombers in the dale. Despite a depression in the textile industry in 1810 there was a substantial drawback on soap at four places in Wensleydale, as Table 13.1 demonstrates. No drawback was recorded in Swaledale at this time. Because of the depression these figures are likely to be an under-representation of the scale of the industry. By the early nineteenth century, the communities listed in Table 13.1 specialized in some form of wool production. Hawes and Gayle had woollen mills, West Burton specialized in woolcombing and Burtersett was a small textile centre.
TABLE 13.1

DRAWBACK ON SOAP AND QUANTITY OF WOOL TREATED, 1810.

<table>
<thead>
<tr>
<th>Drawback WOOL WASHED</th>
<th>£</th>
<th>s</th>
<th>d</th>
<th>lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burtersett</td>
<td>5</td>
<td>8</td>
<td>6</td>
<td>10,416</td>
</tr>
<tr>
<td>Hawes</td>
<td>5</td>
<td>18</td>
<td>6</td>
<td>11,376</td>
</tr>
<tr>
<td>West Burton</td>
<td>12</td>
<td>6</td>
<td>6</td>
<td>23,664</td>
</tr>
<tr>
<td>Gayle</td>
<td>9</td>
<td>12</td>
<td>0</td>
<td>18,432</td>
</tr>
<tr>
<td>Total</td>
<td>33</td>
<td>5</td>
<td>6</td>
<td>63,888</td>
</tr>
</tbody>
</table>

Note 1: the amount of wool washed is estimated on the basis that one shilling was equivalent to ninety-six pounds weight of wool (i.e. 0.125d drawback being equivalent to one pound weight of wool). Derived from James, op cit, p370.

Note 2: the quantities in the above Table are small when compared with some places. For example, in 1810 Skipton in the West Riding had a drawback of £118 10s 3d and Colne in Lancashire had a drawback of £141 13s 4d.


Burtersett provides a good example of a thriving textile village which was partly adapted to machine production and to small workshops. In the late eighteenth and early nineteenth centuries Burtersett had manufactories of wool, cotton, and silk; it:

might be called the manufacturing centre of Wensleydale; inasmuch as it gave work and employment to hundreds of families around.

In the agricultural depression of the post-Napoleonic war period more people took up knitting in order to subsist. By the 1820s knitting was already the sole occupation of some families and most houses in the village had a spinning wheel, knitting sheaths and cards - the basic implements of
the industry. Although knitting was essentially a cottage industry, by the 1820s a degree of centralized organization had taken place in Burtersett. Some of the processes were based in small workshops in which woollen and worsted staple was carded or combed, spun and twisted and wound on to hanks. The wool was then put out to the knitters at weekly or fortnightly intervals. The picture presented here provides an example of the progressive proletarianization of the rural worker. By the 1820s many Burtersett villagers were wage earners but this system coexisted with the independent producer who dealt with virtually all the processes under his own roof.

Of thirty-five households in Burtersett in the 1820s, eleven were solely or predominantly in textiles and many other households had at least one person employed in textiles. There were two manufacturers of stockings, one of whom was also a woolcomber. There was 'a weaving shop and manufactory for cotton, in which about 20 looms were constantly employed', and there was also a well-attended knitting school. In the early nineteenth century the economy of the village depended on this cottage industry which, despite intense industrialization elsewhere, was able to follow its essentially pre-industrial course. Although Burtersett was still thriving in the mid-1820s, the run down of the textile industry was already in evidence. For example, woolcombing in the village declined rapidly and no drawback was claimed from Burtersett in 1830. As the nineteenth century progressed
other elements of the industry declined and by the 1850s such local textile industry as remained in the district was concentrated in the nearby town of Hawes. Burtersett was not unique in the area. Several nineteenth-century writers speak of the intense knitting activity in both Wensleydale and Swaledale that Defoe had noted a century earlier. The events affecting the general development of the woollen and worsted textile industries in the country as a whole also affected the dales. The textile industry in Wensleydale and Swaledale expanded during the eighteenth century as both home and foreign demand increased, and dales’ products served national and international markets. However, during the nineteenth century, as with the Craven dales to the south, the cottage industry became progressively more concentrated into a local, power-operated, factory-based industry. The manufacture of textiles in the two dales survived to the end of the nineteenth century, although both output and the number of people employed were considerably reduced. The dominance of the West Riding, where the industrialization process had run its full course, coupled with structural changes in the economy of Wensleydale and Swaledale, resulted in the rapid decline and eventual demise of the industry in the early twentieth century.

III

Wensleydale and Swaledale experienced at least three
separate influences in the development of their textile industry: knitting emanating from Westmorland; spinning and weaving of cloth orientated towards the West Riding; and cotton directed towards Lancashire.

In the late eighteenth century attempts were made to expand textile production in Wensleydale by introducing the cotton industry into the area. Between 1784 and 1785 cotton mills were built at Aysgarth, Askrigg and Gayle. The late eighteenth-century traveller, Lord Torrington, who took a Romantic view of rural areas, commented on the cotton industry in Wensleydale. While staying at Askrigg he noted meeting a cotton manufacturer from Lancashire who was in the area to establish the cotton industry. Later, after Torrington had visited Aysgarth Falls, he wrote in horror:

... what has completed the destruction of every rural thought, has been the erection of a cotton mill ... whereby prospect and quiet are destroy'd: ... here now is a great flaring mill, whose back stream has drawn off half the water of the falls above the bridge.

This first attempt to bring factory production to the dales was not successful. Of the three cotton mills built in the dale in 1784-5, Yore Mill, Aysgarth, with its fourteen spinning frames, carding engines and drawing frames, had been sold in 1814 and by 1823 had ceased production. Askrigg mill had probably ceased cotton production by the end of the eighteenth century and certainly by the early nineteenth century, and Gayle mill had quickly been converted from cotton to woollen
To what extent had the attempt to introduce these mills into the dales arisen from local impetus? At least three of the people who promoted this venture were from the Lancashire cotton industry but there were also local interests. Gayle mill had been built by Oswald and Thomas Routh, local hosiers who owned an extensive estate near Hawes and possibly used the profits from their estate to help finance the building of the Gayle mill. One of the three partners at Askrigg mill, John Driver, was a local man. Yore mill was built by eight partners, two of whom lived in Wensleydale, three lived in Settle and three came from Lancashire. The six non-local partners all possibly had a prior interest in the textile industry. The attempt to introduce the cotton industry into the locality was, therefore, the work of both local and non-local entrepreneurs, most of whom had some prior interest in textiles, although their capital may have been drawn from other sources. The evidence does not consistently support Mendels's statement that the innovators were urban entrepreneurs who had accumulated capital from ‘putting-out’.

The failure of the cotton industry in Wensleydale was not an isolated phenomenon. As in some other parts of the country, the industry had not developed naturally. Its raw materials had to be supplied over some distance from the port of disembarkation, making cotton much less accessible than wool. Further, although in the early
period the cotton industry was quite dispersed nationally, the dale’s cotton industry, being so isolated, would have been less competitive than many other cotton manufacturing districts, particularly those in the immediate hinterland of the port.70 Perhaps most significantly, the dale’s cotton industry did not enjoy the organizational infrastructure which had long been established in the local woollen industry. Cotton manufacturing had been introduced into the dales at the height of euthoria for the industry and, although benefiting from relatively cheap labour, it could not withstand early rationalization which concentrated production in Lancashire.

Despite the failure of the local cotton industry, the dales’ people were not slow in adapting the technical innovations of that industry to their particular needs. Apart from the three cotton mills, which were adapted to flax and woollen production, other mills were constructed by local farmers and businessmen to develop further the wool textile industry in the dales (see Map 10).

IV

The development of woollen mills in Wensleydale and Swaledale led to a further concentration of the textile industry in specific communities. The failure of the cotton industry at Gayle in the early nineteenth century led to the woollen industry, which had been established in the area since at least the sixteenth century, becoming factory based as the former cotton mill was adapted for
wool spinning. In 1810, apart from short-stapled wool used in woollen production, an estimated 18,500 pounds of long-stapled wool were combed at Gayle (see Table 13.1), indicating a significant worsted production in the area. This activity took place under the guidance of the Routh family who had, prior to the nineteenth century, established combing shops to prepare wool for the worsted industry which flourished in the district. In 1823 Gayle mill was still enjoying high output and the village was noted for:

its manufactures of coarse flannels, worsted yarn and hosiery which gives employment to a great number of the inhabitants.

However, by 1830 the Gayle woollen industry was in decline. In that year E.A. Knowles jun., of Low Row in Swaledale, leased Gayle mill and attempted to revive the industry. Woolcombing was still in evidence by the 1840s when there were eight woolcombers, a woolsorter, and a factory boy employed at the mill. Unfortunately, the decline of the industry could not be forestalled and in 1844 Gayle mill again stood vacant. Further difficulties ensued and by 1848, when the mill was offered for sale, it had probably ceased to be used as a woollen mill. By 1867 the mill had been converted into a saw mill and continued as such into the twentieth century.

After the failure of the Askrigg cotton industry, the mill was advertised for sale as being suitable for wool or flax spinning and by 1823 the mill was being used for flax
manufacture. The flax industry in Askrigg followed the fate of the cotton industry and the mill was sold in 1843 and converted into a private house. In 1803 a new mill, Low Mill, was constructed in Askrigg on the same stream as the older mill. Low Mill, which was used for spinning woollen yarn and weaving, was built by a local woman, Agnes Hastwell, who had had an interest in the cotton mill. The new mill incorporated most of the processes of woollen manufacture and comprised a dye house and wash house on the ground floor with facilities for weaving and spinning on the upper storey. Although Low Mill changed ownership several times during the course of the nineteenth century it remained in the hands of local people and operated as a woollen mill until about 1873 when it was converted into a saw mill. The local mills were generally small operations. For example, in the early 1870s Low Mill had only five machines in operation; two for sorting and carding, a yarn twister, a spinning jenny and a handloom. The wool used was mainly from local sheep but if worsted was required wool was brought from Kendal. Most of the spun wool from the mill was handed to knitters who made up the garments, which comprised predominantly stockings but also jackets, seamen's caps and jerseys. The knitters returned the completed garments to the mill for finishing prior to sale. Low Mill supplied knitters in both Wensleydale and Swaledale but in the latter part of the nineteenth century its main business was in Swaledale. Payment to knitters was either in cash or kind. The mill
owners kept a shop where, if knitters wished, in lieu of wages they could 'purchase' goods. This was not a strict truck system, which elsewhere served to lower wages. Here the knitters had a choice of money wages or payment in kind and, therefore, the system was unlikely to have depressed wages. Low Mill played a small but important part in the local textile industry both as a consumer of local wool and in generating employment for outworkers. However, the mill suffered from the lack of a good water supply, high cartage costs for inferior local coal from Cotterdale pit which was about 10 miles away, and distance from markets. Following the fate of the textile industry elsewhere in Wensleydale and Swaledale, the mill eventually closed because, given its locational disadvantages and the labour intensive nature of the hand-knitting industry, it could not withstand competition from large West Riding firms producing cheap machine-made goods.

One of the largest mills in Wensleydale, which had originally been built for cotton manufacture, was Yore Mill, Aysgarth. After the brief period of cotton production, the mill was used at different times to produce flax and woollen yarn. The most enduring use of the mill in the nineteenth century, however, was to grind corn. After being badly damaged by fire the mill was offered for sale in 1852. It was purchased by two local bankers, C. Other and H. T. Robinson, who formed the Yore Mill Company and rebuilt the mill in 1853-4. The lower storey continued to be used for grinding corn but the
upper storey was used for carding and spinning yarn, which was ‘put out’ for knitting in both Wensleydale and Swaledale. In the mid-nineteenth century the markets for the woollen products of Yore Mill were the West Riding and Lancashire.

Yore Mill suffered from the same disadvantages as the other local mills. Despite the fact that the water supply was drawn direct from the River Ure, it was sometimes insufficient. Also, distance from markets and the increasing concentration of the industry in the West Riding were other difficulties which led to it ceasing textile production in the early 1870s. The corn grinding continued into the twentieth century.

Another early nineteenth century attempt to industrialize the local woollen industry occurred in upper Swaledale. Haverdale Mill, in Grinton township, was built in 1836 on the site of a fulling mill operated by the Knowles’ family, who established a company of spinners and hosiery manufacturers, Jno Knowles & Co. The Knowles’ family were a classic example of the small local entrepreneur whose textile and other interests in the early nineteenth century provided enough capital and impetus to transform textile production into a more fully industrialized phase. At least one member of the firm had prior experience of the local textile industry. E.A.Knowles jun. had, for a short time, leased Gayle mill and also had been involved in the Swaledale cottage industry. Knowles had employed knitters at his home in nearby Melbecks township and had used the
local fulling mill to finish the garments. This cottage industry continued after the opening of the mill and the original function of the mill had been to spin yarn for local knitters.\textsuperscript{110} The Knowles’ textile business was later expanded by installing carpet looms at the mill and, in an attempt to compete more effectively with the industrial centres, steam engines were installed in 1843.\textsuperscript{111} Initially, the mill appears to have been quite successful but this was short-lived. In 1851 production ceased and the mill machinery was sold.\textsuperscript{112} The mill was converted into a corn mill but finally closed at the end of the century and was demolished in the 1930s.\textsuperscript{113} After the closure of the mill, the hosiery industry in upper Swaledale declined and such knitters as remained in employment received their wool from the Wensleydale mills. Even this supply could not be sustained and by 1890 the knit-hosiery industry had been almost totally abandoned in Swaledale.\textsuperscript{114} Again, isolation, lack of an adequate water supply and the cost of carting coals from the Tan Hill pits constrained the local industry from competing successfully with the established centres.\textsuperscript{115}

The place in Wensleydale and Swaledale where the textile industry was most successfully industrialized was Hawes which, as the commercial centre for the upper dales, had a significant advantage over other locations. There may have been a scribbling mill for carding wool at Hawes in the 1780s and there was certainly a woollen mill in production in the 1820s.\textsuperscript{116} This mill and an adjacent dye house were
owned by a local person, John Blyth, who had also managed Low Mill, Askriigg in the early nineteenth century. In addition to spinning yarn for knitting, linen sheets were also woven at the Blyth mill.

By the late 1820s a further textile mill had been constructed in Hawes by another local person, James Smith, who originated from the nearby village of Burtersett where he had been a manufacturer of stockings. In the mid-nineteenth century the Blyths sold their mill to the Smith family who sometime later closed one of the two mills. By the late nineteenth century the remaining mill was used for cleaning, sorting, knitting and fulling. Knitting machines at the mill produced jerseys and linings, while the yarn which was 'put out' was knitted into stockings and sailors' jerseys (guernseys). As was the practice elsewhere in Wensleydale and Swaledale, the knitted goods were returned to the mill for finishing. The Smiths operated the mill until at least the closing years of the nineteenth century when they finally succumbed to the superior machinery, infrastructure and organization of the West Riding. The Smiths' mill was not so much a part of the full phase of industrialization as a survivor of that generally short-lived stage, identified earlier, which serviced the cottage industry. As with the other woollen mills, the Hawes mill rendered a service by using a small part of the upper dale labour force to prepare and supply machine-spun wool to meet the demands of knitters and weavers. By the
late nineteenth century weaving had moved completely into the West Riding factories and it was only the requirements of the knitters which remained. Unfortunately, this industry was neither sufficiently organized nor dynamic enough to ensure its survival.

Any attempt to determine the size of the workforce employed in the various branches of the cottage textile industry is hazardous. The early references are vague but indicate that a large number of people were employed in textiles, at least on a part-time basis. The later censuses probably substantially under-represent the size of the workforce, particularly those involved in knitting. Nevertheless, however imperfectly, it is possible to estimate the scale of employment in the dales' textile industry.

It was estimated that in Kendal in the 1770s there were nearly 5000 knitters employed in knitting stockings and 120 woolcombers, each of whom supplied five spinners, with each spinner providing yarn for four to five knitters. On the conservative basis of four knitters to each spinner then some 2400 knitters would have been employed full time in worsted knitting in Kendal. According to Arthur Young, these knitters made 6600 pairs of stockings per week or a total of 28,600 dozen pairs per annum.\textsuperscript{124} This meant that
each knitter made about three (2.75) pairs of stockings per week.125

Making the assumption that Kendal's labour inputs can also be applied to Wensleydale and Swaledale, it is possible to estimate employment in knitting in the two dales. In 1792 drawback was allowed to forty-four woolcombers in Wensleydale. On the above estimates this number would have provided work for 220 spinners, who would have produced yarn for 880 worsted knitters. This calculation does not allow for the fact that all the worsted wool used in the dales was probably not combed locally or that some households undertook all the processes and may not have claimed drawback. Further, the above calculation is based on combed wool which was used in worsted production and does not make allowance for the coarse, short staple which was also used in knitting. As contemporary sources attest, the dales' knitting industry at this date used mainly the local coarse wool. Estimating, conservatively, that woollens accounted for one half of the output of the local knitting industry in 1792, some 1760 people would have gained employment from the knitting industry in Wensleydale. No drawback was claimed in the late eighteenth century in Swaledale so, presumably, there was little or no worsted industry in that dale. There was, however, a substantial woollen industry but this cannot be quantified prior to the census enumerators' returns.

For the early nineteenth century, estimates of employment
have to be based on the weight of stockings produced. Although the weight of stockings varied, depending on the type of wool used, an average of eight ounces per pair has been allowed in the following estimates. Assuming that all the wool combed in 1810, when an estimated 63,888 pounds of wool was combed in Wensleydale alone (see Table 13.1), was used in knitting stockings, 127,776 pairs of worsted stockings would have been produced. This would have employed approximately 1000 (929) knitters, 250 spinners, and 50 woolcombers. On the basis that worsted employment was only one-half of the total knitting industry, 2000 people in Wensleydale would have been employed in knitting in 1810. Again, the extent of the industry in Swaledale cannot be quantified.

Young noted that in Kendal in the 1770s, in addition to the knitters, 300 to 400 workers were employed in making coarse jackets. He also remarked that many farmers and labourers spun their own wool and took it to market each week. This kept about 500 weavers and between 1000 and 1300 spinners employed in the Kendal area. Although the spinning and weaving of coarse cloth was a secondary occupation to knitting in the dales, it is reasonable to assume that the industry gave employment to a substantial number of people.

The census returns provide a basis for calculating the extent of employment in the textile industry between 1841 and 1881, by which time the industry was passed its peak (see Table 13.2).
### TABLE 13.2

TEXTILE WORKERS IN UPPER AND LOWER WENSLEYDALE AND SWALEDALE, 1841-1881.

<table>
<thead>
<tr>
<th>Year</th>
<th>Upper W/d</th>
<th>Lower W/d</th>
<th>Swaledale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mill wkrs</td>
<td>Home kn.</td>
<td>Mill wkrs</td>
</tr>
<tr>
<td>1841</td>
<td>12</td>
<td>13</td>
<td>32</td>
</tr>
<tr>
<td>1851</td>
<td>28</td>
<td>32</td>
<td>47</td>
</tr>
<tr>
<td>1861</td>
<td>17</td>
<td>32</td>
<td>1.2</td>
</tr>
<tr>
<td>1871</td>
<td>6</td>
<td>47</td>
<td>1.8</td>
</tr>
<tr>
<td>1881</td>
<td>5</td>
<td>47</td>
<td>1.8</td>
</tr>
</tbody>
</table>

1. Percentage of occupied population.
2. Some children in Hawes were returned as scholars and knitters. Also in Hawes, of the 207 knitters, 25 were dually returned as paupers.
3. Work associated with wool. This includes those such as woolcombers who did not specify mill work and who probably worked at home or in small workshops.
4. All the mill workers were employed at Haverdale mill.
5. This includes 25 knitters returned in the lead mining village of Hurst. No knitters were returned in Hurst at the other censuses. Their inclusion here possibly reflects the influence of the enumerator and serves to demonstrate the extent of under-representation taking place.

Note: in some cases the aggregate percentages of mill workers, home knitters and wool workers may differ from the total shown by plus or minus 0.1 per cent. This is due to rounding errors.

Source: PRO HO 107/1245-6, 1252-4, 2379-80, RG 9/3667-73, RG 10/4869-73, RG 11/4873-8, CEB, 1841-1881, upper and lower Wensleydale and Swaledale.

As is to be expected, apart from Swaledale in the less reliable 1841 return, home knitters greatly outnumbered mill workers. The mill-based workers in Wensleydale...
reached a peak in 1851 and in Swaledale in 1841, reflecting the number of mills in operation. The peak period of employment in home knitting in upper Wensleydale occurred in 1851, at the same date as the mill employment peak. The peak in Swaledale occurred in 1861, although this figure may be distorted by inconsistency in enumeration.

Although Table 13.2 grossly under-records out workers, the numbers returned as mill workers are probably reasonably accurate. The number of out workers was in reality considerably greater than the number of mill workers. At its peak mill work accounted for only 1.1 per cent of the occupied population of Wensleydale and 1.5 per cent of the occupied population of Swaledale. However, these were in full-time work as opposed to the part-time employment of the out workers. In 1841 other work associated with wool, such as woolcombing, was still relatively significant but by 1871 it had totally disappeared from both dales.

Table 13.2 shows the spatial distribution of the textile industry. Although in the past some knitting occurred in lower Wensleydale, the tradition of knitting was one which from at least the seventeenth century was particularly rooted in upper Wensleydale, especially from Askrigg westwards. By the nineteenth century handknitting was very largely an upper dale activity and this is reflected in the census returns. A similar situation occurred in Swaledale where knitting was an activity mainly undertaken in the study area and not in the Richmond area or other.
parts of lower Swaledale. In 1043, the Richmond and Leyburn Poor Law Unions reported that women had no indoor occupations whereas Askrigg Union (upper Wensleydale) and Reeth Union (Swaledale within the study area) reported that women were occupied in knitting.\textsuperscript{130}

In 1881 the census returned eighty-nine home knitters for the upper dale. In the same census James Smith of Hawes mill returned that he had 400 workers in occasional employment. If this was the case the census returns possibly capture only about one-quarter (22.3 per cent) of those to some degree engaged in the textile industry.\textsuperscript{131}

If the same proportion of under-registration is used to estimate the number of out workers at the other census dates, an alternative, and probably more accurate, indication of the scale of the industry in the second half of the century can be obtained (see Table 13.3).

| TABLE 13.3 |
| ESTIMATED OUT WORKERS IN UPPER WENSLEYDALE AND SWALEDALE, 1841-1881. |

<table>
<thead>
<tr>
<th></th>
<th>1841</th>
<th>1851</th>
<th>1861</th>
<th>1871</th>
<th>1881</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper W/d</td>
<td>224</td>
<td>928</td>
<td>883</td>
<td>556</td>
<td>399</td>
</tr>
<tr>
<td>Swaledale</td>
<td>58</td>
<td>144</td>
<td>211</td>
<td>27</td>
<td>22</td>
</tr>
</tbody>
</table>

Note: assuming that the original returns represent only 22.3 per cent of the actual home workers.

Source: see Table 13.2 and text.

Table 13.3 probably still under-represents the extent of the industry in the two dales as the estimate is based on only one mill supplying 400 out workers. A fuller picture
can be provided if out workers employed when the other mills were in operation are estimated on the basis of 400 workers to each mill in production. As has been noted, most of the out workers supplied by the Askriigg mill and some of the out workers supplied by Yore Mill in the latter part of the nineteenth century were in Swaledale. Accordingly, a ratio of one Wensleydale worker to three Swaledale workers has been allowed for Askriigg mill and a ratio of two Wensleydale to two Swaledale workers has been allowed for Yore Mill (see Table 13.4).

Table 13.4 shows that, when compared with the census data in Table 13.3, the numbers employed in knitting may have been more seriously under-represented in Swaledale than in Wensleydale.\textsuperscript{132} Tables 13.3 and 13.4 reinforce the point made earlier that the local textile industry, although drastically reduced in the nineteenth century, was by no means finished even in the 1880s. Moreover, as late as the 1890s, Smith's mill was reputedly employing fifteen to twenty workers and about 400 out workers.\textsuperscript{133} It is only with the closure of the mill in about 1905 that the era of the textile industry in Wensleydale and Swaledale was closed.\textsuperscript{134}

In the late eighteenth century it was reported as being common to see men knitting while walking to and from work. By the nineteenth century, however, this practice was declining and an examination of the sex structure of the industry shows that, from at least 1841, the knitting industry was dominated by females. In 1851 thirty-two
knitters were returned for Swaledale of whom twenty-eight were women. In 1881 all the knitters returned in upper Wensleydale were females, although contemporary writers record that a few men still knitted.

TABLE 13.4

OUT WORKERS IN UPPER WENSLEYDALE AND SWALEDALE ESTIMATED FROM THE NUMBER OF MILLS IN PRODUCTION, 1841-1881.

<table>
<thead>
<tr>
<th>Year</th>
<th>Upper Wensleydale</th>
<th>Swaledale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1841</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Askri gg</td>
<td>100</td>
<td>300</td>
</tr>
<tr>
<td>Blyth's</td>
<td>400</td>
<td>-</td>
</tr>
<tr>
<td>Smith's</td>
<td>400</td>
<td>-</td>
</tr>
<tr>
<td>Haverdale</td>
<td>-</td>
<td>400</td>
</tr>
<tr>
<td>Total</td>
<td>900</td>
<td>700</td>
</tr>
<tr>
<td>1851</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Askri gg</td>
<td>100</td>
<td>300</td>
</tr>
<tr>
<td>Smith's</td>
<td>400</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>500</td>
<td>300</td>
</tr>
<tr>
<td>1861</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Askri gg</td>
<td>100</td>
<td>300</td>
</tr>
<tr>
<td>Yore Mill</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Smith's</td>
<td>400</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>700</td>
<td>500</td>
</tr>
<tr>
<td>1871</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Askri gg</td>
<td>100</td>
<td>300</td>
</tr>
<tr>
<td>Smith's</td>
<td>400</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>500</td>
<td>300</td>
</tr>
<tr>
<td>1881</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smith's</td>
<td>400</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>400</td>
<td>-</td>
</tr>
</tbody>
</table>

1 Yore mill, Aysgarth, may have been producing yarn at this date. Blyth's mill, Hawes, had just been sold to the Smith family and may have been still in production. Haverdale mill ceased production in 1851. The figures for this year, therefore, may have been higher.

Source: see text.
The age structure for knitters in upper Wensleydale in 1881 is presented in Table 13.5, which shows that even at this date the industry attracted out workers of all ages, although almost sixty per cent of knitters were over forty years old. The fact that less than twenty per cent of knitters were in the 21-40 age group supports the view that knitting was undertaken primarily by those who were less likely to be fully employed in other work.

**TABLE 13.5**

AGE STRUCTURE OF KNITTERS IN UPPER WENSLEYDALE, 1881.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Under 14</th>
<th>14-20</th>
<th>21-30</th>
<th>31-40</th>
<th>41-50</th>
<th>51-60</th>
<th>Over 60</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>6</td>
<td>10</td>
<td>8</td>
<td>8</td>
<td>18</td>
<td>18</td>
<td>17</td>
<td>89</td>
</tr>
<tr>
<td>%</td>
<td>6.7</td>
<td>11.2</td>
<td>9.0</td>
<td>9.0</td>
<td>20.2</td>
<td>20.2</td>
<td>19.1</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Note: four people representing 4.5 per cent of the eighty-nine knitters did not give their ages.

Source: PRO RG 11/4875-6, CEB, 1881, upper Wensleydale.

If 400 knitters were in half-time employment in 1881 (see Table 13.4) this would have provided at least a basic living for 200 families plus the families of about twenty mill workers. This level of employment would have enabled 1034 of the upper Wensleydale population to remain in the area when otherwise they may have been forced to leave in search of work. However, in the earlier period the knitting industry used under-employed workers or workers who did not otherwise contribute to the household budget rather than the unemployed. This was probably still the
major role of the industry in the late nineteenth century, particularly as by that time most of the knitters were women. As in the earlier period, the knitting industry served as a means of raising the standard of living or, in periods of depression, of providing temporary subsistence rather than acting as a buffer against mass exodus.

In enabling knitting employment to survive in the late nineteenth century, particularly in Swaledale, the local mills must have provided some protection from poverty and subsequent emigration. The textile industry had always been important for the poor in Wensleydale and Swaledale. In the 1820s the poor were not infrequently given financial assistance in order to learn to weave and/or procure a loom. In 1830 it was stated that there was little employment in Swaledale 'except knitting the mines being exhausted'. In 1835, of fifty-one paupers in Muker who returned occupations, twenty-five women and three men were knitters. Again, in the 1840s, because of the lack of other employment, the 'inhabitants of upper Wensleydale had to seek subsistence by knitting' and the Hawes mills provided a vital service in supplying the spun wool. This role of knitting in providing a buffer between subsistence and destitution also occurred in other upland areas.

It is clear that wages for work in textiles in the dales were generally not high. Labour at that date was abundant and wages accordingly low. However, wages varied depending on whether or not the work was undertaken by
women on a part-time basis or by skilled men, theoretically working full time. For a time, skilled man's work, such as hand woolcombing or weaving, commanded a reasonable wage. Wages in the various branches of the woollen industry are available for only a few dates and, being derived mainly from narrative sources, are of limited reliability (see Table 13.6).

Except in the depths of depression textile out work was a supplement to, not a substitute for, other occupations and this is reflected in the wages paid. The outworking wage for knitters and spinners, who were mainly women, was never intended to provide a subsistence wage. Conversely, male cottage weavers could subsist on their late eighteenth-century wage. Although the knitters' wages were generally low and not likely to provide subsistence, Young reported that demand for handknitted goods was so high that if the knitters wished they could have constant employment.

Moreover, in the 1820s a family income from textiles, if all the family were employed, could be as great as that from a small holding. However, in the 1840s it was noted locally that wages fell significantly as soon as factory-based textiles became cheaper. As early as the 1770s framework knitters were earning 10s to 12s 6d per week as compared with the 2s to 2s 6d per week of the Kendal hand knitters. However, at this date it is unlikely that hand knitters were deprived of work as hand knitting could still compete well with framework knitting.
### TABLE 13.6

**WAGES OF TEXTILE WORKERS IN THE COTTAGE INDUSTRY.**

<table>
<thead>
<tr>
<th></th>
<th>Knitters</th>
<th>Combers</th>
<th>Spinners</th>
<th>Weavers</th>
</tr>
</thead>
<tbody>
<tr>
<td>W. C.</td>
<td>3s</td>
<td>1s3d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1770±²</td>
<td>2s6d</td>
<td>2s</td>
<td>10s6d</td>
<td>3s</td>
</tr>
<tr>
<td>1770³</td>
<td></td>
<td></td>
<td>2s</td>
<td>2s6d</td>
</tr>
<tr>
<td>1780-1800</td>
<td>12s</td>
<td></td>
<td>1s4d</td>
<td>10s</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3-4s⁴</td>
<td>7-9s⁴</td>
</tr>
<tr>
<td>W. C.</td>
<td>1s</td>
<td>10 1/2d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1823</td>
<td>2-3s</td>
<td>1s3d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1843</td>
<td>1s6d</td>
<td>9d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1870⁷</td>
<td>1s</td>
<td>1 1/2d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c1890⁸</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

|        | Women 6d per day, children 2 1/2d per day. |
|        | In Kendal. |
|        | In Bradford. |
|        | In the 1770s knitters were said to have knitted about eleven pairs of stockings per month. |
|        | This was considered to be the more usual earnings. |
|        | 6d per pair of stockings was paid, see note 5. A girl was paid 3s per month for knitting babies' socks. Calculated on the basis of six pairs knitted per week. |
|        | Estimated on the basis of 4 1/2d per pair being paid for thigh stockings. (At this date 1s was paid per jersey and 1 1/2-2d per pair of mittens knitted.) These were reputedly the wages paid at Smith's Mill in the late nineteenth century. |

**Source:**

- 1843 BPP, 1843, XII, *Reports of the Special Assistant Poor Law Commissioners on the Employment of Women and Children in Agriculture*, pp286, 289.
- 1890 Information supplied by the late T.C. Calvert.
This is a reflection of the hand knitter’s ability to supply individual designs in response to fashion and also of the unstructured nature of the employment.

From the wages given in Table 13.6 and earlier estimations of the total work force, the wages bill for the textile industry in Wensleydale can be estimated. A hand knitter working in the 1770s would have earned annually £7 10s.149 Using this as a basis for calculation, in 1792, when it is estimated that 1760 knitters were employed, the annual wages bill would have been £13,200. In 1792, there would also have been 44 combers and 44 carders. The combers were earning 10s 6d per week and it is probable that the carders, who were usually female or family workers, were earning the same wage as spinners, 3s per week. This would have produced annual wages for combers and carders of £26 5s and £7 10s respectively and a joint total annual wage bill of £1485. The 1760 knitters would have required 440 spinners to keep them supplied with wool.

The total annual wages for spinners, at 3s per worker per week, would have been £3300, making a total wages bill for textile workers in the dales in the 1770s of £17,985.149 This estimate takes no account of the industry in Swaledale which also generated a substantial wages bill.

In 1843 wages for women knitters were 2s 6d per week. If this is applied to the estimated 1600 knitters in Wensleydale and Swaledale in 1841 (see Table 13.4) an annual wages bill for the knitters in both dales of £10,000 would have been paid. While the 1841 wages bill applies...
only to knitters it highlights the extent of the decline in revenue from textiles in the dales between the two dates, a decline which continued to the end of the century. Even in 1890, based on the low and possibly unreliable wage for knitters of 1s 1 1/2d per week, the total wages bill for the 400 remaining out workers would have been £1125. However, even at that low figure the textile industry was generating some money within the area and, therefore, slightly enhancing employment prospects elsewhere in the economy.

Although the calculation becomes increasingly tentative, it is possible to use the more comprehensive 1792 figures to estimate the additional employment which would have been generated in Wensleydale as a result of the injection into the local economy of textile workers' wages. Assuming an employment multiplier of 1.3, the total wages bill of £17,985 would have generated an additional cash flow of £5396. With an estimated local average annual wage of £10 this would have had the potential of creating 540 new jobs in the area. If a family-size multiplier of 4.7 is used, an additional 2538 local people may have gained their livelihood indirectly from the textile industry in Wensleydale in the late eighteenth century. Although the same exercise cannot be undertaken for Swaledale or for later dates in Wensleydale, it provides an indication of the scale of the additional employment generated by the textile industry in the area.
The non-standardization of products, particularly of knitted woollen garments which comprised a large proportion of the textile output, and the general absence of sound and consistent information on prices, make it extremely difficult to assess the value of the output of the textile industry in Wensleydale and Swaledale. However, Table 13.7 presents the prices of stockings at different dates and gives some indication of changes in price over time. The Table is based on a variety of narrative sources and probably contains inaccuracies. For example, the 1770 figure appears unexpectedly high.

In 1823, when trade was still recovering from the post-war depression, the knitted produce of Wensleydale and Swaledale was estimated at £40,000. In 1856, when stockings were 30s per dozen, if the 1200 knitters estimated as being employed in 1861 (see Table 13.4) had all been producing stockings, some 86,400 pairs of stockings would have been made with a value of £10,800. By the 1870s stockings sold at 2s 4d a pair in Wensleydale. On the basis of 800 knitters each producing seventy-two pairs annually, the production of 57,600 pairs would have been valued at £6720. These figures provide further indication of the significance of the industry in the early nineteenth century and the continuing, although declining, importance of the industry in the two dales as the century progressed. It is probable
that reasonable profits could be made in the industry in the late eighteenth and early nineteenth centuries and this would have further enhanced the wealth of Wensleydale and Swaledale at a time when they were enjoying high returns from other elements of the local economy.

TABLE 13.7

PRICES OF FINISHED STOCKINGS¹

<table>
<thead>
<tr>
<th>Year</th>
<th>Child's</th>
<th>Man</th>
<th>Boy</th>
<th>Girl</th>
</tr>
</thead>
<tbody>
<tr>
<td>1727</td>
<td>6d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1733</td>
<td>9s-17s</td>
<td>8s-11s</td>
<td>9s</td>
<td></td>
</tr>
<tr>
<td>1751</td>
<td>3s-11d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1752</td>
<td>4s-5d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1766</td>
<td>9s-6d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1770</td>
<td>22s-48s</td>
<td>10s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1792</td>
<td>8s-6d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1856</td>
<td>8s-6d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1870s</td>
<td>30s</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Per dozen
² At an average of 3s per pair.

Source:
1752 Ibid.
1770 Young, *op cit*, Vol III, p133.
1856 Barker MSS, 5/8, Account Book, 1856.

VII

As has been noted, the mill-based textile industry in Wensleydale and Swaledale was short-lived. The failure of the industry to survive and progress to full
industrialization was due to fundamental disadvantages, particularly: geographical isolation; the lack of an efficient infrastructure and industrial organization such as existed in the West Riding; the absence of a railway; and a limited water-power capability. There were, however, other specific factors which determined the precise timing of the closure of the local mills. For example, Haverdale Mill possibly failed so quickly because it was over-capitalized in relation to its output potential. The woollen mill which survived longest was Smith's mill at Hawes. This gives some support to the view that in order for the textile industry to industrialize it needed to centralize its operations in the nearest commercial centre, although Hawes was a very small centre when compared with the West Riding towns.

The protagonists of 'proto-industrialization' see that phase not only as preceeding industrialization but as being causally related to it. The experience of the dales supports this view and demonstrates that the 'putting out' system could be an integral part of the factory system. It is suggested that the entrepreneurs who built the mills were either the hosiers, who were often based in urban centres, or those with prior textile experience. Part of this supposition is true in the case of the Wensleydale and Swaledale mill owners. Smith at Hawes, Knowles in Swaledale, Hastwell of Low Mill, Askrigg and Routh of Gayle all had an interest in the industry prior to building their mills and were involved in both the production and the sale
of goods in the pre-industrial era. However, they follow more closely Collins's model of the development of the upland textile industry rather than being part of Mendels's class of urban entrepreneurs. 159

A further suggestion concerning the capital structure of the industry is that most of the capital required to effect the move into factories came from outside the textile industry. 160 This was not the experience in the dales and, apart from insurmountable geographical problems, may be one of the reasons why the industry there failed to fully industrialize. Local men did not have the substantial amounts of capital required:

None of those enormous fortunes sometimes seen in large manufacturing towns, are to be met with here. 160

Farming and the lead industry in the area, while at times prosperous, were not creating inordinately wealthy men and, although some used surplus capital derived from the land, the Knowles's of Haverdale Mill were the only family of more substantial means who may have used wealth derived from lead-mining interests to construct their mill. 161 Non-local investment in the dales' industry was limited and, after the initial, unsuccessful interest, there appears to have been no further injection of external capital. 162

There is, however, some little support for a further proto-industrial theory which suggests that cottage labour
migrated to industrial areas where similar forms of employment were available. For example, dales' people migrated to east Lancashire where they could find similar occupations, either in coal mining or the textile factories (see Chapter 15). However, mining and farming were the principal magnets for dales' people in the nineteenth century; hence the out-migration towards the North East for mining and to the United States for mining and farming.

VIII

The heyday of the cottage textile industry in the area was probably the late eighteenth century, at a time when demand was high but when the industrialization and centralization of all the processes were not yet fully established. It was the buoyancy of the local cottage industry which encouraged entrepreneurs, predominantly from within the area, to attempt to industrialize production. In the early nineteenth century, despite periods of depression, the symbiotic relationship which existed between mill and outwork was at its height between about 1800 and the 1830s, with the peak of activity occurring in the 1820s. By the 1840s the local textile industry was reported to have declined over the previous few years with an accompanying fall in wages.143

The dales' textile industry was doomed to failure being assaulted on several fronts. In particular, spinners and weavers were under threat from the centralization and industrialization of the industry in the West Riding and,
due to changes in fashion and falling demand for hand-knitted hosiery, hand knitters were, by the nineteenth century, confronted with increasing competition from framework knitters. A further factor in the decline of the dales' woollen industry was the competition which woollen goods faced from other textiles. By the mid-1850s the differential between the price of wool and that of other textiles was so great that, even allowing for the demand for individuality, hand-knitted goods were having difficulty competing with cotton and flax. The disappearance of the industry was inevitable, what is surprising is the tenacity of those branches which lingered on into the twentieth century.
NOTES - TEXTILE INDUSTRY


3 James, op. cit., pp330-1; Collins, op. cit., p20; Ponting, op. cit., p32.

4 Collins, op. cit., p20. In this they follow closely Collins' model of the textile industry in upland areas.

5 Baines, op. cit., pp99-100; Collins, op. cit., p20.

6 Ponting, op. cit., p32; James, op. cit., pp323-4,590;

7 Wensleydale Advertiser, 27 February 1844, yarn was stolen from a carrier who travelled weekly from Keighley in the West Riding to deliver wool from Hawes market.

8 Baines, op. cit., pp70-1,110; James, op. cit., p326;


11 James, op. cit., pp326,331,376-7,425.

12 Ponting, op. cit., p54.
11 Baines, op cit, p99.
12 Ibid, p110.
13 James, op cit, pp500-1.
16 Mendels, op cit, pp242, 248.
19 Clarkson, op cit, pp25-6.
20 Mendels, op cit, p243.
21 Ibid, p245.
22 Hudson, 1981, op cit, passim.
23 As D. C. Coleman points out 'de-industrialization' is the wrong term for this experience, it should be 'de-proto-industrialization' as the area never fully industrialized; Coleman, op cit, p443.
24 D. Defoe, A Tour Thro' the Whole Island of Great Britain, 1724-5, 1727, 1928 ed., p222; BPP, 1843, XII,
Reports of Special Assistant Poor Law Commissioners on the Employment of Women and Children in Agriculture, p286;

26 Tuke, op cit, p92.
28 Tuke, op cit, p92.
29 Thirsk, op cit, p217.
30 P. Romney (ed), The Diary of Charles Fothergill, 1805, Leeds, 1984, p109. Knitting was a social activity and knitters gathered in each other's houses not only to save fuel but also to exchange gossip, E. Pontefract & M. Hartley, Wensleydale, 1936, pp68-9.
31 Defoe, op cit, p222.
32 Ibid.
33 Ibid; T. Cox, History of Yorkshire, 1728, p620; Heaton, op cit, p265.
34 G. A. Cooke, Cooke's County Itinerary: Westmorland and Yorkshire, c1809.
35 Tuke, op cit, p92.
36 Clarkson, 1821, op cit, pp409-10.
40 James, op cit, pp375-7, 381, 412.
44 Baines, op cit, pp106, 113.
48 Ibid, p130.
49 Baines, op cit, p135; H. Speight, Romantic Richmondshire, 1897, p482; PRO, RG 107/2380, CEB, 1851, Hawes.
51 W. White, History, Gazetteer and Directory of the East
and North Riding of Yorkshire, 1840, pp606,611.

Baines, 1875, op cit, p135.

Ibid. James, op cit, pp368-371.

Ibid, p326; PRO HO 107/2379-80, CEB, 1851, Wensleydale.

James, op cit, pp369-70.

J.Chapman, Burtersett Sixty Years ago, Hawes, 1884, pp4-9.


Ibid. The move to proletarianization has been noted elsewhere as occurring from at least the seventeenth century, Thirsk, op cit, p255.

Chapman, op cit, pp5-9.

James, op cit, Appendix p13.


S.R.Clarke, The New Gazetteer, 1828, (no page numbers); Allen, op cit, p281; Baines,1823, op cit, p510; White, op cit, p28.


Tuke, op cit, p92.

C.B.Andrews(ed), The Torrington Diaries; A Tour of the North, Vol III, 1st publ. 1792, this ed.1936, p84.
Religious Society of Friends, London, Register of Quaker Births, John Blakey, cotton manufacturer and liquor merchant, was recorded as living in Askrigg in the 1790s but no mention is made of him in 1823; Baines, 1823, op cit, p408. In 1823 the Askrigg mill was producing linen, ibid; and see M. Hartley and J. Ingilby, Yorkshire Village, 1953, pp132-3; D. Hall, 'Gayle Mill', NYCRO Journal, 6, Northallerton, 1978, p118.

71 Hartley & Ingilby MSS, (Copy of) Deed for Yore Mill, Aysgarth, 29 March 1784.
72 Hartley & Ingilby, 1978, op cit, pp54-55, additional information supplied by the late T. C. Calvert.
73 Hartley & Ingilby, 1953, p132.
74 Hartley & Ingilby MSS, (Copy of) Deed for Yore Mill, Aysgarth, 29 March 1784.
75 One of the partners from Settle was a doctor and the other two were members of the Birkbeck family. The Birkbecks were merchants and wool manufacturers in the Settle area. Of the three partners from Lancashire one was a gentleman, one an engineer and one was in commerce, Ibid.

In the late eighteenth century, the Birkbeck family were the active partners and ran the mill, Hartley & Ingilby, 1978, op cit, p48.
There is no reference to drawback being claimed in Gayle in 1830, James, op cit, Appendix p13.

PRO HO 107/1252, CEB, 1841, upper Wensleydale. These mill workers were returned as living in Gayle though they may have worked in Hawes a mile and a half away.

Wensleydale Advertiser, 13 February 1844, the mill was advertised as having been used for cotton, flax, and wool spinning.

Ibid, 29 February 1848; Hall, op cit, p119.

W. White, Directory of Hull, York and the North and East Ridings of Yorkshire, Sheffield, 1867, pp534-5. The whole process of the manufacture of worsted yarn had moved out of the area. In 1872 the combing shops in Hawes were listed as unoccupied but the combers had left long before this date, E. Broderick, Valuation of the Township of Hawes, 1872.

Baines, 1823, op cit, p408, records one flax manufacturer in Askrigg; Hartley, & Ingilby, 1953, op cit, pp133-5, the mill was renamed Flax mill sometime after 1823.

Hartley & Ingilby, 1953, op cit, p137.

Ibid, pp132-7; The mill probably went into production in 1804. From 25 March 1805 Mrs. Hastwell paid an annual rent to Lord Grantham; WYAS/L, Vyner MSS, 5521, Account
Book of Rents of the Estates of Lord Grantham at Nappa, 1802-13, p44; 5495, Rent Book of the Estates of Lord Grantham, 1821-28. This document specifically states that the rent was for water to the factory. Agnes Hastwell's first husband was John Driver and after his death in 1787 she continued to have connection with the cotton mill. She also had previous experience of the woollen industry as her father had been a hosier; Hartley & Ingilby, 1953, op cit, pp132-7.

Hartley & Ingilby, 1978, op cit, pp41-2,44.

The woollen mill was still in operation in 1872, Broderick, op cit, Valuation of the Township of Askrigg, 1872; Hartley & Ingilby, 1978, op cit, pp41-2,44.

Ibid, p44.

Ibid, pp43-45. With the abundant water supply and the emphasis on pastoral small holdings, Wensleydale and Swaledale, therefore, had the prerequisites essential for rural knitting communities, Thirsk, op cit, p248.


Hartley & Ingilby, 1978, op cit, pp43-5, quoting the reminiscences of brothers William, John and Leonard Gill whose family owned the mill. In the late nineteenth century the retail outlet for the knitwear was reputedly a large department store in Newcastle.

Hartley & Ingilby, 1978, op cit, p45, yarn from Low Mill
was delivered in Swaledale once a month and the knitted goods from the previous month's yarn collected.

Ibid. The Gill family were mill owners from 1863 to 1873 and kept an exchange shop, Hartley & Inglisby, 1953, op cit, p173. The exchange shop, however, had been in existence prior to the Gill's ownership.


Hartley & Inglisby, 1978, op cit, pp43,45. For coal and cartage costs see Chapter 12.


Copy of auction notice in my possession;

Whitaker, op cit, p393; Baines, 1823, op cit, p409; White, 1840, op cit, p609; Hartley & Inglisby, 1978, op cit, pp47-9.

Copy of auction notice in my possession; see also, Hartley & Inglisby, 1978, op cit, pp49-50.


Ibid; Whellan, op cit, p390.

HLRO, Minutes of Evidence, HC, 1866, Vol 30, S-C,
evidence of C. Other, partner in the woollen mill, p16; HLRO, Minutes of Evidence, HL, 1866, Vol 17, S-C, evidence of C. Other, p20.

107 Yore Mill was still producing textiles and corn in 1867, but by 1872 only corn was being produced; White, 1867, op cit, p532; E.R. Kelly (ed), The Post Office Directory of the North and East Ridings of Yorkshire, 1872, p89.


109 White, 1840, op cit, p649. The Knowles family also had an interest in lead mining, see Chapter 10 and B. Jennings, 'The Lead Mining Industry of Swaledale', unpublished M.A. Thesis, Leeds University, 1959, p257.

110 Baines, 1823, op cit, p487; Hartley & Ingilby, 1978, op cit, pp33-4; White, 1840, op cit, p649; Barker MSS, 2/5/2, Garth Day Book, December 1836; 'Mr. Knowles first got water to the new mill wheel'; PRO, HO 107/1246, 1253, CEB, 1841, Swaledale.

111 Hartley & Ingilby MSS, Diary of Joseph Smithson, 6 May 1840, notes the arrival of the first carpet looms to the mill; 24 May 1843, 'The engine came for the mill at Crackpot Gill foot. The mill belongs to E.A. Knowles'.

112 Barker MSS, 2/5/3, Garth Day Book, 27 November 1851.

113 Whellan, op cit, p489; Kelly, 1893, op cit, p92; Hartley & Ingilby, 1978, op cit, p34.

114 Whellan, op cit, p490; Hartley & Ingilby, 1953, op cit, p232; Bulmer, op cit, p440.

John Tuke records that a scribbling mill was built in Wensleydale in 1874/5 though he does not specify the place: Tuke, op cit, p92; Baines, 1823, op cit, p450.


Ibid.

Ibid, pp55-6; Chapman, 1884, op cit, p9; T.C. Calvert, Burtersett 70 Years ago, Hawes, 1974, p6; Whellan, op cit, p410.

Whellan, op cit, p410; White, 1867, op cit, p534; Hartley & Ingilby, 1978, op cit, p56.

Ibid.


E.R. Kelly (ed), Directory of the North and East Ridings of Yorkshire, 1905, p113 and - 1909, ibid, pp114-5; knit hosiery manufacture was still recorded in Hawes in 1905 but there is no mention of the industry in 1909. However, directories were frequently out of date and Kit Calvert notes that the mill closed in 1898, K. Calvert, Wensleydale Cheese, Clapham, 1977, p14.


Ibid; this would appear to be quite reasonable. Joan Thirsk notes that in the late sixteenth century knitters were reckoned to knit two pairs of stockings per week, Thirsk, op cit, p248; However a good knitter could produce...

2.75 pairs of stockings per week, based on a fifty week year, Thirsk, *op cit*, p248. Hartley, & Ingilby, 1978, *op cit*, p44; in the 1870s an eight ounce knot of wool was sufficient to knit a pair of knee length stockings. At that time most knitters made an average of only six pairs a month so were less fully employed than their earlier counterparts.

Not all the knitting was hosiery and some of the wool was woven but the estimate provides a useful guide, *ibid.* See Thirsk, *op cit*, p248 for calculations of the extent of the national industry in the late seventeenth century.


Eighty-nine returned at the census is 22.3 per cent of the 400 out workers returned by Smith. The numbers of outworkers may have been higher, as noted earlier, some knitters still received their wool direct from the West Riding.

Although the mills differed in size, they were all small and the estimate in Table 13.4 in assuming the same out-working labour force for all mills is not unreasonable. The calculation cannot be precise but it does provide a rough guide.
Using a multiplier of 4.7 for 220 workers.

NYCRO, Minutes of the Select Vestry Meetings of Bainbridge Township, 19 February 1821, 29 April 1824, 18 November 1824, 26 October 1825. Also inventories of people in receipt of poor relief, 7 October 1820, these included seven spinning wheels and one pair of looms.


BPP, 1843, op cit, p295.

D. Howell, Land and People in Nineteenth Century Wales, 1977, p103; Thirsk, op cit, pp244-5.

There are further problems in calculating the wage as most of the work was piece work. However the wages in Table 13.9 provide an indication of trends.

The 1851 census enumerator for Askrigg commented that out migration had taken place since the 1841 census because of 'the depression of agricultural interest and the loss of the knit hosiery business'; NYCRO, PP 19/17, Census Enumeration Abstract for the County of York, 1851, Askrigg.
Chapman, 1884, op cit, p4. This was apparently the case despite the fact that in 1823 Wensleydale knitted products were so reduced in price that earnings from knitting were reported to be extremely low, *Yorkshire Gazette*, 2 August 1823, quoted in Hastings, op cit, p32.

White, 1840, op cit, p38.

Chapman, 1972, op cit, p10; Young, op cit, Vol III, p134.

Ibid., Vol II, p425, based on the local wage in the 1770s. The annual wage is based on a fifty week working year, see Thirsk, op cit, p248.

This is on the basis of all the wool being knitted and does not take account of weavers and their wages.

This is an employment multiplier drawn from modern economics. It has been assumed that it is appropriate to a labour-intensive occupation such as the textile industry.

The £10 annual wage is based on Tuke's comment that £12 per annum 'is esteemed great wages for a head man' in the dales, Tuke, op cit, p80.

Baines, 1823, op cit, p510. The value of the knitted produce represented about one-third the value of the lead raised in Swaledale and Wensleydale at that date, see Chapter 11; Hartley & Ingilby, 1978, op cit, pp104, 108, 117; Dover's letters.

Based on an average of six pairs of stockings per month for twelve months. Ibid, p44.

Hartley & Ingilby, 1978, op cit, pp44-5, eight ounces of spun wool was used to make one pair of stockings which cost
is 6d to produce and which sold at 2s 4d a pair.

155 See note 153.

156 Clarkson, 1985, op cit, p12.


158 Collins, op cit, p20.

159 Bythell, op cit, p251.

160 Clarkson, 1821, op cit, p411.

161 The mill was reputedly built after the death of E.A.Knowles sen. who had an estate of £40,000. This would have been mainly derived from the textile and lead mining industry; G.Spencer, Guide to Swaledale and Arkengarthdale, Richmond, c1912, p40; Jennings, op cit, pp257-8.

162 Hartley & Inglisby, 1953, op cit, p138.

163 White, 1840, op cit, p38.

164 Whaley, op cit, p11.

165 In 1854-6 imported wool cost 1s 4d per pound, English wool, 1s 2d, imported cotton 5 3/4d, and flax 5d per pound, Baines, 1875, op cit, p73. In Swaledale in 1856 six pairs of worsted stockings cost 15s whereas the same quantity of cotton stockings cost 3s 3d, Barker MSS, 5/8, Account Book, 1856.
Prior to the middle of the eighteenth century communications in Wensleydale and Swaledale were based on three types of road: the long-established network linking communities and running either from west to east along the main valley floors or from north to south across the major watersheds; drove roads facilitating the movement of stock, usually from places further north to centres of population south of Wensleydale and Swaledale; and jagger routes which primarily linked the lead and coal mines to the smelt mills and thence to Richmond, the centre from which the Swaledale lead was transported by cart to Stockton. The economy of the dales in the late eighteenth and nineteenth centuries was based predominantly on agriculture and the extractive industries. The produce of these industries was transported largely on the hoof, the livestock being driven, while coal and lead were carried by pony. It is not surprising, therefore, that the roads in most frequent use and those which followed the most direct routes, often over difficult terrain, were drove roads and jagger routes. These roads often pre-dated ordinary roads and, in terms of the economy, were probably the most important routes in the area in this period.

The ordinary roads in the area were said, usually by non-daies' people, to be in poor condition. The road from
Richmond which passed west through Wensleydale was reported in 1751, by petitioners for a turnpike, to be:

so bad, ruinous, narrow and rocky that it is totally impassible at some Times of the Year for any Kind of Wheel Carriages ...

Although after 1751 turnpiking improved some of the roads in the area most, particularly those which traversed the watersheds, remained in a poor condition. The moorland road which ran north from Askrigg to Brough was described in the late eighteenth century as 'fit only for a goat to travel'. When Lord Torrington travelled on this road in 1794 he claimed that it took him seven hours to travel the twenty miles from Barnard Castle to Askrigg. Lord Torrington also noted that the roads became virtually impassable in the depths of winter, effectively bringing to a standstill communication between the two dales. Although these comments must be treated with some scepticism, neither the terrain nor the condition of the roads was suited to easy travel. The alleged condition of the roads should not lead to the assumption that there was a lack of mobility within the two dales. On the contrary, local diarists attest to the high degree of mobility at all seasons not only within each dale but between the two dales. It appears to have been rare for weather and road conditions to have seriously curtailed movement in the dales any more than it does at the present day.
Some roads in the area were improved where there was an economic incentive. For example, in the late eighteenth century the Richmond to Reeth road was improved principally at the instigation of a large landowner near Richmond who had interests in the mines in Arkengarthdale. By the early nineteenth century the main roads in the dales were reputedly in reasonable repair although some were still hazardous particularly in winter. However, even in the mid-nineteenth century roads in the area were reported to be 'not very good' and road travel remained difficult into the 1860s and 1870s. Major improvements in the area's roads did not occur until the early twentieth century when the County Council provided a special grant for roadworks in Wensleydale.

Drove roads criss-crossed the area, providing a direct link with Scotland and, via the markets of Ingleton, Skipton and Leyburn, with other centres to the south. Many of these roads fell into disuse in the latter part of the nineteenth century as the railway altered the marketing of stock. The jagger roads were to be found wherever the route between the mines and the smelt mill did not follow existing roads. These routes fell into disuse either when alternative better roads were constructed, for example the Richmond and Reeth turnpike, or when the mines or smelt mills closed down.

During the eighteenth century there was pressure for the construction of a turnpike through Wensleydale. In 1751
Parliament was petitioned for an Act to establish a turnpike between Richmond and Lancaster via Wensleydale. The early date of the Act is surprising given the lack of any real need within Wensleydale for a high quality road. However, the main impetus for the turnpike came from outside the dale, principally from the inhabitants of Richmond and Lancaster who maintained that a turnpiked road would provide an efficient link between the North East and Lancashire. The petitioners also claimed that the improved road would enhance the economy of places on the route.14

The Richmond and Lancaster Turnpike Act of 1751 was the first to affect Wensleydale and Swaledale (see Map 11). It proposed the construction of a turnpiked road from Richmond to Redmire in lower Wensleydale and thence to Bainbridge before leaving the dale in a south-westerly direction by crossing the watershed and continuing to Lancaster.15 The Trust was split into two divisions and it was the eastern division which included the section through Wensleydale.16 In 1795 the turnpike was diverted through Hawes in order to avoid the high ground south-west of Bainbridge.17 It is possible that, as happened elsewhere, the Richmond and Lancaster turnpike was built as the natural extension of an existing turnpike, the Yarm to Richmond, which dated from 1747.18

The success of the Richmond and Lancaster turnpike is difficult to gauge in the absence of detailed statistical information. Even by 1821, despite the fact that income of £516 after expenses exceeded expenditure of £436, the Trust
had a 'floating debt' of £751 due to 'renewal by act'. Also in 1821, in common with most trusts, the Richmond and Lancaster Trust had a mortgage debt of at least £4000 which, although less than the debt of £5800 in 1795, was still substantial. However, trusts were less concerned with profit making than with providing and maintaining an efficient service. At an interest rate of about 4 per cent in 1821, the mortgage debt will not have been an excessive burden to the Trust.

Predictably, given the lack of high demand locally, the tolls received on the Wensleydale sections of the turnpike were not high. Returns showing the annual income from tolls are available for intermittent years and are presented in Table 14.1. A peak in the tolls collected occurred in 1844. Receipts from the Richmond and Lancaster turnpike were probably at their highest in the early nineteenth century, as this was a time of substantial activity in agriculture, mining, and textiles, and a period when the population of the two dales was near, or had reached, its peak.

There is no extant information on the toll charges on the Richmond and Lancaster turnpike in the 1840s but toll charges for 1846 are available for a toll gate on the turnpike road passing through Bowes immediately to the north of the study area. The charges listed include cattle at 8d per score, sheep at 4d a score, laden horses at 1d each, and two-horse carts at 3d. If these charges are used in conjunction with the total of tolls collected in
TABLE 14.1

TOLLS COLLECTED ON THE RICHMOND AND LANCASTER TURNPIKE IN
UPPER AND LOWER WENSLEYDALE, 1773-1860.  

<table>
<thead>
<tr>
<th>Year/Region</th>
<th>1772/3</th>
<th>1843/4</th>
<th>1857/8</th>
<th>1859/60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redmire</td>
<td>£60</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hallifield</td>
<td>-</td>
<td>£37</td>
<td>£31</td>
<td>£31</td>
</tr>
<tr>
<td>Askrigg</td>
<td>£54</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bra4;enbar</td>
<td>£13</td>
<td>£83</td>
<td>£73</td>
<td>£78</td>
</tr>
<tr>
<td>Hawes²</td>
<td>-</td>
<td>£52</td>
<td>£30</td>
<td>£28</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>145</td>
<td>172</td>
<td>134</td>
<td>137</td>
</tr>
</tbody>
</table>

¹ To nearest £. The toll year ran from June to June.
² Hawes was on the turnpike road only after the diversion in 1795.

Note: some of the toll gates were resited between 1773 and 1860.

Source: NYCRO, ZB 1399, The tolls collected upon the East District of the Richmond and Lancaster Turnpike Road, 1751-1774, repr. in M.Hartley & J.Ingilby, D.S.Hall, L.P.Wenham, Alexander Fothergill and the Richmond to Lancaster Turnpike Road, NYCRO Publications 37, Northallerton, 1985, p229; Wensleydale Advertiser, 22 October 1844, Richmond and Ripon Chronicle, 2 October 1858, 3 November 1860.

1843/4 on the Richmond and Lancaster turnpike within Wensleydale (see Table 14.1) and the total arbitrarily divided equally between the four categories of traffic (cattle, sheep, laden horses, and two-horse carts), an indication of the level of usage can be gained. The total receipts would equate to 1290 score of cattle, 2580 score of sheep, 10,320 laden horses and 3440 carts using the turnpike in the course of a year. The above figures are entirely hypothetical and probably bear little relation to the actual proportions of the different types of traffic but they do provide an indication of the possible level of
usage of the road. As in many places, concessions may have been given to local people. If so, the full extent of the usage would not be reflected in the total of tolls collected. Further, there were many other minor roads in the area, particularly the road to the south of the Ure which ran parallel with the turnpike and which may have carried quite heavy traffic intending to avoid the turnpiked road. The size of the debt, the tolls taken and the intensity of usage within Wensleydale would seem to indicate that the Trust will have produced little surplus and that, like the railway which was to follow, it was built on optimistic speculation rather than sound economics. The eastern section of the Richmond and Lancaster turnpike continued to operate to 1868 when the Trust was terminated by Act.

Several other turnpike trusts were established in the area between 1770 and 1836. In 1770 a short turnpike road was constructed from Reeth via Arkengarthdale to connect with the Brough/Scotch Corner road. The principal reason for constructing this road was stated to be the exploitation of the Tan Hill coal pits and the lead mines in the area. The turnpike through Arkengarthdale did not make jagger ponies redundant, as some of the mines were still virtually inaccessible by cart and many of the roads which had to be traversed in order to reach the Arkengarthdale turnpike had steep gradients. Also, the construction of the Arkengarthdale turnpike did not radically reduce the costs of transporting lead from the
mines. Between 1786 and 1792 nearly 14 per cent of the A.D. Company's total costs were incurred on transport. Similarly, from 1793 to 1799 the Arkengarthdale mines spent over 8 per cent of total costs on pack horse transport and a further 4 per cent on the transport of lead from Richmond to Stockton. In this period carriage more than doubled the cost of coal brought from the Tan Hill pits to the Arkengarthdale smelt mills.

In an attempt to improve communication westwards from Wensleydale to the wool-producing area around Kendal and probably due partly to the influence of the Richmond and Lancaster Trust, a turnpike from Askrigg to Sedbergh was authorized by Act in 1761. Turnpiking in this area was further extended when in 1825 the road from Kirkby Stephen to Gayle on the outskirts of Hawes was authorized to be turnpiked.

The final turnpike Act to affect the area was in 1836 when a ten-mile stretch of road between Richmond and Reeth was authorized. The lead-mining interests in Swaledale had promoted the new road in 1821 with the intention of providing a more efficient vehicular route for conveying lead from the dale. It was anticipated that, in addition to lead, stone and lime would also be exported and that the back carriage would bring corn, timber, coal and other goods into the dale. In 1821 it was estimated that the road would cost £4500 to construct and would produce an annual return of £300. No information is available concerning anticipated receipts but the costs of
construction clearly escalated and in 1836, immediately prior to the passing of the Richmond and Reeth Act, were estimated to be £7200.\textsuperscript{35} Nevertheless, by March 1836, £9075 had been subscribed to finance the project.\textsuperscript{36} The construction of the Richmond and Reeth turnpike provides an example of a turnpike constructed not directly in response to the existence of other turnpikes in the area but as a means of enhancing the profitability of local industry.\textsuperscript{37}

The turnpike roads constructed in Wensleydale and Swaledale appear not to have significantly changed marketing patterns, as was the case in other parts of the country, but served to consolidate patterns which already existed.\textsuperscript{38} The usage of the Richmond and Lancaster turnpike in Wensleydale would seem to demonstrate that turnpikes in the area were not very heavily utilized and did not produce high receipts. However, the local turnpikes did facilitate speedier and more efficient travel, particularly for vehicular traffic, and provided both links with the outside world and improved movement within the two dales. Also, the construction and maintenance of the turnpikes provided employment which will have contributed to the overall economy of the area.

II

In the pre-railway era the roads in Wensleydale and Swaledale were the only means of travel. Apart from private traffic, some public transport was available in Wensleydale and Swaledale for at least part of the
nineteenth century.

Prior to 1844 the Exmouth Coach Company had run a limited service in Wensleydale. In 1844 the Wensleydale Mail Coach Company took over the service and collected post from several centres in Wensleydale. By 1845 the coach service was extended to run from Leyburn to Northallerton railway station and in July 1845 a coach service was established on three days a week to run westwards to Sedbergh and Kendal during the summer months. In the late 1850s stage wagons and omnibuses were run eastwards in both Wensleydale and Swaledale to link with the railway stations at Leyburn and Richmond respectively. The omnibus service appears to have survived only for a few years and it would seem that most dales' people used the facilities offered by carriers.

The carrier network in Wensleydale and Swaledale was vitally important to the industry and commerce of the two dales. There were specialist carriers, such as those who transported lead or who collected farm produce to take to markets outside the dale, but there were also general carriers, who both linked the communities within the dales and transported goods in and out of the area.

The absence of water and rail transport meant that lead producers had to use jagger pony carriers both to transport lead, and to import machinery and materials for use in the industry. The carriage of lead was a laborious process. Two months were allowed for carriage from the mills to
Stockton and in the early nineteenth century a constant stream of lead carriers travelled the route between the dales and the Tees estuary. In 1801 and 1802 carriers were paid fourteen pounds and thirteen guineas respectively per load of about twenty-four tons of lead taken from Richmond to Stockton, although exceptionally some were paid £20 or £25 a load. The lead carriers at this time were generally farmers who supplemented their income from this trade.

The carrier specializing in the carriage of farm produce was often a cheese or butter factor as well and undertook this specialist carrying in addition to general carrying. As Alan Everitt has noted, the country carrier, as opposed to the long distance carrier, played an important role in ‘linking town and country, farm and market, and village and railhead together’. Everitt comments that the carrier had four functions: to act as a shopping agent, purchasing goods from local towns; to carry bulky parcels to town or railhead; to carry passengers; and to convey country produce. That Wensleydale and Swaledale carriers performed all these functions is attested by local sources and in addition the carriers serviced some of the small local industries, such as textiles.

The arrival of the railway in the area in the latter part of the nineteenth century redirected rather than curtailed the activities of the carriers, who were used to connect the more remote communities with the railway. Most of the carriers in the area operated from towns or villages.
which had, or formerly had, a market function and the most frequent journeys undertaken were to other places in the dales.\textsuperscript{1} Prior to the establishment of the mainline railways in the 1840s, regular carrier services were established with the major towns surrounding the area, including such destinations as Leeds, York, Stockton, Kendal, Lancaster, and Manchester.\textsuperscript{2} The dales’ people also availed themselves of the services of long-haul carriers who plied their trade via Wensleydale from the North East to Lancashire.\textsuperscript{3}

The frequency of the carrier journeys shows the importance of the services in the two dales (see Table 14.2).

\textbf{TABLE 14.2}

\textbf{CARRIER SERVICES PER WEEK IN UPPER AND LOWER WENSLEYDALE AND SWALEDALE, 1823, 1857, 1879, 1893.}

\begin{tabular}{|c|c|c|c|}
\hline
 & 1823 & 1857 & 1879 & 1893 \\
\hline
U W/d & 12 & 11\textsuperscript{1} & 8 & 12 \\
L W/d & 19 & 14 & 9 & 7 \\
S/d & 9 & 17 & 23\textsuperscript{2} & 20 \\
\hline
\end{tabular}

\textsuperscript{1} There is possibly under recording as no carrier journeys are recorded from Askrigg in 1857 whereas about three per week are recorded at the other dates.

\textsuperscript{2} This figure includes three stage-wagon journeys and one omnibus journey to Richmond.

Note: there is an element of double counting as where the final destination of a journey is to another place in the study area, the departure from each destination is recorded.

Although the number of carrier journeys in lower Wensleydale declined after the opening of the railway to Leyburn in 1856, the number of carrier journeys in upper Wensleydale, after a brief fall immediately after the extension of the railway through the dale, had recovered by 1893 as more remote places were linked with Hawes. In Swaledale the number of carrier journeys increased significantly between 1823 and 1879 reflecting the use of carriers to Richmond station and the Wensleydale railway. In the absence of a railway in Swaledale, the number of carrier journeys remained high in the 1890s, at twenty per week, and continued so into the twentieth century. The total number of carriers in the three areas rose from eighteen in 1823 to twenty-one in 1893, while the population served per carrier fell from 878 to 490, demonstrating the increase in post-railway carrying traffic in the two dales.

The picture which emerges from the directories and oral sources shows an efficient and frequent network of carriers in Wensleydale and Swaledale. Nevertheless, the problems inherent in road travel prior to the advent of motorized transport in the late nineteenth century meant that dales' people enthusiastically welcomed the increased convenience and flexibility offered by the railway when it became available.
The development of the railway in Britain is well documented. Following the opening of the Stockton and Darlington line in 1825 and, more particularly the Liverpool and Manchester railway in 1830, the industry quickly became established. The trunk lines which form the basis of the present day railway network were laid down largely in the railway manias of the mid-1830s and mid-1840s. During the 1850s and 1860s the railway system was extended to connect all significant centres of population and in the following two decades, in what was effectively the final phase of railway building, numerous branch lines were built, particularly in rural areas.

Railway construction in nineteenth-century Britain was strongly cyclical. This fact and the length of time which generally elapsed between the promotion and construction of a railway, often resulted in construction taking place during a downturn in the economy. While the effect of this was to diminish the extent of the downturn, enabling the economy to remain more buoyant than would otherwise have been the case, many of the railway proposals, particularly those that were exposed to the downturn that followed the mania of the 1840s, failed to come to fruition.

Recent studies have sought to examine the impact of the railways by using counterfactual methods to analyse the extent of social saving arising from their introduction. While the level of social saving resulting from the
development of the railway in Wensleydale cannot be fully quantified, the impact of the railway on the locality can be broadly assessed and some conclusions drawn as to its effect on the economy and society of the area.

The impact of the railway began to be felt in the area long before the completion of the full Wensleydale line in 1878. From the days of the great railway mania in the 1840s, Wensleydale, and to a lesser extent Swaledale, had been subjected to a plethora of speculative proposals. This created an atmosphere of expectation within the dales which ensured that railway proposals were a topic of lively interest among both the proponents and the opponents of the revolutionary new form of transport. None of the nine schemes proposed in the 1840s reached fruition, all but two being quickly abandoned (see Map 12). The two schemes which were presented as bills to Parliament were also subsequently abandoned having fallen victim to the contra-cyclical trend after 1847. However, in 1856 the Bedale and Leyburn Railway Company constructed a ten-mile line linking Leyburn to the Northallerton-Bedale line which had opened in the previous year. This Company soon found itself in financial difficulty and in 1859 it was taken over by the North Eastern Railway Company (NER). This acquisition gave a large and rapidly expanding Company a direct interest in the area and this augured well for the future.

During the renewed national speculation which erupted after 1862, the two dales attracted the interest of
PROPOSED RAILWAYS IN THE 1840S

Existing Railways
- Richmond Branch of Great N of England Railway (opened 1846)

Proposed Railways
- Leeds and Carlisle
- George Hudson's Company
- Yorkshire and Glasgow Union
- Unnamed company, Jervaulx to Ure Head
- Unnamed company, Richmond to Wharfhead
- Lancashire and North Yorkshire Railway
- Lancashire and North Yorkshire Railway (Aysgarth-Hawes Branch)
- Liverpool, Manchester and Newcastle Junction Railway (same route as the Lancashire and North Yorkshire Railway)
- Manchester, Liverpool and Great North of England Union Railway

All proposed routes are approximate. T = Tunnel
promoters who claimed to be seeking, as had the promoters of the earlier turnpikes, both to provide a link line between the north-south trunk systems to the east and west of the country and to exploit the potential of the area. By this time the NER was beginning to regard Wensleydale as its own territory and was anxious to consolidate its position. Motivated by the desire to protect its interests from encroachment by rival companies, the NER promoted a scheme, which was enacted in July 1870, for the construction of a sixteen-mile line between Leyburn and Hawes. This was to connect with the Midland Company’s proposed six-mile branch line linking Hawes with the Settle-Carlisle line at Garsdale Head. Other proposals were put forward in the 1880s, 1890s and the early twentieth century, mainly intended to follow traditional routes southwards to the West Riding, but none of these were implemented.

The divergent fortunes of Wensleydale and Swaledale in the nineteenth century are at least in part attributable to the fact that Swaledale did not have a railway west of Richmond. The railway had reached Richmond as early as 1846 but, although schemes for a railway through Swaledale were promoted periodically from the 1840s to the twentieth century, none succeeded. The most promising scheme, for a light railway following the turnpike route from Richmond to Reeth, was put forward in the early twentieth century. This attracted substantial local support and proceeded as far as the granting of the Swaledale Light Railway Order in
Unfortunately the First World War intervened and, when the required capital could not be raised, the project was abandoned in 1922. As a result of the failure of these schemes to bear fruit, the people of Swaledale were obliged to cross the watershed and use the nearby Wensleydale line if they wished to avail themselves of the advantages of rail transport.

The promoters of the various railway proposals from the 1840s onwards insisted that the construction of a railway through Swaledale would considerably enhance the prospects both of the lead industry and of other sectors of the local economy. Undoubtedly, a railway would have benefited aspects of the economy and reduced the social isolation of the dale. However, as noted in Chapter 11 and as an examination of the impact of the railway in Wensleydale will show, it is unlikely that a railway in Swaledale would have prolonged, to any material degree, the life of the lead industry or have prevented the mass exodus of the dale's population.

IV

Construction of the NER Leyburn-Hawes line commenced in 1873 and was completed in late 1876. The estimated cost of construction was £192,847 but the final cost was some 21 per cent higher at £233,251. The final cost of the line, which was single track except at stations, was £14,578 per mile. This was considerably higher than the cost of the Bedale and Leyburn line which was between £7000 and £8000.
The cost was just within the £12,000 to £15,000 per mile maximum cost yardstick at which, in the mid-nineteenth century, it was estimated that rural branch lines would yield a reasonable return on capital.\(^7\)

Construction of the Midland branch, which was completed in 1878, was even more costly. Engineering difficulties and resultant delays, which had been a feature of the construction of the Settle-Carlisle line, led to escalating costs. It was estimated that the final construction cost of the six-mile branch exceeded the total cost of the sixteen-mile NER line.\(^7\) If true, the cost of the Midland branch may be conservatively estimated at £240,000 or £40,000 per mile for the single track line.

The construction of the Wensleydale line had a direct impact on the economy of the dale in terms of: land purchase and payment of compensation, which up to 31 December 1875 amounted to £11,029 for the NER line; the purchase of some construction materials locally (although most materials were imported into the area by the contractors); employment opportunities for local labour; and the spending power generated by the arrival of a substantial non-indigenous workforce.\(^7\)

The influx of the railway navvies into Wensleydale represented the first major immigration, albeit temporary, since the Norse settlement of the ninth century. The social impact on a community which hitherto had little day to day contact with the outside world must have been considerable. Although no record exists of the numbers of
labourers employed in the construction of the NER line, some indication can be gained from a comparison with the numbers employed on the Midland branch. The labour employed on the Garsdale section of the Settle-Carlisle line and the Midland branch lived in an isolated settlement near the Moorcock Inn, some six miles west of Hawes. In 1871, 142 railway labourers, some with dependants, lived in this largely temporary encampment. They were housed in ten wooden huts and an existing dwelling. The numbers resident in each building ranged from two to twenty-three people. A further twenty-two navvies lived elsewhere in the locality. In addition to navvies, the Moorcock encampment accommodated two blacksmiths, four stone masons, two wood sawyers and one engine driver, all employed in construction of the railway. Other craftsmen resident in the area were probably employed on the construction work but evidence does not exist to substantiate this assumption. The immigrant construction workers came from many parts of the country, as Table 14.7 demonstrates.

If it is assumed that the information in the Table is representative of the whole line, it is clear that the dale was not inundated by Irishmen, as the popular image of the navvy might suggest. The relatively low proportion of Irish navvies is consistent with the findings of D. Brooke, which show that only 1.3 per cent of a workforce of 2041 employed on the construction of the Settle-Carlisle line were of Irish birth. These statistics differ markedly, however, from those produced by J.A. Patmore in his study.
of Knaresborough navvies in 1851, which reveal that 26 per cent of the population studied was born in Ireland. This difference may be explained, as suggested by Brooke, by a general decline in the importance of Irishmen in the workforce in the later years of the railway building period.

TABLE 14.3

BIRTHPLACES OF LABOURERS RESIDENT AT THE MOORCOCK SETTLEMENT, 1871.

<table>
<thead>
<tr>
<th>Area</th>
<th>Number</th>
<th>%</th>
<th>Area</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wensleydale</td>
<td>23</td>
<td>16.2</td>
<td>S.W/S.E</td>
<td>36</td>
<td>25.4</td>
</tr>
<tr>
<td>Yorkshire</td>
<td>4</td>
<td>2.8</td>
<td>Wales</td>
<td>3</td>
<td>2.1</td>
</tr>
<tr>
<td>N.West/N.East</td>
<td>26</td>
<td>18.3</td>
<td>Scotland</td>
<td>9</td>
<td>6.3</td>
</tr>
<tr>
<td>E.&amp; W.Midlands</td>
<td>12</td>
<td>8.5</td>
<td>Ireland</td>
<td>14</td>
<td>9.9</td>
</tr>
<tr>
<td>E.Anglia</td>
<td>8</td>
<td>5.6</td>
<td>Not known</td>
<td>7</td>
<td>4.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>142</td>
<td>100.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: for convenience, classification is based on present day Economic Planning Regions.

Source: PRO, RG 10/4871, CEB, 1871, upper Wensleydale.

The birthplaces of dependants provide some indication of the high degree of mobility of the navvy, as exemplified in Table 14.4.

An impression of the numbers of navvies employed in Wensleydale can be gained by a projection based on the 164 workers employed in constructing the six miles of the Midland Branch. The total length of the Wensleydale line from Leyburn to Garsdale Head was twenty-two miles, of which the Midland branch represented a little over 27 per
TABLE 14.4

BIRTHPLACES OF ONE NAVVY AND HIS FAMILY RESIDENT AT THE
MOORCOCK SETTLEMENT, 1871.

<table>
<thead>
<tr>
<th>Person</th>
<th>Birthplace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railwy lab./hut keeper</td>
<td>Berkshire</td>
</tr>
<tr>
<td>Wife</td>
<td>Ireland</td>
</tr>
<tr>
<td>Child - 7 years</td>
<td>Essex</td>
</tr>
<tr>
<td>Child - 4 years</td>
<td>Middlesex (Holloway)</td>
</tr>
<tr>
<td>Child - 3 years</td>
<td>Middlesex (Hendon)</td>
</tr>
<tr>
<td>Child - 1 year</td>
<td>Leicester</td>
</tr>
</tbody>
</table>

Source: As Table 14.3.

cent. If it is assumed that the labour employed was in
direct proportion to the length of the line, approximately
600 workers may have been employed on railway construction
in Wensleydale in the mid-1870s. 80

From the foregoing estimate, a total annual wages bill has
been constructed (see Table 14.5). In the absence of
precise data, these figures are illustrative and must be
viewed with circumspection. However, the exercise is
justified in that it provides a basis for assessing the
economic impact of the navvies on Wensleydale.

Some of the wages of the navvies will have been spent in
the company shop where one existed and some will have been
saved or sent out of the dale. Making the conservative
assumption that one-third of the navvies' wages was spent
within Wensleydale, this would have represented an
additional annual injection of £12,840 into the economy of
the dale at the peak of construction in the mid-1870s. 81
This in turn would have stimulated local production and
employment. 82 Assuming an employment multiplier of 1.3, an
additional cash flow of £3,852 would have been generated which, with a local average annual wage of £18, would have had the potential of creating 214 new jobs in the area.  

TABLE 14.5  

ESTIMATED WAGES OF WENSLEYDALE NAVVIES.  

<table>
<thead>
<tr>
<th>Weekly wage per person¹</th>
<th>Annual wage per person</th>
<th>Total annual wages bill</th>
<th>£</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skilled wkrs. (120)²</td>
<td>31/-</td>
<td>81</td>
<td>9720</td>
</tr>
<tr>
<td>Unskilled wkrs. (480)²</td>
<td>23/-</td>
<td>60</td>
<td>28,800</td>
</tr>
<tr>
<td>Total Annual Wages</td>
<td></td>
<td></td>
<td>38,520</td>
</tr>
</tbody>
</table>

¹ Derived from a table of weekly wages for the period 1843 to 1869 for a major railway contractor's employees and quoted in T. Coleman, The Railway Navvies, 1965, repr. 1968, p67 and Coleman's subsequent comments on wage rates on the Settle-Carlisle construction.

² Based on unskilled workers constituting 80 per cent of the workforce, see T. R. Gourvish, Railways and the British Economy 1830-1914, 1980, p20.

Note: based on a 52 week year.

Approximately 16 per cent of the navvies at the Moorcock settlement were from Wensleydale. Projecting this percentage to the whole line would give a total of 96 local men employed on railway construction in the mid-1870s, a figure which is likely to be on the conservative side. Assuming a family-size multiplier of 4.7, this would suggest that the railway construction provided the principal livelihood for some 451 local people. This would represent 5.5 per cent of the 1871 Wensleydale population of 8176. If the same calculation is used for the
potential 214 new jobs mentioned above, a further 1006 local people, representing an additional 12.3 per cent of the 1871 population, may have gained their livelihood indirectly from the railway construction. The total of 1457 persons who may have gained their livelihood directly and indirectly from the railway construction represents 17.8 per cent of the 1871 population, a substantial proportion in a period when outward migration was already pronounced due to a general decline in traditional employment opportunities.

The NER line was opened between Leyburn and Askrigg on 1 February 1877 and extended to Hawes on 1 June 1878, after the Midland Company had completed the construction of Hawes Station. The Midland branch between Hawes and Hawes Junction at Garsdale Head opened on 1 October 1878, completing the link between the East Coast Route and the Settle-Carlisle line, and establishing for the first time good communication between Wensleydale and the rest of England (see Map 13).

The line was served by stations at Leyburn, Wensley, Redmire, Aysgarth, Askrigg, and Hawes. Hawes was a joint station, built by the Midland Company and manned by NER staff. There was also a small exchange station at Hawes Junction, which was later renamed Garsdale.

The newly-opened railway was not a major employer of local people. The railway staff were drawn generally from outside the dale and did not fit naturally into the hierarchy of rural life. As can be seen from Table 14.6,
the total number of railway employees at the six stations in the dale was never great.

<table>
<thead>
<tr>
<th>Designation</th>
<th>1861</th>
<th>1871</th>
<th>1881</th>
</tr>
</thead>
<tbody>
<tr>
<td>Station Master</td>
<td>-</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Railway Agent</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Clerk</td>
<td>1</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Porter</td>
<td>3</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Fireman/Stoker</td>
<td>2</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Engine Driver</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Signalman</td>
<td>-</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>Inspector</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Guard</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Railway Lab.</td>
<td>-</td>
<td>-</td>
<td>17</td>
</tr>
<tr>
<td>Platelayer</td>
<td>-</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>8</td>
<td>16</td>
<td>65</td>
</tr>
</tbody>
</table>

1 Excluding construction workers.
2 Leyburn station only.
3 It is probable that there were station masters at each of the six stations in 1881. The lower number may be due to inaccurate enumeration within the 'railway worker/labourer' category or to a temporary vacancy.
4 It is probable that some railway workers were returned simply as 'labourer' in the census returns and, consequently, the above table may be an under representation.

Source: PRO, RG 9/3669, RG 10/4869, RG 11/4874-6, CEB, 1861-81, upper and lower Wensleydale.

A detailed analysis of annual staff returns for Leyburn Station between 1870-1929 demonstrates both the changing structure of station personnel and the movement of wages (see Table 14.7).
TABLE 14.7

STATION STAFF AND WAGES AT LEYBURN STATION, 1870-1911.

<table>
<thead>
<tr>
<th>Year</th>
<th>Designation</th>
<th>Staff £</th>
<th>s</th>
<th>d</th>
<th>Staff £</th>
<th>s</th>
<th>d</th>
<th>Staff £</th>
<th>s</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>1871</td>
<td>St. M.</td>
<td>1</td>
<td>78</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>84</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Clerks</td>
<td>2</td>
<td>42</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>65</td>
<td>0</td>
<td>2</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>(pass.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clerks</td>
<td>1</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>42</td>
<td>9</td>
<td>4</td>
<td>83</td>
</tr>
<tr>
<td></td>
<td>(goods)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clerks</td>
<td>1</td>
<td>35</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>50</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(mins.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Porters</td>
<td>2</td>
<td>45</td>
<td>10</td>
<td>0</td>
<td>3</td>
<td>47</td>
<td>13</td>
<td>4</td>
<td>57</td>
</tr>
<tr>
<td></td>
<td>(pass.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Porters</td>
<td>1</td>
<td>44</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>40</td>
<td>6</td>
<td>0</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>(goods)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Guards</td>
<td>1</td>
<td>54</td>
<td>12</td>
<td>0</td>
<td>3</td>
<td>63</td>
<td>6</td>
<td>8</td>
<td>78</td>
</tr>
<tr>
<td></td>
<td>Signalm.</td>
<td>2</td>
<td>61</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>51</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pens.</td>
<td>1</td>
<td>19</td>
<td>10</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>8</td>
<td>365</td>
<td>6</td>
<td>0</td>
<td>16</td>
<td>824</td>
<td>14</td>
<td>8</td>
<td>18</td>
</tr>
</tbody>
</table>

1 Wages per person.
2 Leyburn was the terminus for the line until 1877.


Source: Pearson MSS, NER Leyburn Station Annual Traffic Returns (hereafter Pearson MSS, Annual), 1871, 1891, 1911.

In assessing the contribution which the earnings of railway employees made to the economy of the dale, it is possible to project the wages paid at Leyburn Station to produce a staff wages total for all Wensleydale stations in 1881. Further, by using other returns, estimates can be made of the wage bill for railway employees other than station staff (see Table 14.8).

The additional spending power generated within the dale by the above wage bill would not have been insignificant in an area where the living-in wage of agricultural workers...
ranged from about £15 per annum in the 1870s to about £20 per annum in the early twentieth century.**

**TABLE 14.8**

WAGES OF RAILWAY EMPLOYEES IN WENSLEYDALE, 1881.

<table>
<thead>
<tr>
<th>Leyburn (per person)</th>
<th>Total for W/d</th>
<th>£</th>
<th>s</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Station Master</td>
<td></td>
<td>78</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Clerks (av.)</td>
<td></td>
<td>47</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Porters (av.)</td>
<td></td>
<td>48</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Guards</td>
<td></td>
<td>64</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Signalmen</td>
<td></td>
<td>52</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>29</strong></td>
<td><strong>1567</strong></td>
<td><strong>0</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Railway employees</th>
<th>Total</th>
<th>£</th>
<th>s</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine Driver</td>
<td></td>
<td>92</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Platelayer</td>
<td></td>
<td>46</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Railway labs.</td>
<td></td>
<td>46</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>63</strong></td>
<td><strong>3223</strong></td>
<td><strong>0</strong></td>
</tr>
</tbody>
</table>

1 Total station staff and wages.
2 Total railway employees and wages. There were also two railway inspectors in 1881, whose salaries are unknown.


The employment of railway personnel in Wensleydale in the mid-nineteenth century meant that for the first time an appreciable number of workers in the locality were being paid at wage rates which were geared to regional and national rather than local levels. Compared with the wages of agricultural workers, those of the railway workers had the advantage of being consistently higher and more regular. However, the numbers employed on the railway were probably too low to affect wage rates in other employment within the dale.

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When the first railways were constructed in the early nineteenth century their promoters considered that, at best, they would be substitutive, taking over traffic which had formerly moved by road, sea and canal. It was quickly realized, however, that the facility which the railway afforded for the relatively cheap and rapid movement of goods and people could be creative and could lead to substantially increased levels of traffic. Wensleydale was no exception and the arrival of the railway stimulated a major increase in both passenger and goods traffic.

Once the railway opened it served not only the people of Wensleydale but also the neighbouring community in upper Swaledale. The day books of Francis Garth, a Swaledale farmer, illustrate the importance of the Wensleydale railway to local people. Before the line opened, Garth occasionally used the station (opened 1846) at Richmond in lower Swaledale, some twelve miles east of his home. In 1851 he noted attending the Great Exhibition, having caught the train at Richmond. He recorded the opening of the Wensleydale line to Askrigg in February 1877 and on 5th March of that year he took his first railway journey from Askrigg, which was his nearest station, to visit Darlington market. A few months later he travelled to London, spent a few days in Hampshire and then journeyed to Manchester before returning home. After the complete line was opened in 1878, Garth travelled extensively, particularly to
agricultural shows and markets as far afield as Northallerton, Darlington and Carlisle. Also, he visited London regularly and took his family for holidays to Harrogate, Scarborough, Bridlington, and Lytham St. Annes. Garth's day books provide a personal glimpse of the greatly increased mobility which rail transport made possible.

The Garth family was not alone in availing itself of the new mode of transport, as can be seen from Table 14.9.

Although the population of the area decreased steadily in the decades following the opening of the railway, passenger traffic on the combined NER/Midland Wensleydale line was maintained at a consistently high level, rising to 89,008 in 1911. The peak passenger level was attained in 1921

TABLE 14.9

<table>
<thead>
<tr>
<th>Year</th>
<th>Tickets Issued</th>
<th>Population W/d &amp; S/d</th>
<th>No. of Tickets per head of population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1871</td>
<td>14,481³</td>
<td>16,116</td>
<td>0.9</td>
</tr>
<tr>
<td>1881</td>
<td>85,275⁴</td>
<td>15,213</td>
<td>5.6</td>
</tr>
<tr>
<td>1891</td>
<td>85,191</td>
<td>12,361</td>
<td>6.9</td>
</tr>
<tr>
<td>1901</td>
<td>84,262</td>
<td>10,910</td>
<td>7.7</td>
</tr>
<tr>
<td>1911</td>
<td>69,008</td>
<td>11,093</td>
<td>8.0</td>
</tr>
</tbody>
</table>

³ At all six stations including Midland branch traffic (except 1871)
⁴ The population figures include some townships outside the study area but within the Leyburn station catchment area.

³ Only Leyburn station open.
⁴ 1880 figure and includes estimates for some NER stations.

and thereafter numbers declined rapidly in line with the national trend. The contribution of the Midland branch to the overall passenger traffic levels was always subordinate, averaging about 7500 passengers per annum in the decades up to 1920 and never rising above 10,000 in any year."

Detailed returns available for Leyburn Station between 1871 and 1911 illustrate the changing trends in numbers and categories of passenger tickets issued. Leyburn was the market town of the lower dale and handled approximately one-third of all the NER Wensleydale passenger traffic and one-quarter of the combined NER-Midland traffic on the Wensleydale line (see Table 14.10).

<table>
<thead>
<tr>
<th>Year</th>
<th>1871</th>
<th>1881</th>
<th>1891</th>
<th>1901</th>
<th>1911</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>13,678</td>
<td>94</td>
<td>17,891</td>
<td>76</td>
<td>16,199</td>
</tr>
<tr>
<td>Return</td>
<td>-</td>
<td>-</td>
<td>5,340</td>
<td>22</td>
<td>6,208</td>
</tr>
<tr>
<td>Exn.</td>
<td>803</td>
<td>6</td>
<td>493</td>
<td>2</td>
<td>1,611</td>
</tr>
<tr>
<td>Total</td>
<td>14,481</td>
<td>23,814</td>
<td>24,018</td>
<td>23,871</td>
<td>23,950</td>
</tr>
</tbody>
</table>

^1 Return tickets included in single category (designated 'ordinary') in 1871 return.

Note: Exn = excursion.

Source: Pearson MSS, Annual, op cit, 1871-1911.

Overall passenger traffic at Leyburn remained relatively stable throughout the period 1881-1911 before rising to a
peak immediately after the First World War. Thereafter the
number of passengers declined rapidly, in common with the
trend on the line as a whole. Nationally, passenger
traffic quadrupled between 1870 and 1912 and over the same
period traffic on the NER system tripled. Although
passenger traffic at Leyburn increased between 1870 and
1912, it did so by little more than 50 per cent. This
considerably lower rate of increase may be attributable
largely to continuing outward migration which resulted in
the population of the study area as a whole falling by over
35 per cent between 1871 and 1911.

A detailed categorization of tickets is available for
1911. In that year 2961 special-rate tickets were issued,
comprising 12 per cent of all tickets sold at Leyburn.
Some 96 per cent of all tickets issued were for third-class
travel, a similar proportion to the national average but
slightly lower than the 98 per cent figure for third-class
tickets issued on the whole NER network in that year.
Only 7 per cent of the tickets issued at Leyburn in 1911
were for travel on foreign networks. The Wensleydale line
was apparently very popular for travel within the dale, to
neighbouring villages, to local markets, to school and,
ome more occasionally, for travel beyond the dale for business
purposes, visits to district agricultural shows, day
excursions, and holidays. This is consistent with the
view that travel on branch lines tended to be predominantly
local.
While Wensleydale was not wholly inaccessible to the visitor prior to the arrival of the railway, access was very limited. Following the opening of Leyburn Station in 1856 the opportunities for exploring Wensleydale improved. There was a substantial increase in the number of visitors to the dale, a fact supported by evidence of the growth of a significant tourist trade. From the 1860s, guidebooks of the area proliferated, carrying many advertisements for hotels, boarding houses and conveyances to local beauty spots. In 1858, seeking to attract tourists further into the dale, an enterprising Hawes hotelier ran an omnibus from Leyburn Station to Hawes twice a week during the summer months. However, the venture was not a commercial success and in 1861 the service was terminated.

From 1856 many excursion trains were run into the dale from the North East. For example, on 14th August 1858 two special excursions arrived, one from Newcastle bringing about 100 visitors and the other from Darlington carrying about 200 members of Mechanics’ Institutes. In August 1860, 450 clerks and officials from railway stations on Tyneside arrived in Leyburn for the day. By 1864 cheap railway tickets were available for tourists from Tyneside to travel to Leyburn, departing Newcastle at 4.30 pm on Saturdays and returning from Leyburn at 6.05 am on Mondays.

When the Wensleydale line was completed in 1878, substantial numbers of visitors arrived for the first time.
in upper Wensleydale. The Midland Company immediately announced plans to provide 'frequent and cheap opportunities for the operative classes' of the West Riding to travel to the dale.\textsuperscript{103} In late August 1879 the Company ran two cheap excursion trains to Hawes, one from Bradford arriving with 600 passengers and the other from Leeds carrying 400 passengers.\textsuperscript{104} In 1884 one guidebook noted that travel in Wensleydale had been greatly improved with the arrival of the railway and that the journey time between Leyburn and Tyneside, Manchester, York and the West Riding was only between two and a half and three and a half hours.\textsuperscript{105} By the 1890s the NER was advertising cheap circular tours from Leeds to be run in conjunction with the Midland Company.\textsuperscript{106} Also, other possible connections were listed in an attempt to attract visitors from further afield. Interest in active outdoor recreation was growing nationally in the late nineteenth century and, in step with this new trend, cyclists and walkers were encouraged to visit the dale.\textsuperscript{107} Both the railway companies and local people recognized the potential benefits of tourism and sought to exploit this by improving local amenities and developing new facilities.

Returns of tickets collected at Leyburn commenced in 1912 and these provide some indication of incoming traffic. An estimate of total incoming passenger traffic for Wensleydale can be derived from the returns (see Table 14.11).
TABLE 14.11

TICKETS COLLECTED AT LEYBURN AND ALL WENSLEYDALE STATIONS, 1912.

<table>
<thead>
<tr>
<th>Year</th>
<th>Leyburn</th>
<th>NER W/d¹</th>
<th>Midland branch²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1912</td>
<td>41,839</td>
<td>144,272</td>
<td>12,970</td>
</tr>
</tbody>
</table>

¹ Estimates based on tickets issued at Leyburn as a percentage of tickets issued for the whole of the NER line including Leyburn.
² Estimates based on the proportion of tickets issued at Hawes to those issued at Leyburn.

Source: Pearson MSS, Annual, op cit, 1912.

In 1912, 10,960 return tickets were issued at Leyburn and, therefore, approximately one-quarter of the 41,839 tickets collected at Leyburn in that year may have been these return tickets. Of the remaining 30,879 tickets collected, some will have been single tickets handed in by local people who had departed from Leyburn (travelling on single tickets). Even assuming that all the 12,489 who purchased single tickets at Leyburn in 1912 subsequently returned to Leyburn on single tickets, this still implies that 18,390 visitors arrived at Leyburn Station.¹⁰⁸ If this figure is projected to the rest of the Wensleydale railway, including the Midland branch, an estimated 69,000 visitors arrived in the dale by train in 1912.¹⁰⁹

Assuming, conservatively, that each visitor spent one shilling per head in the dale in 1912, this would have generated a revenue from tourism in Wensleydale of £3000–£4000 per annum.¹¹⁰ As many visitors will have spent several days in the area, the total revenue from tourism is

481
likely to have been much higher. Although the above estimate can provide only an approximate guide it gives an indication of the financial importance of the tourist trade in Wensleydale at that time. Further, substantial indirect benefits will have accrued from tourism through improved productivity and employment opportunities in response to increased demand for accommodation, provisions, road transport to beauty spots and the souvenir trade. Due to its relative isolation, it would not have been possible for a tourism industry to develop to any significant degree in Wensleydale in the nineteenth and early twentieth centuries without the advent of the railway.

VII

From the time of the first railway proposals in the 1840s, residents and other observers had recognized the potential benefits which a railway would bring to the economy of the area. The editor of a local newspaper commented in 1845 that: in addition to the stimulation of the tourist trade, dairy products would be sold quickly to the industrial West Riding; manufacturers would establish businesses in the dale, providing work for local people; and the mineral wealth of the area would be exploited.111 This point was reiterated in the Darlington and Stockton Times immediately prior to the opening of the line.112

In 1877, in anticipation of the arrival of the railway, Hawes established a market for dairy produce and, in September 1878, following the construction of pens to
accommodate 10,000 sheep, a new sheep and lamb market.\textsuperscript{113}

Prior to the arrival of the railway, livestock had been moved laboriously on the hoof with an attendant loss of quality.\textsuperscript{114} The new railway facilitated the swift and efficient movement of fat cattle and sheep to the industrial areas, where they arrived in prime condition. Returns for Leyburn Station demonstrate the importance of the railway for the movement of livestock (see Table 14.12).

\textbf{TABLE 14.12}

\textbf{CATTLE HANDLED AT LEYBURN STATION, 1871-1911.}

\begin{tabular}{|c|c|c|c|c|c|}
\hline
Cattle & 1871 & 1881 & 1891 & 1901 & 1911 \\
\hline
Forwarded & 3715 & 4153 & 6098 & 3183 & 3894 \\
\hline
Received & 983 & 1354 & 3992 & 1748 & 2705 \\
\hline
Calves F & R & 19 & 299 & 609 & 214 & 430 \\
\hline
Total & 4717 & 5806 & 10,699 & 5145 & 7029 \\
\hline
\end{tabular}

Note: F & R = Forwarded and received.

Source: Pearson MSS, Annual, op cit, 1871-1911.

The numbers of cattle received at Leyburn, which were often in excess of 50 per cent of those forwarded, reflect its position as the lower dale market centre. These will have included animals sent short distances from within the dale as well as incoming cattle for fattening in the area. Cattle handled at Leyburn reached a peak of 10,699 in 1891. Thereafter, a decline in numbers ensued, followed by a
slight recovery in the early twentieth century. Cattle handled at Leyburn continued to decline after the war and reached a low point of 1897 in 1934 when the freight returns for Leyburn end. The decline in cattle movement by rail was established, therefore, prior to the First World War and before the full impact of motor transport was felt.

The decline in the number of cattle handled at Leyburn after 1891 reflects the decline in the number of cattle in the dale. As noted in Chapter 9, this was against the national trend and was due both to a shift from cattle fattening into more intensive dairy farming and to a positive move into sheep farming. Table 14.13 shows the numbers of sheep handled at Leyburn.

<table>
<thead>
<tr>
<th>Table 14.13</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHEEP HANDLED AT LEYBURN STATION, 1871-1911.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1871</th>
<th>1881</th>
<th>1891</th>
<th>1901</th>
<th>1911</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forwarded</td>
<td>9,751</td>
<td>12,643</td>
<td>16,177</td>
<td>18,668</td>
<td>18,756</td>
</tr>
<tr>
<td>Received</td>
<td>550</td>
<td>2,128</td>
<td>5,332</td>
<td>3,741</td>
<td>4,243</td>
</tr>
<tr>
<td>Total</td>
<td>10,301</td>
<td>14,771</td>
<td>21,509</td>
<td>22,409</td>
<td>22,999</td>
</tr>
</tbody>
</table>

Source: Pearson MSS, Annual, op cit, 1871-1911.

The number of sheep handled at Leyburn climbed erratically from 5044 in 1868 to reach a peak of 29,240 in 1907, followed by an equally erratic decline. The peak in the number of sheep handled at Leyburn and the establishment of the subsequent decline occurred,
therefore, as with cattle, before the arrival of motor transport. 117

Individual categories of livestock are not available for the Wensleydale stations apart from Leyburn but total livestock figures for the NER stations demonstrate a similar overall trend to that of Leyburn. From 1885, which is the earliest return available, numbers rose rapidly from 37,610 to a peak of 75,933 in 1909 and thereafter declined. 118

Livestock movement on the Midland branch rose steadily from an estimated 10,000 head in 1879 to 15,180 in 1914 and reached a peak of 25,898 in 1919. 119

Horses were carried by rail but numbers were generally small, except at Leyburn Station which served nearby Middleham, an important centre for racehorse training. 120

The total number of horses forwarded and received at Leyburn Station rose from 1251 in 1868 to 1539 in 1900 and, contrary to other livestock numbers, continued to rise until the late 1930s when the records end. 121

VIII

The opening of the railway directly influenced one major change in farming practice in Wensleydale which the speculators of the pre-railway days had not anticipated. As noted in Chapter 10, with the advent of a rapid transport system fresh milk could be sent from the Wensleydale farm to the urban consumer and, henceforth, other dairy produce played a supporting and not a dominant
role. The timely arrival of the railway provided the dale’s farmer with the means for survival when foreign competition was threatening traditional markets. The arrival of refrigerated ships carrying meat from New Zealand and North America in the 1880s and the increased imports of continental dairy produce were adversely affecting pastoral farmers by the late nineteenth century. The liquid milk market remained immune from foreign competition and the dale’s farmer was quick to capitalize on the natural protection which this market enjoyed. Wensleydales was not alone in this respect and many rural areas moved into large-scale liquid milk production at this time. Henry Rew in 1892 commented:

Every traveller by rail has noted the outward and visible signs of the expansion of this trade in the battalions of cans ... which daily come and go along all the country lines of railway.

The earliest reference to the movement of fresh milk from Wensleydale occurs in 1894, although probably milk had been sent by rail to the cities prior to this date. In 1894 milk was sent from Wensleydale via Northallerton to Newcastle-upon-Tyne, Sunderland, Darlington, Hull, York, and Leeds. By the turn of the century it was being forwarded also to other West Riding towns, to Lancashire and to the large depot at Finsbury Park for supply to London. The freight charge to farmers for the Lancashire traffic was 1s 11 1/2d per seventeen gallon.
Milk forwarded from the NER Wensleydale stations leapt from 27,000 gallons in 1899 to 118,584 gallons in 1901 and to 454,562 gallons in 1905. Because of the increase in demand, and the consequent need to process and distribute Wensleydale milk quickly and efficiently, a bottling depot was erected by the NER at Northallerton. This was let to the newly-formed Wensleydale Pure Milk Society (WPMS). Unlike their Welsh counterparts, the dale's farmers accepted the need to work through co-operatives to realize the potential which the railway offered for the export of both liquid milk and other dairy produce.

Within its first few years of operation the WPMS depot was sending milk to Tyneside, Teesside, the West Riding and London. Despite certain early financial problems, the Society thrived and by 1907 the WPMS milk accounted for over £1800 of the total NER milk traffic revenue of £15,000. In 1911, with the encouragement of the NER, the Wensleydale Farmers' Association was established at Redmire and a dairy was constructed adjacent to the railway at Redmire Station.

Following the establishment of the WPMS, milk traffic from the stations on the Wensleydale line rose dramatically and by 1911 759,763 gallons were being forwarded annually from Wensleydale to the WPMS. In addition substantial quantities of Wensleydale milk were being forwarded direct to urban markets. The Redmire co-operative, which had fifty members in 1911, was run in conjunction with the WPMS.
until it ceased trading in 1931.$^a$

Although there are no detailed accounts concerning milk sent from the Wensleydale stations in the period under study, accounts do exist for milk sent from Askrigg in the early 1930s which illustrate the scale of this traffic. In the mid-1920s thirteen farmers and two local dairies were forwarding their milk daily and paying on a monthly account.$^a$ Table 14.14 shows the number of farmers with monthly accounts in the early 1930s and the destination of the milk.

<table>
<thead>
<tr>
<th>Year</th>
<th>Farmers</th>
<th>Destinations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Leeds</td>
</tr>
<tr>
<td>1930</td>
<td>22+1$^1$</td>
<td>21,683</td>
</tr>
<tr>
<td>1931</td>
<td>22+1$^1$</td>
<td>15,614</td>
</tr>
<tr>
<td>1932$^2$</td>
<td>-$^3$</td>
<td>9,120</td>
</tr>
</tbody>
</table>

$^1$ Mason’s dairy, Askrigg.
$^2$ For the sake of comparison figures are projected for the whole year, although from 1 October all milk was sent by road to Appleby.
$^3$ Not recorded.

Source: Bell MSS, LNER Milk Accounts Ex Askrigg, 1925-33.

Information also exists for the milk traffic at Leyburn between 1909 and 1939 and this provides a further indication of the importance of liquid milk in the agricultural economy of the dale (see Table 14.15).
TABLE 14.15

MILK FREIGHT AT LEYBURN STATION (IN GALLONS), 1909-39.

<table>
<thead>
<tr>
<th></th>
<th>1909</th>
<th>1914</th>
<th>1919</th>
<th>1924</th>
<th>1929</th>
<th>1934</th>
<th>1939</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non</td>
<td>13,484</td>
<td>37,100</td>
<td>184,470</td>
<td>259,233</td>
<td>345,875</td>
<td>38,865</td>
<td>3,227</td>
</tr>
<tr>
<td>WPMS</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>41,094</td>
<td>102,275</td>
</tr>
<tr>
<td>Total</td>
<td>386,969</td>
<td>141,140</td>
<td>3,367</td>
<td>38,865</td>
<td>3,227</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Estimated.
2 1920 figure.
3 In thousands.
4 Not recorded.

Note: the exceptionally low figure for non-WPMS milk in 1934 may be due to an incorrect return (1935 = 162,981 Non WPMS milk and 101,402 WPMS milk = total of 264,383 gallons).


The amazing increase in milk traffic at Leyburn in 1939 was due mainly to the diversion of most of the upper dale milk from Appleby to the new Express Dairy at Leyburn (opened 1937). 137

For much of the life of the line a substantial volume of milk was forwarded westward over the Midland branch but detailed information is not available to quantify this traffic. 138

The new liquid milk industry had an important impact on the economy of the dale. The price of milk fluctuated greatly in the early twentieth century and, on occasions, farmers were able to command high prices for their milk, particularly from city buyers who bought direct from the farm. However, the sale of milk on the open market involved a certain amount of risk and many farmers
preferred the comparative security of contracts with the WPMS and other local outlets. In 1907 the WPMS was paying 7 1/2d per gallon. In that year 570,241 gallons were forwarded from Wensleydale on the NER line, of which 370,882 gallons were destined for the WPMS. Based on the WPMS price, the total milk forwarded would have produced revenue of £17,820.

Although liquid milk became of primary importance to the dale’s dairy farmer, as noted in Chapter 10, other dairy produce was not totally eclipsed. There is some indication that, particularly before the rapid expansion into liquid milk in the late nineteenth century, the production and forwarding of cheese and butter was substantial.

The impact of the Wensleydale railway on dairy production in the area was, therefore, considerable, not only in enabling a liquid milk industry to be established but also in assisting the transportation of other dairy produce.

IX

The Wensleydale railway had a major influence on the rapid development of stone quarrying within the dale (see Chapter 12) and, as with the tourist trade and milk production, its impact was creative rather than substitutive. In contrast the railway had a negative impact on the local coal industry by facilitating the easier importation of good quality coal.

Even in the eighteenth century large quantities of superior coal were carted into the dales from the Bishop
Auckland area of Durham some thirty miles away. By the early nineteenth century demand in the dales was such that coal was brought daily from Durham in carts or on donkeys. The trade from Durham increased during the nineteenth century as demand from domestic and industrial users grew in line with the generally falling price. However, until the railway reached the area imported coal remained relatively expensive and it was usually mixed with the inferior local coal by domestic users. Table 14.16 shows the price movement of imported coal in Wensleydale and Swaledale and at London Dock Side. Because of the isolation of the dales prior to the railway, the price of Durham coal remained high and in the mid-1840s, when coal was being sold at 27s a ton in upper Wensleydale, some local people claimed that they were being overcharged and that rail access would reduce the price to ten or twelve shillings a ton. The arrival of the railway at Richmond in 1846, at Leyburn in 1856 and at Hawes in 1878 meant that for the first time south Durham coal could be transported into the area easily. After the railway reached Richmond, the dales enjoyed lower coal prices than London. Although Swaledale did not have a railway throughout the dale, substantial quantities of Durham coal were transported into the dale after the opening of Richmond station. The consumption of imported coal in Swaledale further increased after 1878 when many upper Swaledale people bought coal from the Wensleydale stations.
TABLE 14.16

IMPORTED COAL PRICES¹

<table>
<thead>
<tr>
<th>Year</th>
<th>Place</th>
<th>Price</th>
<th>London²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1821</td>
<td>Richmond</td>
<td>35s</td>
<td>32s</td>
</tr>
<tr>
<td>1846</td>
<td>Wensleydale</td>
<td>27s</td>
<td>16s10d</td>
</tr>
<tr>
<td>1852</td>
<td>Richmond</td>
<td>8s</td>
<td>15s5d</td>
</tr>
<tr>
<td>1854</td>
<td>Richmond</td>
<td>14s</td>
<td>22s8d</td>
</tr>
<tr>
<td>1860s</td>
<td>Leyburn</td>
<td>10s-15s</td>
<td>16s6d</td>
</tr>
<tr>
<td>1878³</td>
<td>Hawes</td>
<td>15s</td>
<td>16s10d</td>
</tr>
<tr>
<td>1878⁴</td>
<td>Hawes</td>
<td>10s 10d</td>
<td></td>
</tr>
<tr>
<td>1880</td>
<td>Wensley</td>
<td>10s</td>
<td>14s11d</td>
</tr>
</tbody>
</table>

¹ Per ton.
² Price of best coals at London Dock Side.
³ Prior to the opening of the railway west of Leyburn.
⁴ Following the opening of the Wensleydale line to Hawes.

Source:
Local Prices
1821 - C. Clarkson, The History of Richmond, 1821, p.409.
1846 - HLRO, Minutes of Evidence, HC, 1846, Vol 9, LMNJ, evidence of Capt. Lawes, p.156.
1852 - Richmond and Ripon Chronicle, 8 December 1860.
1854 - Ibid.
1878 - Bedale and Northallerton Times, 24 and 31 August 1878.

The reduction in the price of coal following the arrival of the railway at Richmond and Leyburn did not meet local expectations and there were complaints about the high prices. The dales' people, having been used to local coal prices, failed to recognize that the price of imported coal was affected by national factors. For example, when the price of coal in Richmond rose from 8s per ton in 1852 to
14s per ton in 1854 the railway company was accused of over pricing. In fact the price rise reflected the national trend (see Table 14.16). In the mid-1860s prices generally moved down and in lower Wensleydale the price of coal at Leyburn ranged between 10s and 15s per ton. Prior to 1st August 1878, good quality coal was sold at Hawes at 9d per hundredweight. Within days of the opening of the railway increased competition led to a marked fall in prices and St. John's Normanton coal was being sold at 6 1/2d per hundredweight including delivery within Hawes. In 1879, when 1847 tons of coal were imported into Hawes via the Midland Railway, this would have represented an immediate saving to the local population of £385. It is likely that other settlements along the Wensleydale line enjoyed similar savings.

Coal freight on the Wensleydale line was substantial in the late nineteenth and early twentieth centuries and detailed returns for Leyburn, set out in Table 14.17, provide an indication of the scale of this traffic.

<table>
<thead>
<tr>
<th>Year</th>
<th>1871</th>
<th>1881</th>
<th>1891</th>
<th>1901</th>
<th>1911</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12,194</td>
<td>6016</td>
<td>5493</td>
<td>5009</td>
<td>5661</td>
</tr>
</tbody>
</table>

1 In tons, three year moving average.
2 Leyburn handled coal for the upper dale before 1877.

Source: Pearson MSS, Annual, op cit, 1871-1911.

Between 1881 and 1911 there was a fall in the tonnage of
coal arriving at Leyburn Station. Coal received on the whole of the NER Wensleydale line followed a similar trend. From 13,184 tons received in 1885 this traffic declined to 10,923 tons in 1901, recovered to 12,719 tons in 1911 and subsequently underwent a sustained decline. This trend is contrary to that on the rest of the NER network where coal freight more than doubled between 1871 and 1912. Coal was received at Hawes over both the NER and Midland networks. In the late nineteenth century an average of about 1900 tons per annum was received at Hawes via the Midland network. This traffic fluctuated at a somewhat lower level in the early part of the twentieth century before undergoing the same sustained decline as was experienced on the NER line. As most of the coal arriving in Wensleydale was for domestic use it is probable that the downward trend reflects the decline in population as much as the adoption of other forms of fuel.

Miscellaneous goods traffic on the Wensleydale line increased dramatically in the years following the opening of the line. Total goods traffic for the whole line rose to a peak of 26,732 tons in 1898 before settling to an average of about 21,000 tons per annum prior to the First World War. Returns available for Leyburn demonstrate the importance of the railway for the transport of miscellaneous goods, as shown in Table 14.18.
TABLE 14.18

MISCELLANEOUS GOODS HANDLED AT LEYBURN STATION, 1870-1910.¹

<table>
<thead>
<tr>
<th>Year</th>
<th>1870²</th>
<th>1880</th>
<th>1890</th>
<th>1900</th>
<th>1910</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fd.</td>
<td>3172</td>
<td>1102</td>
<td>2041</td>
<td>1451</td>
<td>1116</td>
</tr>
<tr>
<td>Rd.</td>
<td>7354</td>
<td>4486</td>
<td>3539</td>
<td>4337</td>
<td>5012</td>
</tr>
</tbody>
</table>

¹ In tons. Although the method of categorizing goods changed during this period, the detail of the Leyburn returns makes it possible to achieve a close degree of comparability.

² Before 1877 Leyburn handled goods for the upper dale.

³ Goods forwarded.

⁴ Goods received.


In addition to greatly facilitating the export of dales' produce the railway served a vital role in assisting the import of essential commodities, thereby improving the quality of dales' life and enabling the area to compete more effectively with other parts of the country. As Table 14.18 shows, the tonnage of goods received at Leyburn was consistently greater than that forwarded.

The facility which the railway afforded to the farming community for the import of fodder and other farm requisites was invaluable in enabling the agricultural economy to respond to change. Invoices of goods received at Aysgarth in April 1877, shortly after the line opened, illustrate the quantity and type of goods imported.¹⁶ A variety of agricultural products, including feedcake, hay, straw, manure, bones and phosphate soda were received.¹⁶⁷ Corn was imported, of which a substantial amount was consigned to Yore Mill, Aysgarth and was subsequently
exported as flour. Apart from agricultural products arriving at Aysgarth in April 1877, the railway facilitated the import of building materials, such as bricks and Welsh slates which hitherto had not been used to any great extent in the dales. Domestic provisions and manufactured goods were more easily accessible. For example, in April 1877 Aysgarth received large quantities of beer from Bass at Burton-on-Trent and such luxuries as sea fish could be purchased for the first time in the dale.\textsuperscript{139}

Commodities were received in Wensleydale not only from the furthest parts of the British Isles but also from abroad via the ports of the north. For example, cider was sent from Leominster, salt from Northwich, Welsh slates from Bangor, Llangollen and Dolgellau, Westmorland slates from Windermere, concrete blocks from Lancashire, cement from the Midlands, sanitary pipes from Castleton, soot from Glasgow and Edinburgh, basic slag from Middlesbrough, iron and steel from Teesside, and deals, battens and boards from Hartlepool.\textsuperscript{139}

The wide availability of imported goods was not an unequivocal advantage. As noted in Chapter 3, the number of craftsmen in the area declined towards the end of the century and some local industry suffered.\textsuperscript{140} However, the advantages of the railway decisively outweighed its disadvantages for the majority of the dale's people.

XI

It is not possible to quantify precisely the impact which
the railway had on the economy and society of Wensleydale and upper Swaledale. In general terms the railway opened up the dale to the mainstream influences of Victorian England and, conversely, gave the dales people and their produce greatly improved access to the nation at large. Specifically, the railway laid the foundations for the modern tourist industry, assisted agriculture to adapt to changed circumstances and markets thereby enabling it to survive periods of depression, and provided essential support to other traditional and new industries. It is clear that the railway did not achieve its peak impact on all sectors of the economy at the same time. Indeed, passenger traffic and the various categories of freight traffic reached their peak levels at markedly different times as is demonstrated in Table 14.19.

TABLE 14.19
PEAK USAGE OF THE WENSLEYDALE RAILWAY BY PASSENGERS AND FREIGHT.

<table>
<thead>
<tr>
<th></th>
<th>1877-1900</th>
<th>1901-1925</th>
<th>1926-1954</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheep</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper dale stone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goods</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower dale stone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leyburn racehorses</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

By 1875 over 70 per cent of the final route mileage in the country had been built. This meant that the dales were already at a disadvantage in competing with other rural areas which were served by railways earlier in the
century. However, it could be argued that between the 1840s and the 1870s, a period when the national economy was generally buoyant, the dales did not suffer too greatly from the lack of a railway. On the contrary, the absence of a railway meant that certain elements of the local economy, such as crafts and services, were not threatened by competition and as a result the local community remained relatively intact. The Wensleydale railway was opened at the beginning of a period when the dales, along with other areas, were starting to suffer from falling prices and when, in order to survive, they required improved transport facilities to enable local industries to compete in the wider market place.

Unfortunately, despite the considerable boost which the railway gave to the dales' economy and the improvement which it brought to the quality of life of the dales' inhabitants, its positive impact was not sufficient to reverse the sustained decline in population which set in after 1861. In fact, the railway had the paradoxical effect of assisting the dales' economy whilst at the same time, by increasing mobility and extending awareness of the outside world, facilitating the decline of craft industries and depopulation.

The Wensleydale railway, although not bringing industrialization into the area, enabled the dales to participate in the industrialization process both as a producer (quarrying and milk etc) and as a consumer (coal and mass-produced goods).
To what extent was the Wensleydale line commercially viable and profitable to the NER and Midland Companies? In the absence of complete details of all capital costs and all revenue receipts and expenditure, and without carrying out a full financial appraisal, it is not possible to answer this question with any precision. It would appear, however, that certain classes of traffic, such as passengers, minerals and milk, far exceeded expectations and at times may have rendered the line profitable. Bearing in mind that protection of territory rather than profitability was the prime motive for construction of the line, it would certainly seem that, overall, the line performed rather better than anticipated at the time the decision was taken to proceed with the undertaking. Nevertheless, as a branch line (it was never used effectively as a link line) in a relatively remote rural area, the line cannot have been more than occasionally profitable and, over its full lifespan, cannot have provided an acceptable return on the capital invested. This would have been particularly true of the Midland branch.

XII

The traditional communications network of Wensleydale and Swaledale, comprising local roads, drove roads and jagger routes, evolved naturally in response to the requirements of agriculture and lead mining, the area's two main industries, and to the social needs of the local
communities. The impetus for the introduction of improved communications, initially turnpikes and later railways, came largely from non-local people who were motivated by interests other than the development of the dales' economy. The principal turnpike in the area, the Richmond to Lancaster, was developed primarily as a through route between Lancashire and the North East. Similarly, the only railway in the two dales was constructed largely as the result of competition between two railway companies. Nevertheless, the development of improved transport infrastructure was of great benefit to the dales' economy. The construction of the railway was particularly important as it enabled the inhabitants of Wensleydale, and to a lesser extent those of Swaledale, to withstand the late nineteenth-century depression. The railway made it possible for the dalesman to maintain profitable farming and to develop other industries based on local raw materials. This enabled the dales' community to enter the twentieth century diminished in size but essentially intact.
NOTES - TRANSPORT.


6 Ibid, p80.

7 Barker MSS, 2/5/1-5, Garth Day Books, 1795-1904, passim.


Darlington and Stockton Times, 2 March 1907.

HLRO, Minutes of Evidence, HC, 1846, Vol 70, YGU, evidence of M. Milburn, p17; LMNJ, op cit, evidence of Col. Wood, pp121,123; SWL, op cit, evidence of C.E. Coleridge, p5; Raistrick, op cit, pp120-1; additional information from Reeth Folk Museum.


Hartley et al., op cit, pp11-13; Arthur Young, who was inclined to suggest turnpiking in the most unlikely places, advocated turnpiking on the watershed between upper Wensleydale and Swaledale. He considered that it would enhance access so that the land could be improved thereby increasing the wealth of the area. The scheme was totally impractical and predictably the advice was not acted upon, Young, op cit, Vol II, p187.

HLRO, Committee Books, Private Bills, HL, 24 April 1751, Richmond to Lancaster Road Bill; Hartley et al, op cit, p11.


HLRO, Committee Books, Private Bills, HL, 6 & 15 May 1795, Richmond to Lancaster Road Amendment Bill; Hartley et al, op cit, p11.


BPP, 1821, IV, SC appointed to consider Acts now in force regarding Turnpike Roads and Highways in England and Wales, p137. These details pertain to the section of the
road from Widdale Foot near Hawes to Lancaster. No
information is available for the Wensleydale section.

20 This declared debt was in respect of forty-one of the
sixty miles of road and undoubtedly other sections also
carried a debt, Ibid, pp137,252; HLRO,1795, op cit, 15 May.

21 B.R. Mitchell and P. Deane, Abstract of British Historical

22 The tollgate keepers were originally employed on a
salaried basis but by the 1840s the turnpikes were let to
the highest bidder, Wensleydale Advertiser, 9 April 1844.
Where tolls were let in this way the toll-gate keeper would
expect receipts to show a reasonable profit after payment
of rent. For example, the rent of a toll gate at Bowes was
£80 and receipts were: 1842 - £115 4s, 1843 - £131 4 6d,
1844 - £126 11s, 1845/6 (50 weeks only) - £109 9s, HLRO,
Minutes of Evidence, HC, 1846, Vol 70, Y-C, evidence of
George Heslop, p10.

23 Ibid; There are some details of tolls for 1756 on the
Richmond to Lancaster road. For example, cattle 1Od per
score, sheep 5d per score, laden horses 1d, and three- and
four-horse carriages 6d, Hartley et al, op cit, p14.

24 Ibid.

From this date the turnpike roads in the area were
gradually taken over by the District Highway Boards,
Hartley et al, op cit, p16.


27 Jennings, op cit, p206.

503
Ibid, p208.
Hartley & Ingilby, 1953, op cit, p108.
C. Clarkson, The History of Richmond, Richmond, 1821, p411; NYCRO, QDP(m) 6/25, Richmond-Reeth Turnpike, 1835; HLRO, Committee Books, Private Bills, HL, 25 March 1836, Vol 2, Richmond and Reeth Road Bill; Fieldhouse & Jennings, op cit, pp459-60.
Clarkson, op cit, p411.
Ibid.
HLRO, 1836, op cit.
Ibid.
Aldcroft & Freeman, op cit, p59.
Ibid, p57.
Wensleydale Advertiser, 5 November 1844. There is no indication as to why the Exmouth Coach Company was operating in Wensleydale.
Ibid.
Ibid, 24 June, 8 July, 18 November 1845, 9 June, 24 November 1846.
E.R.Kelly(ed), Post Office Directory of Yorkshire: North and East Ridings of Yorkshire, 1857, p1459; - 1879, p244;
Richmond and Ripon Chronicle, 10 April 1858, 5 March 1859, 22 September, 1860.

43 Jennings, op cit, p205.

46 Ibid; David Hey notes that many carriers in north Derbyshire and south Yorkshire worked only part-time and that farming was their main occupation, op cit, pp205,229. This appears to have also been the situation in Wensleydale and Swaledale.

49 Wensleydale Advertiser, 1844-8, passim; additional information relating to the early twentieth century supplied by the late T.C.Calvert and E.Cooper; Everitt, op cit, p185.
50 Ibid, p180. The railway companies also employed carriers in Wensleydale to carry goods to and from the station, PRO, RAIL 527/732,742-3, NER Printed Agreements, Vols 10, 20-1, agreements with Henry Kilding, Leyburn for delivery and collection of parcels, 1898, 1908-9.
51 Kelly,1857, op cit, pp1270,1408,1459.
53 Ibid.
54 G.Spencer, Guide to Swaledale and Arkengarthdale,
Richmond, c1912, p27, comments that carriers were numerous in Swaledale.

This phenomenon has been noted elsewhere, Everitt, op cit, pp185-6.


Ibid, pp38,44-5.


Gourvish, op cit, p13.

P.S. Bagwell, The Transport Revolution from 1770, 1974, p95.


A detailed discussion of these proposals can be found in C.S. Hallas, The Wensleydale Railway, Clapham, 1984.


HLRO, Minutes of evidence, HC, 1865, Vol 57, SWL, 506

Parris, op cit, pp224-5.

Hallas, op cit, pp15-18.

Ibid; Barker MSS, 3/13, Miscellaneous Notes of Adam Barker, 1848-1870. In 1869 Barker records attending a meeting about the construction of a railway in Swaledale. He gives details of estimated cost.

Hallas, op cit, p18. The NER agreed to supply the rolling stock, PRO RAIL 527/391, Proposed Swaledale Light Railway, 1911.

The Wensleydale Advertiser, 24 June 1845; HLRO, S-C, op cit, evidence of Lord Wharncliffe, pp10-12.

The Darlington and Stockton Times, 22 February 1873, stated that the building of the line had not commenced. The Richmond and Ripon Chronicle, 1 November 1873, reported that the construction was well under way; Darlington and Stockton Times, 22 July 1876, 3 February 1877; Yardley MSS, NER Reports of Directors, Engineers' Reports, 13 August 1875, 18 February 1876.


Parris, op cit, p148.

E. D. Chattaway, Railways, their Capital and Dividends etc 1855-6, p130, quoted in Parris, op cit, p130; D. Thomas, The
The debate on return on capital invested in railways has been re-examined recently by R.J. Irving. He contends that return on capital was higher than formerly assumed, R.J. Irving, 'The capitalisation of Britain's railways 1830-1914', JTH, 3rd ser., 5, 1984, pp3-4.

Bedale and Northallerton Times, 10 August 1878.

Yardley MSS, op cit, 31 December 1875. Additional information supplied by M. Weatherald, a director of the local building firm which had the contract for the maintenance of the stations on the line.

PRO, RG 10/4871, CEB, 1871, upper Wensleydale. It appears that most of the construction of the Midland branch did not proceed until work on the main Settle-Carlisle line was almost complete. At this date, therefore, these numbers probably relate to those building the main line. However, in the absence of other data it is reasonable to assume that this settlement which belonged to the same contractor who built the branch and which was situated near the proposed line, continued to supply labour when work commenced on the branch line, probably in 1873/4. There is some evidence that additional navvies may have lived at Hawes, Bedale and Northallerton Times, 13 July 1878 and 8 February 1879. The numbers here are, therefore, probably an under-estimate.

D. Brooke, The Railway Navvy, Newton Abbot, 1983, pp26,189, Brooke's figures do not include the navvies at the Moorcock settlement. For a further discussion of the


Such indications as exist appear to suggest that the sixteen-mile NER Leyburn to Hawes line and the six-mile Midland Hawes to Garsdale Head line took approximately the same time to construct i.e. two and a half to three years. After making allowances for the clear differences in the rate and cost of construction per mile between the two lines, it is speculated that the labour force at any one point in time would have been more or less in proportion to the lengths of the two lines.

81 It is probable that a higher proportion of the wages of the NER navvies was spent in the locality, as the NER line passed through villages at approximately four mile intervals and, therefore, local services may well have been used by the navvies.

82 Local people were not slow to take advantage of the influx and on occasions charged inflated prices, Bedale and Northallerton Times, 8 February 1879.

83 The employment multiplier is drawn from modern economics. It has been assumed that it is appropriate to a labour-intensive occupation such as railway construction.

84 PRO RG 10/4868-71, CEB, 1871, upper and lower Wensleydale.

85 Bedale and Northallerton Times, 10 August and 28 September 1878.

86 PRO RG 10/4868-71, RG 11/4873-6, CEB, 1871-81, upper and
lower Wensleydale; oral sources.

97 Barker MSS, 2/5/4-6, Garth Day Books, 1848-1936.


99 Barker MSS, 2/5/1-6, op cit, 1795-1936, passim.


93 Pearson MSS, op cit, 1870-1912.

94 Dyos & Aldcroft, op cit, p200; Irving, op cit, p296.

95 Barker MSS, op cit, 2/5/4-6; and local oral tradition.


97 For a detailed list see Hallas, 1984, op cit, p72.
Richmond and Ripon Chronicle, 10 April 1858.

Ibid., 2 March 1861.

Ibid., 14 August 1858.

Ibid., 18 August 1860.


Bedale and Northallerton Times, 6 September 1879.

Late G. Hardcastle, *Wanderings in Wensleydale*, 1864, revised C. Horner, 1884, p54.


A. E. Harrison, 'The Competitiveness of the British Cycle Industry 1890-1914', EcHR, 2nd ser., XXII, 1969, p288. The cycle industry enjoyed a boom in the mid-1890s and, because of the railway, Wensleydale was able to gain a greater advantage from this boom than would otherwise have been the case.

Pearson MSS, Annual, op cit. Some of these will have been from other stations in the dale but for the purposes of the present exercise all are regarded as visitors from outside the dale. The basis of this calculation is not unreasonable because the resultant over-estimate of visitor numbers will, to a large extent, be compensated for by the assumption that all persons purchasing single tickets at Leyburn subsequently returned to Leyburn by rail.

Tickets collected at Leyburn represented 26.6 per cent of the tickets collected on the whole line. This same
proportion has been used to estimate the number of visitors arriving on the whole line.

For example, in the late nineteenth century an album of Wensleydale photographs was 6d, and a day’s membership of Hawes Golf Club was 1s, Borough Guides, Upper Wensleydale, Askrigg, c1900, p7.

The Wensleydale Advertiser, 24 June 1845.

Darlington and Stockton Times, 22 July 1876.

Ibid, 17 February 1877; Bedale and Northallerton Times, 7 September 1878.


For further details see Hallas, 1986, op cit, p35.


However, it was only after 1931 with increasing use of motor lorries that numbers of sheep handled at Leyburn fell dramatically from 17,346 in 1931 to 4347 in 1934, Pearson MSS, op cit, 1911-1934. Sheep and cattle movement on the railway fluctuated according to the time of year. The busiest period was during the autumn sheep and cattle fairs, Pearson MSS, NER Leyburn Station Summary of Monthly Totals, (hereafter Pearson MSS, Monthly), 1868. For further details see Hallas, 1986, op cit, p37.

PRO RAIL 527/2146,2179, NER Station Traffic Index and
op cit., 1885-1919.

119 PRO RAIL 491/671-2, 674-5, op cit, 1879-1919.

120 For example, in 1899 only 492 Horses, Carriages and Dogs were forwarded on the NER line excluding Leyburn. PRO RAIL 527/2166, NER Station Traffic Receipts, 1899.

121 Pearson MSS, Annual, op cit, 1868-1934.


124 PRO, RAIL 527/290, NER Minutes and Reports; Report on Milk Traffic, 1905.

125 Bell MSS, NER Rate Book for perishable merchandise by passenger train or similar service, Askrigg, 1892, (hereafter Bell MSS, Askrigg Rate Book) used with updates until the early twentieth century; letter re milk traffic from Askrigg to Liverpool, 1899. The growth of rail-borne milk to London has been discussed elsewhere, although with no mention of Wensleydale milk; see E.H.Wheatham, 'The London Milk Trade 1860-1900', ECHR, 2nd ser., XVII, 1964-5, pp369-80, and The London Milk Trade 1900-1930, Reading, 1970; D.Taylor, 'London's Milk Supply, 1850-1900: A Reinterpretation', AH, 45, 1971, pp33-38, and - 'The English Dairy Industry, 1860-1930: The Need for a Reassessment', AHR, 22, 1974, pp153-9. Taylor makes the point that the years 1890-1910 were not characterized by

126 Bell MSS, Askrigg Rate Book, op cit, 1892.
127 PRO RAIL 527/1273, Miscellaneous Documents relating to the WPMS Depot, includes Report on the WPMS Depot, 1908.
128 PRO, RAIL 527/290, op cit, 1905.
130 PRO, RAIL 527/1273, op cit, Report on the WPMS Depot, c1906.
131 Ibid, Report on the WPMS Depot, 1908, Total milk from Wensleydale in 1907 accounted for £3117 of NER milk traffic revenue.
132 PRO, RAIL 527/745, Agreement between NER and Wensleydale Farmers' Association Ltd, 26 October 1911.
133 PRO, RAIL 527/391, NER Goods Dept. District Officers Report 1911. In 1911 there were 30 members of the WPMS and 50 members of the Wensleydale Farmers Association.
134 Bell MSS, op cit, 1899; T.C. Calvert, *Wensleydale*


136 Bell MSS, LNER Milk Accounts ex Askripp, 1925-33.

137 Information supplied by R.V. Slack. For further details see Hallas, 1986, op cit, pp39-40.

138 Bell MSS, Askripp Rate Book, op cit, 1892; additional information supplied by the late T.C. Calvert.

139 Calvert, op cit, p15; additional information supplied by the late T.C. Calvert.

140 PRO, RAIL 527/1273, op cit, Report on the WPMS Depot, 1908.

141 Daykin MSS, NER Telegraphs to Askripp, complaints from Stockton and elsewhere re consignments of cheese, 1881; Bell MSS, Aysgarth Invoices, April, 1877, (hereafter Bell MSS, 1877); a substantial number of empty butter boxes were received from Bradford station; Moore MS, NER Traffic Details, c1905; the train due to depart Hawes at 3.25 pm on Tuesdays (market day) was instructed to wait until the butter was ready. Additional information supplied by the late R. Hugill, former dairy manager, Askripp.

142 H. Speight, Romantic Richmondshire, 1897, p391.

143 C. Clarkson, op cit, p409.

144 Speight, op cit, p391; W. White, History, Gazetteer & Directory of the East and North Ridings of Yorkshire, Sheffield, 1840, p35.

145 HLRO, 1846, LMNJ, op cit, evidence of Capt. Lawes.

\[\text{Barker MSS, 2/5/2, op cit, 2 November 1846, Garth sent his men for coal from Richmond railway depot and thereafter they frequently collected coal from Richmond. For example, 1846, - 5,15,23 December, 1847, - 23 January, 20 March, 10 April, etc. However, men were still sent to Tan Hill when demand was high, for example, 1870, - 13, 16, 17, 20, 27, 30, 31 August, 2, 20, 22, 24 September. 2/5/3, 17 October 1851 - coal was also transported from Richmond station to Hawes. 2/5/4, - from 1878 Garth stopped using Richmond and went instead to the newly opened Wensleydale railway at Askrigg. Even after the opening of the Wensleydale railway difficulties were still encountered in transporting the coal from the stations. HLRO, 1881, S-K, op cit, evidence of R.Lodge, p17.}\]

\[\text{Richmond and Ripon Chronicle, 8 December 1860, 9 March 1861, 6 April 1861.}\]

\[\text{HLRO, HL, 1866, S-C, op cit, evidence of J.Rutherford, pp40-1; HLRO, Minutes of Evidence, HC, 1865, Vol 57, SWL, evidence of T Topham, p165. Topham claimed that coal sold at between 15s and 16s a ton at Leyburn. Hall MS, Shoemaker's Account Book, 1864-5, during this period the shoemaker paid an average of 13s 4d per ton for coal at Leyburn station.}\]

\[\text{Bedale and Northallerton Times, 31 August 1878.}\]

\[\text{Ibid, 24 and 31 August 1878.}\]

\[\text{PRO, RAIL 491/672, op cit, 1879. Some coal was also}\]

\[516\]
transported over the NER network but 1885 is the earliest
NER extant record.

152 PRO, RAIL 527/2179, op cit, 1885-1914.

153 Irving, op cit, p293.


155 PRO, RAIL 527/2179, 2142; 491/671-2, 674-5, op cit,
1879-1914.

156 Bell MSS, 1877, op cit.

157 Ibid, the movement of hay and straw into the dale
during the winter months was often substantial. For
example, between January and May 1886, fifty-eight tons of
hay and twenty-two tons of straw were received at Askrigg
station, Brown MS, NER Goods Weighing Book, Askrigg, 1
January - 29 May, 1886.

158 Bell MSS, 1877, op cit.

159 Bell MSS, NER Rate Book for Merchandise, Askrigg, 1895,
updated to 1926.

160 PRO, HO 107/ 1252, 1254, 2379-80, RG 9/3667-71, RG
10/4868-71, RG 11/4873-6, CEB, 1841-81, upper and lower
Wensleydale.

161 Gourvish, op cit, p9.
CHAPTER 15

MIGRATION

The movement of population has attracted the interest of both contemporary writers and twentieth-century historians. Most recent debate has been couched in terms of Ravenstein's 'laws of migration' and has centred upon the dynamics of migration; the forces, economic and others, which determined both the migration and the destination of migrants; the age/sex structure of migrants; the nature of migration, whether temporary or permanent; the distance of migration; and the loss to the communities of the skills and entrepreneurial spirit of those who had left.

I

The rapid growth of population in Britain in the late eighteenth and nineteenth centuries, coupled with the centralization of the industrial processes and the attendant urbanization of the population, resulted in an unprecedented movement of people both internal and international. As the industrial areas expanded from the late eighteenth century, people were drawn from the countryside in increasing numbers. However, the movement of population did not reach a peak until the 1840s when industrialization entered its mature phase. Between the 1840s and 1880s, the British economy remained generally buoyant and the expanding towns continued to absorb most of
the rural efflux. The situation was reversed in the 1880s when, as the British economy suffered a downturn and British capital investment abroad increased, emigration far surpassed internal migration. The British economy recovered slightly in the 1890s and internal migration was again high but, in the first decade of the twentieth century, as British foreign investment increased, there was a further tide of emigration. Contemporaneously, for the first time since the early nineteenth century, the rural efflux slowed considerably and there was a net loss of population in urban areas.

Migration was usually a response to economic forces which have been identified in terms of 'push' and 'pull' factors. The 'push' factors in rural areas centred upon loss of employment, decreasing range of job alternatives, and a poor return on output in the form of either profit or wages. The 'pull' factors occurred when the economy of another area appeared superior to the one in which the potential migrant lived. A threshold when migration was most likely to occur cannot easily be identified as other considerations, including non-economic factors, need to be taken into account. Although some migration took place in times of local prosperity, 'push' and 'pull' factors exerted their greatest influence in periods of depression and, depending upon whether the depression was due to local or national causes, the resultant migration might be principally either internal or international. Whatever the destination of the rural migrant in the nineteenth
century, the principal cause was basically the same. Employment opportunities in the agriculturally-based economy of the early nineteenth century were not increasing at the same rate as the local population and, as the century progressed, they were declining. In order for the economy of the rural community to remain viable and for its members to live above subsistence level, a substantial proportion of the population had to leave the area.

II

The rapid growth in the population of the two dales in the late eighteenth and early nineteenth centuries was commented upon by contemporaries and, from 1801, was highlighted in the census returns (see Chapter 2). While some of this increase is attributable to in-migration, particularly in Swaledale, most of the growth was due to natural increase. The acceleration in the rate of natural increase was part of a national phenomenon, the causes of which have been the subject of considerable debate. It is likely, however, that this was a consequence both of a fall in the death rate and a rise in the birth rate. While the causal relationship between demographic change and economic forces is the subject of continuing dispute, it is probable that the growth of population within Wensleydale and Swaledale was triggered by exogenous factors, particularly the demand for and high price of local goods and a growing demand for labour. However, with the failure of the two dales to industrialize, it was
inevitable that the resources of the area would be placed under increasing strain and, in course of time, be unable to support the rapidly expanding population. In such circumstances it was only a matter of time before out-migration became established.

The decennial censuses show that the three areas exhibited different population profiles between 1801 and 1901. The census returns, however, mask more extreme population movements. When natural increase is estimated and related to actual population change net migration can be calculated (see Tables 15.1 and 15.4). Table 15.1 shows that for most of the period 1801-61 a large part of the natural increase was surplus to local employment requirements.

Contemporary observers noted the drift towards the towns in the first decade of the nineteenth century, but the scale of out-migration in upper Wensleydale was probably atypical. Between 1811 and 1821 more of the natural increase was absorbed within the local economic framework as expansion in agriculture, due to the war and the enclosure movement, demanded a greater labour force. The improvement was short-lived and in the following decade, as the depression years of the 1820s took their toll, the number of people leaving the upper dale increased. The decline continued and between 1841 and 1861 out-migration exceeded natural increase.
<table>
<thead>
<tr>
<th>Year</th>
<th>Upper W/d</th>
<th>Lower W/d</th>
<th>Swaledale</th>
<th>Upper W/d</th>
<th>Lower W/d</th>
<th>Swaledale</th>
<th>Upper W/d</th>
<th>Lower W/d</th>
<th>Swaledale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1811</td>
<td>896</td>
<td>335</td>
<td>987</td>
<td>896</td>
<td>335</td>
<td>987</td>
<td>896</td>
<td>335</td>
<td>987</td>
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<tr>
<td></td>
<td>17.2</td>
<td>17.2</td>
<td>17.2</td>
<td>-931</td>
<td>+22</td>
<td>+314</td>
<td>-17.9</td>
<td>+1.1</td>
<td>+5.5</td>
</tr>
<tr>
<td>1821</td>
<td>889</td>
<td>397</td>
<td>1211</td>
<td>-438</td>
<td>-4</td>
<td>-771</td>
<td>-8.5</td>
<td>-0.2</td>
<td>-11.0</td>
</tr>
<tr>
<td>1831</td>
<td>967</td>
<td>465</td>
<td>1287</td>
<td>-792</td>
<td>-348</td>
<td>-1747</td>
<td>-14.1</td>
<td>-12.9</td>
<td>-23.4</td>
</tr>
<tr>
<td>1841</td>
<td>922</td>
<td>437</td>
<td>1130</td>
<td>-993</td>
<td>-792</td>
<td>-1392</td>
<td>-17.1</td>
<td>-28.1</td>
<td>-19.8</td>
</tr>
<tr>
<td>1851</td>
<td>836</td>
<td>340</td>
<td>1014</td>
<td>-926</td>
<td>-148</td>
<td>-952</td>
<td>-16.2</td>
<td>-6.0</td>
<td>-14.1</td>
</tr>
<tr>
<td>1861</td>
<td>749</td>
<td>324</td>
<td>948</td>
<td>-735</td>
<td>+20</td>
<td>-1572</td>
<td>-13.5</td>
<td>+0.8</td>
<td>-23.0</td>
</tr>
</tbody>
</table>

- = out migration  
+ = in migration

Source: Natural increase between 1801-1831 is based on an average annual rate for the North Riding of 16.3 per thousand (i.e. 1.6 per cent) cited in P. Deane & W.A. Cole, British Economic Growth 1688-1815, Cambridge, 1969, p.115. Natural increase between 1831-1851 is based on the percentage in 1821/1831 and the percentage in 1851/1861 and assuming a steady decline over the intervening period. For full details see Appendix XVIII.
In 1851 the census enumerator ascribed out-migration to:

the depression of the agricultural interest and
the loss of the knit-hosiery business; many of
the labouring classes having either emigrated
or removed to the manufacturing districts.¹⁶

Lower Wensleydale, with some lead-mining interest, and
Swaledale, with its major lead-mining industry,
experienced a small net in-migration between 1801 and
1811.¹⁷ John Harland of Reeth, writing in the 1870s,
commented that from time immemorial the lead mines had been
the chief employment for the local labourers and that there
had been few strangers in the district. However, Harland
claimed that in the late eighteenth and early nineteenth
centuries there was:

a vast influx of strangers from the mining
districts of the western parts of
Northumberland, and the neighbouring borders of
Durham, Westmoreland, and Cumberland.¹⁸

While not ‘vast’, this influx, coupled with natural
increase, affected the balanced structure of the community
and, in particular, resulted in a strain on the traditional
poor relief system.¹⁹ The influx was quickly reversed in
the two areas although lower Wensleydale, with its more
balanced economy, was initially not as badly affected as
Swaledale, where the impact of the late 1820s depression on
the lead industry was severe. Between 1831 and 1841 the
position was briefly reversed with lower Wensleydale,
uncharacteristically, suffering a higher level of
out-migration than Swaledale. Both areas were less severely affected in the 1840s, particularly lower Wensleydale, where the expanding lead industry was beginning to improve employment opportunities. This more favourable trend continued into the 1850s in lower Wensleydale, which experienced a small net in-migration coincident with peak output in the lead industry (see Chapter 11). In Swaledale, however, despite a period of general prosperity in the lead industry, out-migration increased dramatically in the 1850s.

Between 1801 and 1861 upper Wensleydale lost an estimated 4815 people (91.6 per cent of its natural increase), lower Wensleydale lost 1250 people (54.4 per cent of its natural increase) and Swaledale lost 6120 people (93.1 per cent of its natural increase). Whereas upper Wensleydale lost its population fairly steadily throughout the sixty years, Swaledale’s worst losses occurred in the 1820s. This highlights the magnitude of the depression in the lead industry in Swaledale and reinforces contemporary comments that there was much distress in the area and that, as a consequence, many people were leaving.

Details of birth and death rates for upper and lower Wensleydale and Swaledale are available from the 1860s. These identify the components of natural increase and, therefore, provide an indication of the mechanisms which resulted in the migration patterns of the second half of the nineteenth century. Table 15.2 shows that throughout
the period 1861-1910 the local birth rate was significantly lower than the average for England and Wales, and also lower than the average for the Northern Rural Residues.

TABLE 15.2
CRUDE BIRTH AND DEATH RATE, UPPER AND LOWER WENSLEYDALE AND SWALEDALE, 1861-1910.¹

<table>
<thead>
<tr>
<th></th>
<th>1861-70</th>
<th>1871-80</th>
<th>1881-90</th>
<th>1891-1900</th>
<th>1901-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper W/d</td>
<td>31.1</td>
<td>29.9</td>
<td>28.2</td>
<td>25.0</td>
<td>21.8</td>
</tr>
<tr>
<td>Lower W/d</td>
<td>29.7</td>
<td>28.6</td>
<td>24.5</td>
<td>22.1</td>
<td>21.1</td>
</tr>
<tr>
<td>Swaledale</td>
<td>30.5</td>
<td>31.5</td>
<td>28.2</td>
<td>22.5</td>
<td>18.6</td>
</tr>
<tr>
<td>N.R.R.²</td>
<td>32.5</td>
<td>32.0</td>
<td>29.5</td>
<td>27.6</td>
<td>24.5</td>
</tr>
<tr>
<td>E &amp; W.</td>
<td>35.2</td>
<td>35.4</td>
<td>32.5</td>
<td>29.9</td>
<td>27.2</td>
</tr>
</tbody>
</table>

|          |         |         |         |           |         |
| Death Rate |         |         |         |           |         |
| Upper W/d  | 20.1    | 20.0    | 15.9    | 17.5      | 15.1    |
| Lower W/d  | 17.9    | 18.7    | 13.7    | 16.1      | 13.4    |
| Swaledale  | 20.7    | 20.2    | 16.3    | 17.6      | 15.4    |
| N.R.R.²    | 20.1    | 19.4    | 17.5    | 17.1      | 14.6    |
| E & W.     | 22.5    | 21.4    | 19.1    | 18.2      | 15.4    |

¹ Average annual rate per 1000 population per decade.

² Northern Rural Residues.

Note: lower Wensleydale forms only part of Leyburn Registration District. The rates shown relate to the whole District.

Source:
Wensleydale and Swaledale; BPP, 1872, 1884-5, 1895, 1914-6, XVII, XVII, XXIII.i, VIII, Annual Reports of the Registrar General of Births, Deaths and Marriages in England, 1872, p440; 1884-5, p365; 1895, p635-7; 1914/6, p1. HMSO, Census of England and Wales, County of York, 1902.

Northern Rural Residues; A.J.Cairncross, Home and Foreign Investment, 1870-1913, Cambridge, 1953, p82.


As the century progressed, the gap between local and
national birth rates widened until by the decade 1901-10 the local birth rate was between 20 and 32 per cent lower than that of England and Wales. With the exception of the decade 1871-80, when there was a rise in birth rate both in England and Wales and in Swaledale, the birth rate fell consistently over this period in the nation at large, in the Northern Rural Residues and in the three local areas. As would be expected, death rates in the three local areas were consistently lower than the national average, which from the mid-century was biased increasingly towards urban areas with their higher mortality rates.

Between 1861 and 1910 the death rate in England and Wales fell steadily, a feature which was mirrored generally in the three local areas. However, reversals of the mainly downward trend in the death rate occurred in lower Wensleydale between 1861-70 and 1871-80, and in all three areas between 1881-90 and 1891-1900. These increases in the death rate reflect the ageing population structure resulting from high out-migration. Throughout this period, death rates in Swaledale and lower Wensleydale were consistently the highest and lowest respectively of the three local areas.

While there is a superficial similarity between birth and death rates in upper Wensleydale and those in Swaledale, this masks important differences which reflect the contrasting working environments of the inhabitants of the two dales (see Table 15.3). Until 1890 between 7.1 and 8.5 per cent of all deaths in Swaledale occurred in the 25 to
54 year age range due to phthisis, the miner's consumption. This was some 2 per cent higher than in the same age range in upper Wensleydale. After 1890 both dales returned a much lower and almost identical proportion of deaths from phthisis.

**TABLE 15.3**

**CAUSES AND AGE OF DEATH, UPPER WENSLEYDALE AND SWALEDALE,**

1851-1910.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total deaths</th>
<th>Deaths of tot.</th>
<th>% of tot.</th>
<th>Deaths of tot.</th>
<th>% of tot.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>55yrs</td>
<td></td>
<td>phthisis 25-54yrs</td>
<td></td>
</tr>
<tr>
<td><strong>Upper W/d</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1851-60</td>
<td>1105</td>
<td>459</td>
<td>41.6</td>
<td>61</td>
<td>5.5</td>
</tr>
<tr>
<td>1861-70</td>
<td>1037</td>
<td>383</td>
<td>37.1</td>
<td>52</td>
<td>5.0</td>
</tr>
<tr>
<td>1871-80</td>
<td>1093</td>
<td>478</td>
<td>43.7</td>
<td>58</td>
<td>5.3</td>
</tr>
<tr>
<td>1881-90</td>
<td>908</td>
<td>416</td>
<td>45.8</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1891-1900</td>
<td>795</td>
<td>454</td>
<td>57.1</td>
<td>30</td>
<td>3.8</td>
</tr>
<tr>
<td>1901-10</td>
<td>662</td>
<td>404</td>
<td>61.0</td>
<td>17</td>
<td>2.6</td>
</tr>
<tr>
<td><strong>Swaledale</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1851-60</td>
<td>1309</td>
<td>464</td>
<td>35.4</td>
<td>93</td>
<td>7.1</td>
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<td>7.9</td>
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<tr>
<td>1881-90</td>
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<td>349</td>
<td>47.4</td>
<td>52</td>
<td>7.1</td>
</tr>
<tr>
<td>1891-1900</td>
<td>502</td>
<td>302</td>
<td>60.2</td>
<td>18</td>
<td>3.6</td>
</tr>
<tr>
<td>1901-10</td>
<td>377</td>
<td>236</td>
<td>62.6</td>
<td>9</td>
<td>2.4</td>
</tr>
</tbody>
</table>

Source: derived from Reports of the Registrar General for England and Wales, details supplied by B. Benson.

Table 15.3 shows also the number of deaths in the fifty-five years plus age group and the proportion that these constituted of total deaths. In the period 1851 to 1880 the disparity in the figures for upper Wensleydale and Swaledale is apparent. The fact that a lower proportion of the population of Swaledale were more than fifty-five years
old on death indicates a younger age structure. While this could be attributable to the in-migration of young workers and their families, it is likely that this was due largely to a shorter life expectancy, in which deaths by phthisis and other environmental diseases clearly played a part. The two dales did not begin to exhibit similar patterns in the age and cause of death until after 1891 when the economy of Swaledale became primarily agricultural and converged with that of upper Wensleydale.

The fall in birth rate in the three areas, by an average of about one-third, led to an overall decline in the rate of natural increase between 1861 and 1911. In all three areas the rate of natural increase was consistently below the national average. Between 1861 and 1911 the overall fall in the rate of natural increase was 40.4 per cent in upper Wensleydale, 25.9 per cent in lower Wensleydale and 64.8 per cent in Swaledale compared with a fall of only 8.8 per cent in the country as a whole (see Table 15.4).

Out-migration from Swaledale continued at a high rate, absorbing considerably more than the natural increase in every decade. In 1881-91 out-migration assumed massive proportions, the dale losing almost 40 per cent of its 1881 population. This was the decade when the national loss of population through emigration was at its highest and when many other northern rural areas experienced their greatest out-migration. In Swaledale the lead industry was in terminal decline and agriculture was affected by falling prices, adverse weather and livestock disease.
<table>
<thead>
<tr>
<th>Year</th>
<th>Upper W/d</th>
<th>Lower W/d</th>
<th>Swaledale</th>
<th>G.B.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1871</td>
<td>615</td>
<td>336</td>
<td>565</td>
<td>3.14</td>
</tr>
<tr>
<td></td>
<td>10.9</td>
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<td>13.6</td>
</tr>
<tr>
<td></td>
<td>-791</td>
<td>-632</td>
<td>-1391</td>
<td>-0.20</td>
</tr>
<tr>
<td></td>
<td>-14.0</td>
<td>-21.1</td>
<td>-22.4</td>
<td>-0.9</td>
</tr>
<tr>
<td>1881</td>
<td>546</td>
<td>262</td>
<td>572</td>
<td>3.90</td>
</tr>
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<td></td>
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</tr>
<tr>
<td></td>
<td>-537</td>
<td>-243</td>
<td>-1225</td>
<td>-0.26</td>
</tr>
<tr>
<td></td>
<td>-9.8</td>
<td>-9.0</td>
<td>-22.8</td>
<td>-1.0</td>
</tr>
<tr>
<td>1891</td>
<td>519</td>
<td>223</td>
<td>383</td>
<td>4.14</td>
</tr>
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<td></td>
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<td>13.9</td>
</tr>
<tr>
<td></td>
<td>-1259</td>
<td>-608</td>
<td>-1883</td>
<td>-0.82</td>
</tr>
<tr>
<td></td>
<td>-23.0</td>
<td>-22.3</td>
<td>-39.9</td>
<td>-2.8</td>
</tr>
<tr>
<td>1901</td>
<td>346</td>
<td>133</td>
<td>141</td>
<td>4.09</td>
</tr>
<tr>
<td></td>
<td>7.3</td>
<td>5.7</td>
<td>4.4</td>
<td>12.4</td>
</tr>
<tr>
<td></td>
<td>-580</td>
<td>-472</td>
<td>-838</td>
<td>-0.12</td>
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<td></td>
<td>-12.2</td>
<td>-20.2</td>
<td>-26.0</td>
<td>-0.4</td>
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<tr>
<td>1911</td>
<td>295</td>
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<td>4.59</td>
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<td>6.5</td>
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</tr>
<tr>
<td></td>
<td>-541</td>
<td>-106</td>
<td>-204</td>
<td>-0.76</td>
</tr>
<tr>
<td></td>
<td>-12.0</td>
<td>-5.3</td>
<td>-8.1</td>
<td>-2.1</td>
</tr>
</tbody>
</table>

1 Upper Wensleydale is conterminous with Aysgarth Registration District.
2 Lower Wensleydale is that part of Leyburn Registration District within the study area (see Appendix XIX).
3 Swaledale is conterminous with Reeth Registration District.
4 In millions.
5 Net emigration.

Note: full details and the sources from which the table is derived are contained in Appendix XIX.
Out-migration continued at a high rate in the 1890s but by the first decade of the twentieth century the reservoir of potential out-migrants was beginning to run dry and the former torrent had reduced to a comparative trickle.

In upper Wensleydale the position was similar although less severe. The upper dale lost the whole of its natural increase in every decade except 1871-81. As in Swaledale the nadir was reached in 1881-91 when the dale lost almost a quarter of its 1881 population. Although out-migration declined after 1891, it remained high and in 1901-11 the number of out-migrants from upper Wensleydale exceeded the number from Swaledale for the first time since 1801-11.

The lower dale fared considerably worse in the second half of the century than it had in the first. As with upper Wensleydale and Swaledale, net out-migration was greatest in the decade 1881-91, accounting for 22.3 per cent of the 1881 population. Out-migration remained high in the following decade but by 1901-11, in common with Swaledale, it had fallen to a relatively modest level.

Between 1861 and 1911 upper Wensleydale lost 3708 people through out-migration, equivalent to more than one and a half times its natural increase (compared with 91.6 per cent between 1801-61); lower Wensleydale lost 2061 people, which was more than one and three-quarter times its natural increase (compared with 54.4 per cent between 1801-61); and Swaledale lost 5541 people, equivalent to more than three times its natural increase (compared with 54.4 per cent between 1801-61); and Swaledale lost 5541 people,
equivalent to more than three times its natural increase (compared with 93.1 per cent between 1801-61). The scale of these losses was considerable, particularly as their impact was concentrated very largely into the period 1861-1901 and especially into the single decade 1881-91 which accounted for more than one-third of the total out-migration from the three areas. In contrast the first decade of the twentieth century was a period of equilibrium with both dales exhibiting some of the characteristics of the 'quiet revival' enjoyed by many rural areas at this time. Out-migration continued but at a much lower level and there is evidence that a new balance had been struck between the economic resources of the area, now principally agriculture, and its much reduced population. Thereafter, further population change tended to be evolutionary rather than cataclysmic.

III

Although out-migration was a feature of all three areas for most of the nineteenth century it might be suggested that this was counteracted by in-migration. This was clearly not the case as there was little encouragement, except during the generally short-lived boom periods of the lead-mining industry, for non-natives to settle in the area. Consequently, migrationary 'counter-currents' had little impact. Analysis of the birthplaces of the local population in the second part of the nineteenth century throws some light on the extent to which the dales were a
'closed' area (see Table 15.5). The decennial censuses between 1851 and 1881 show that a high proportion, between 61 and 87 per cent, of the population were born within the parish in which they were registered. However, the proportion of locally born people, although fluctuating, decreased as the century progressed.

TABLE 15.5

POPULATION BORN WITHIN THE TOWNSHIP AND THE PARISH, UPPER AND LOWER WENSLEYDALE AND SWALEDALE, 1851-81.¹

<table>
<thead>
<tr>
<th>Year</th>
<th>Total pop.</th>
<th>% born in T.²</th>
<th>% born in P.³</th>
</tr>
</thead>
<tbody>
<tr>
<td>1851</td>
<td>5635</td>
<td>52.2</td>
<td>80.6</td>
</tr>
<tr>
<td>1861</td>
<td>5649</td>
<td>62.5</td>
<td>80.6</td>
</tr>
<tr>
<td>1871</td>
<td>5473</td>
<td>59.7</td>
<td>77.5</td>
</tr>
<tr>
<td>1881</td>
<td>5482</td>
<td>56.9</td>
<td>74.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Total pop.</th>
<th>% born in T.²</th>
<th>% born in P.³</th>
</tr>
</thead>
<tbody>
<tr>
<td>1851</td>
<td>2655</td>
<td>54.9</td>
<td>63.9</td>
</tr>
<tr>
<td>1861</td>
<td>2999</td>
<td>52.6*</td>
<td>62.7*</td>
</tr>
<tr>
<td>1871</td>
<td>2703</td>
<td>56.1</td>
<td>64.7</td>
</tr>
<tr>
<td>1881</td>
<td>2722</td>
<td>50.7*</td>
<td>61.3*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Total pop.</th>
<th>% born in T.²</th>
<th>% born in P.³</th>
</tr>
</thead>
<tbody>
<tr>
<td>1851</td>
<td>6820</td>
<td>72.9</td>
<td>86.4</td>
</tr>
<tr>
<td>1861</td>
<td>6196</td>
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</tr>
<tr>
<td>1871</td>
<td>5370</td>
<td>71.4</td>
<td>85.0</td>
</tr>
<tr>
<td>1881</td>
<td>4717</td>
<td>69.7</td>
<td>84.3</td>
</tr>
</tbody>
</table>

¹ By percentage.
² Percentage of population born within the township.
³ Percentage of population born within the civil parish including those born within the township. The civil parishes are identical to the Poor Law Union Districts identified earlier (with West Witton being added to Leyburn sub-district 2) and are, therefore, conterminous with the three study areas.
* The birthplaces of the people of West Witton have been estimated on the basis of 229 birthplaces out of a total population of 659.
** Percentage based on a population of 2672 only, as fifty entries (two pages) are missing from the West Witton CEB.

Source: PRO, HO 107/2379-80, RG 9/3667-73, RG 10/4868-73, RG 11/4873-8, CEBs, 1851-81, upper and lower Wensleydale and Swaledale.
Throughout the period Swaledale consistently recorded the highest proportion of locally born inhabitants. Although immigrant miners had worked in the lead industry these would almost certainly be among the first to leave the area in periods of depression whereas local men, who were often cushioned by a small holding, were better able to withstand hard times. Indeed, in all three areas it was those who had some involvement with agriculture who were most likely to remain. Predictably, lower Wensleydale, with its relatively diverse economy and emphasis on service employment, was the most attractive to immigrants and, consequently, recorded the lowest proportion of locally-born residents, except in 1851. Overall, however, the high proportion of the population which was locally born suggests that Wensleydale and Swaledale could, indeed, be termed a 'closed' area.

The relatively small number of people who entered the area were generally responding to the 'pull' factor of labour demand in specific occupations. Most of the dales' immigrants, following the national pattern, had travelled only short distances from their place of birth (see Table 15.6). For most of the period the proportion of the non-native population born within ten miles of the place of residence was highest in lower Wensleydale. This was due to several factors. Lower Wensleydale was relatively small in area; it was the most accessible of the three areas; and it attracted not only non-dales' people...
but also inhabitants of the upper dale and, to a lesser extent, Swaledale. For example, over 40 per cent of those born within ten miles of Leyburn and West Witton.

**TABLE 15.6**

**BIRTHPLACES (BY DISTANCE) OF POPULATION BORN OUTSIDE THE PARISH, UPPER AND LOWER WENSLEYDALE AND SWALEDALE, 1851-81.**

<table>
<thead>
<tr>
<th>Miles</th>
<th>0-10</th>
<th>11-20</th>
<th>21-50</th>
<th>over 50</th>
<th>Total(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper W/d</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1851</td>
<td>34.9</td>
<td>32.0</td>
<td>20.8</td>
<td>12.3</td>
<td>1089</td>
</tr>
<tr>
<td>1861</td>
<td>32.1</td>
<td>33.7</td>
<td>20.9</td>
<td>13.3</td>
<td>1097</td>
</tr>
<tr>
<td>1871</td>
<td>33.8</td>
<td>24.0</td>
<td>20.0</td>
<td>22.2</td>
<td>1218</td>
</tr>
<tr>
<td>1881</td>
<td>25.7</td>
<td>28.1</td>
<td>27.1</td>
<td>19.1</td>
<td>1414</td>
</tr>
<tr>
<td>Lower W/d</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1851</td>
<td>50.2</td>
<td>19.4</td>
<td>19.8</td>
<td>10.6</td>
<td>950</td>
</tr>
<tr>
<td>1861</td>
<td>48.7</td>
<td>21.0</td>
<td>19.1</td>
<td>11.2</td>
<td>1112</td>
</tr>
<tr>
<td>1871</td>
<td>45.5</td>
<td>17.7</td>
<td>21.0</td>
<td>15.8</td>
<td>937</td>
</tr>
<tr>
<td>1881</td>
<td>37.5</td>
<td>18.2</td>
<td>22.0</td>
<td>22.4</td>
<td>1002</td>
</tr>
<tr>
<td>Swaledale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1851</td>
<td>41.5</td>
<td>19.5</td>
<td>26.0</td>
<td>13.0</td>
<td>911</td>
</tr>
<tr>
<td>1861</td>
<td>40.1</td>
<td>23.5</td>
<td>24.2</td>
<td>12.2</td>
<td>803</td>
</tr>
<tr>
<td>1871</td>
<td>43.6</td>
<td>18.1</td>
<td>21.9</td>
<td>16.4</td>
<td>791</td>
</tr>
<tr>
<td>1881</td>
<td>40.9</td>
<td>16.2</td>
<td>25.0</td>
<td>17.9</td>
<td>727</td>
</tr>
</tbody>
</table>

\(^1\) See Table 15.5 footnote 3.

\(^2\) Percentage of total immigrant population.

\(^3\) Total immigrant population (excludes those whose birthplace is not known - the numbers involved are statistically insignificant).

Note: the distances of birthplaces outside the parish in which the township was situated are calculated on straight-line distances from the main village within the relevant township.

Source: see Table 15.5.

townships in 1851 were from upper Wensleydale. In 1861 30.6 per cent of those born within ten miles of Castle Bolton were from the upper dale and 52.8 per cent were from Swaledale. Similarly, of those born less than ten miles
from Redmire in 1861, 38.3 per cent were from the upper dale and 33.3 per cent were from Swaledale. The non-native population of lower Wensleydale who were born further afield increased substantially in 1881, reflecting the improved accessibility of the area following the opening of the railway west of Leyburn.

Some two-fifths of the non-native population of Swaledale were born within ten miles of their place of residence, with the next highest group being born within twenty-one and fifty miles of their place of residence. This second group probably included many individuals from the mining districts of Cumberland, Durham and Northumberland. The pattern in upper Wensleydale is less clear. Between 1851 and 1871 approximately one-third of the non-native population was born within ten miles of their place of residence with, for the most part, decreasing proportions coming from successively higher distance categories. Following the arrival of the railway in 1878, however, proportionately more of the non-native population are recorded as being born in the second and third distance categories than in the ‘up to ten miles’ category.

Detailed research on the birthplaces of migrants, particularly in rural areas, is sparse and even fifteen years after Michael Anderson’s pioneering study of Preston little comparable work has been undertaken. Nevertheless, despite the contrasting characters of the areas, the pattern of immigration into the dales has similarities with urban Preston, where 42 per cent of all
immigrants in 1851 had birthplaces within ten miles distance. However, the dales' immigrants were probably slightly more local than their urban Lancashire counterparts. In Preston 70 per cent of immigrants were born within thirty miles of the town whereas in upper and lower Wensleydale and Swaledale 67, 70, and 61 per cent, respectively, of immigrants had travelled less than twenty miles. The difference between Preston and the dales is small and it would appear that the immigration patterns were remarkably similar. This supports the view that in the mid-nineteenth century the majority of migrants travelled only short distances. Further, the type of area to which the immigrant was travelling, whether urban or rural, appears to have had little effect on distance travelled.

Table 15.6 shows that by 1881 proportionately more migrants travelled from further afield to the dales and that in upper and lower Wensleydale the longer-distance migrants were also increasing in absolute numbers. This was due to improved accessibility and reflects the growth in late Victorian Britain of the more mobile professional and bureaucratic classes. Even in Swaledale, where the number of all immigrants declined between 1851 and 1881, there was a proportional increase in those with birthplaces over fifty miles away.
Recent research into the vectors of migration has identified certain common factors which influenced the choice of destination. Anderson has demonstrated the importance of locality links between migrants and their destination. John Rowe has shown the significance of letters home and the local press in disseminating information on the potential reception areas. The decisions of migrants were influenced also by the proximity of areas capable of providing an improved livelihood and the opportunities available for pursuing a similar occupation. The destinations of Wensleydale and Swaledale migrants demonstrate the significance of these factors.

Most of those who left the dales did not emigrate but made new lives elsewhere in Britain. As in other rural areas, many migrants moved to the nearest industrial areas which were capable of providing appropriate employment. Some of this migration was life cycle movement in that, for example, single females left the dales in substantial numbers to enter service, particularly in the West Riding, with some subsequently returning to their native area to marry and settle. Male migrants, together with their families, gravitated towards Lancashire, the North Pennine lead field and the coal-mining areas of the North East. As with female migrants, some of these moves, particularly
those of miners, formed part of a life cycle movement. Although the number of migrants was not great in terms of the overall population of the districts where the dales' people settled, there frequently developed a strong sense of community. Wensleydale and Swaledale migrants tended to settle in specific towns and even in the same streets. 30

Brierfield, near Burnley in Lancashire was a favoured destination of dales' people, particularly from Swaledale, from at least the 1820s. It was both a coal-mining and a textile district and it was relatively accessible from the dales. 31 The number of dales' people living in Brierfield increased fourfold between 1851 and 1871, from 62 to 248 (Table 15.7).

TABLE 15.7
WENSLEYDALE AND SWALEDALE MIGRANTS RESIDING IN BRIERFIELD, LANCASHIRE, 1851-81.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pop.</td>
<td>%¹</td>
<td>%²</td>
</tr>
<tr>
<td>1851</td>
<td>1567</td>
<td>62</td>
<td>4.0</td>
</tr>
<tr>
<td>1861</td>
<td>1738</td>
<td>120</td>
<td>6.9</td>
</tr>
<tr>
<td>1871</td>
<td>2401</td>
<td>248</td>
<td>10.3</td>
</tr>
<tr>
<td>1881</td>
<td>2798</td>
<td>93</td>
<td>3.3</td>
</tr>
</tbody>
</table>

¹ Those parts of Brierfield where most of the dales-born people resided.
² Percentage of total population.
³ Percentage of dales' migrants

Source: PRO HO 107/2254, RG 9/3077, RG 10/4155-6, RG 11/4160-2, CEB, 1851-81, Brierfield.
By 1881, however, the number of dales' people in Brierfield had declined to 93. It is not known whether this decline was the result of emigration or onward migration within Britain. Due to poor employment opportunities in the dales at this time it is unlikely that many returned to their home area. There are indications that migration from the dales to this part of Lancashire increased again in the 1880s and 1890s. Some Swaledale miners, after the decline of lead mining in the 1870s and 1880s, had initially found employment in the quarries of upper Wensleydale. When output from these quarries declined in the late 1880s many of the Swaledalers and some Wensleydale natives moved to Lancashire in search of employment. Further, the opening of the railway not only facilitated the movement of stone from Wensleydale into Lancashire but also encouraged the workforce to follow the same route when local employment declined.

In 1851 twenty-eight (45 per cent) of the dales-born population in Brierfield worked in the coal mines and only eight (12.9 per cent) worked in the textile mills. The situation had reversed by 1871 when eighty-nine (35.9 per cent) worked in the mills and thirty-seven (14.9 per cent) worked in the mines. By 1881 only forty people were working in the mills but these constituted a greater proportion (43.0 per cent) of dales-born people than in 1871. By 1881 only two of the dales-born population (2.2 per cent) worked in the coal mines.

Brierfield was not the only area of Lancashire which
attracted dales' people. Some migrants, particularly those from Wensleydale, settled in the Liverpool area to trade as urban cowkeepers. Local tradition maintains that the dales' people who ran cowhouses in Liverpool were generally the younger sons of dales' farmers. The cowhouse keeper drew upon the home farm for lactating cows and the family ties provided the basis for an advantageous and dependable business arrangement. From 1851 an increasing number of Liverpool cowkeepers came from Yorkshire: 8.2 per cent in 1851; 17.4 per cent in 1861; and 23.5 per cent in 1881. However, only 1.9 per cent of the Liverpool cowkeepers in 1861 were from the two dales. It is probable that the number of dales-born cowkeepers increased briefly after 1878 when cattle were more easily transported to Liverpool by rail but before the Wensleydale liquid milk trade became firmly established from the 1890s. The migration of these cowkeepers appears not to have been primarily a response to the direct "push" factor of local unemployment. Rather it provided appropriate full employment for younger sons within a system of primogeniture while maintaining close family ties and aiding the economy of the home farm. If this outlet had not existed the younger son may have remained at home in underemployment and become a burden on the resources of the farm.

A further group of migrants from the dales comprised those in receipt of poor relief. Local select vestries were keen to encourage their paupers to find employment elsewhere, particularly as many of these paupers were
non-natives. For example, in 1822, Bainbridge select vestry ordered that Richard Pratt of Gayle near Hawes be given ten shillings to assist him to remove his family to Burnley. Some of the vestries were quite unscrupulous. When their paupers were sent back from their new homes in the industrial areas the guardians would repeat the exercise by giving the paupers further assistance to return.

Contemporary writers attest to the fact that lead miners and their families were the most mobile section of the population. Some miners, both local and non-local, moved several times during their working lives. The 'currents of migration' flowed between the coal and lead-mining areas. Movement took place as the fortunes of each industry and the separate areas fluctuated. On occasions lead miners were actively recruited to work in the coalfields. The early 1830s slump in the lead industry coincided with a strike in the Durham coalfield. Matthias Dunn of Hetton colliery, Durham travelled to lead-mining districts, including Arkengarthdale, in search of lead miners to replace the striking colliers. He was successful and the "strangers" kept the pits working. After the strike had ended and the colliers had returned to work, some of the lead miners left. Later, in 1834, when there was a depression in the coal industry, it was the non-local people who left first, as had occurred earlier in the Swaledale lead industry. Many of the former lead miners returned to the dales where the lead industry was beginning
However, as Table 15.8 demonstrates, the mobility of miners between the lead and coal fields, particularly between 1851 and 1881, may not have been as extensive as was previously believed.

TABLE 15.8

WENSLEYDALE AND SWALEDALE NATIVES RESIDING IN SELECTED COAL MINING DISTRICTS IN DURHAM, 1851-1881.

<table>
<thead>
<tr>
<th>Year</th>
<th>Tot. Pop.</th>
<th>Yks. Born</th>
<th>W/d Born</th>
<th>S/d Born</th>
</tr>
</thead>
<tbody>
<tr>
<td>1851</td>
<td>10877</td>
<td>535</td>
<td>15</td>
<td>2.8</td>
</tr>
<tr>
<td>1861</td>
<td>13037</td>
<td>676</td>
<td>17</td>
<td>2.5</td>
</tr>
<tr>
<td>1871</td>
<td>16480</td>
<td>801</td>
<td>17</td>
<td>2.1</td>
</tr>
<tr>
<td>1881</td>
<td>24867</td>
<td>978</td>
<td>22</td>
<td>2.2</td>
</tr>
</tbody>
</table>

1 Total population of the selected Durham districts.
2 Includes some estimates.
3 Percentage of the total population.
4 Percentage of the population from Yorkshire.

Note: not all the Yorkshire born gave details of their parish or township of birth.

Source: derived from census enumerators' handbooks for the selected Durham districts, 1851-1881. Details supplied by P. Norris.

The number of Swaledale natives residing in the selected coal-mining districts in Durham was greatest in 1861 and 1871. The number of Wensleydale-born residents peaked in 1881. Taking the two dales together, at the peak only about 12.0 per cent of the Yorkshire-born residents were from the two dales. A far greater proportion came from the Vale of York. Despite the data presented in Table 15.8 the tradition of movement between the dales and Durham was strong and examples of the miners' mobility occur frequently throughout the census enumerators' handbooks.
Some Swaledale and Wensleydale lead miners, particularly the locally born, did not travel far but limited their movements to between the two dales or from mine to mine within a dale. Table 15.9 illustrates the mobility of the miner.

| TABLE 15.9 |
| BIRTHPLACES OF A LEAD MINER AND HIS FAMILY DOMICILED IN MARRICK, SWALEDALE, 1871. |

<table>
<thead>
<tr>
<th>STATUS</th>
<th>AGE</th>
<th>BIRTHPLACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEAD</td>
<td>31</td>
<td>SWALEDALE - MUKER</td>
</tr>
<tr>
<td>WIFE</td>
<td>29</td>
<td>SWALEDALE - DOWNHOLME</td>
</tr>
<tr>
<td>DAUGHTER</td>
<td>8</td>
<td>DURHAM - SPENNYMOOR</td>
</tr>
<tr>
<td>SON</td>
<td>6</td>
<td>DURHAM - WOLSINGHAM</td>
</tr>
<tr>
<td>SON</td>
<td>3</td>
<td>DURHAM - TOW LAW</td>
</tr>
<tr>
<td>SON</td>
<td>1</td>
<td>SWALEDALE - MARRICK</td>
</tr>
</tbody>
</table>

Source: PRO RG 10/4873, CEB, 1871, Marrick.

Although lead miners were the most mobile of the occupational groups in the dales', other workers moved from the area only to return again. It is not possible to assess the number of migrants who subsequently returned to the area but a two-way flow existed and this was not peculiar to the dales. Table 15.10 gives two examples of non-mining migrants who returned to the dales. Both families had been living in Brierfield. None of those in the examples were returned in the census as visitors so it must be assumed that they had returned to live in the dales. The reason for their return can only be surmised.
In both cases it may have been for personal rather than economic reasons.

TABLE 15.10

BIRTHPLACES OF TWO FAMILIES DOMICILED IN THE DALES IN 1871.

<table>
<thead>
<tr>
<th>STATUS</th>
<th>AGE</th>
<th>BIRTHPLACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AYSGARTH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HEAD (Corn dealer)</td>
<td>48</td>
<td>W/d - AYSGARTH</td>
</tr>
<tr>
<td>WIFE</td>
<td>-</td>
<td>&quot;</td>
</tr>
<tr>
<td>CHILDREN</td>
<td>15</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>12</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>8</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>5</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>1</td>
<td>LANCS-BRIERFIELD</td>
</tr>
<tr>
<td>&quot;</td>
<td>1</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

| MUKER           |     |                  |
| HEAD (Farmer)   | 70  | W/d - NOT GIVEN  |
| DAUGHTER        | 39  | S/d - GRINTON    |
| SON             | 21  | "                |
| GRANDSON        | 11  | "                |
| "               | 9   | LANCS - BRIERFIELD |

Source: PRO RG 10/4870, 4872, CEB, 1871, Aysgarth and Muker.

The migration of dales' people within the United Kingdom would appear to support Anderson's conclusions concerning the importance of locality links. It also supports the view that migrants moved relatively short distances and, wherever possible, followed occupations with which they were familiar.70
inhabitants took place during the depression in the late 1820s and early 1830s and was mainly to America. Edward Broderick, a Swaledale landowner, noted in his diary on 3 September, 1830, 'Emigration to America was the theme of the conversation - all are apparently for going but few go'. Many did subsequently go and local diarists refer to farm sales of several who were intending to emigrate to America. Evidence given before the Select Committee on Agriculture in 1833 noted a trend over the previous five years for the poor yeomen and small farmers of the northern counties who had some capital to emigrate to Canada or, if they could afford it, to Australia. However, the poorest families and paupers could not leave as, generally, they could not raise enough capital. In some cases the local vestry paid for the journey of these poor people.

The emigration movement gathered pace and by the 1840s it was reported that many Swaledale families were leaving for America. In 1844 the local newspaper noted that several families passed through upper Wensleydale from Swaledale on their way to Liverpool to embark for America. A similar report in 1845 records over fifty people in one group, most of whom were 'husbandmen'. At the same time emigration from the Leyburn area was also proceeding 'to a great extent' with many taking advantage of a free passage to Australia. The local emigration agent, who was also the master of Leyburn workhouse, kept readers of the local paper informed of sailings. In 1846 mechanics, agricultural labourers and miners, together with their
families, were offered a free passage to the Cape of Good Hope and Algoa Bay in South Africa. As other research has demonstrated, the influence of newspaper articles, letters and proselytizing agents must not be underestimated, since many potential migrants were encouraged by reports of a better life abroad. The rate of emigration increased as dales' migrants wrote to their families and friends of the advantages of the new life. America was 'the country for the poor labouring man', where, it was said, he need work only half his time and still gain a better living than at home.

When problems in the lead industry increased in the late 1870s a second major wave of emigration took place. In 1876-7 James Broderick, son of Edward Broderick, travelled to America to visit former Swaledale friends and to discover where future migrants might find good farms. As was typical of many migrants, the Swaledale people had tended to settle in the same place. A large group lived in and around Dubuque in Iowa, where the initial attraction was the rich veins of lead ore coupled with the good opportunities for successful farming. The lead-mining industry had peaked in the Dubuque area in the 1840s but, contrary to the situation in Swaledale, in addition to agriculture, another important industry, the timber trade, had developed. There were several other industries such as foundries, flour mills, a pork-packing plant and a pump factory. Dubuque was also an active commercial centre with many opportunities for employment.
Swaledale emigrants had first settled in Dubuque during the migratory wave of the 1830s. These dales' people tended to be insular and considerable inter-marriage took place. Dubuque was a popular centre with other migrants and the Swaledale group, which probably did not number more than a few hundred, was dwarfed by a contingent of over 6500 from the German principalities and a community of over 3000 from Ireland.

Broderick wrote in glowing terms of the opportunities which existed in America, and of the low price of land, livestock and provisions. He frequently drew comparisons with the less-favourable conditions in England. He wrote of many local migrants who had succeeded in business. He observed:

when he (Mr. Cleminson) came here 19 years ago he had nothing; now he lets his land for £60 a year, has timber on a considerable portion of it worth $100 per acre, which he can get grubbed for $10 per acre.

Cleminson's land was also rich in minerals. He had come from Feetham in Swaledale where his father had been a lead mine agent. Another ex-Swaledale native was eighty-one year-old Dicky Waller. Broderick records:

He says there were several families in Swaledale who would have scorned the idea of his marrying one of them and now he says, 'Ize wuth mar ta day ner them all put togither'.

He had accumulated his wealth by buying mineral ground at
$1.25 per acre, building blast furnaces for lead smelting, and buying and smelting lead."

In common with other migrants, some Swaledale emigrants moved several times before they finally settled. James Pratt left Swaledale in 1833 and lived initially in Ohio, where he spent two years clearing fifty acres of farm land. He then moved to Galena, Iowa, and worked as a lead miner until moving, in 1836, to Dubuque where he bought a corn mill. This venture was so successful that he built other mills and later became a director of three banks in Dubuque. Other branches of this Swaledale family settled in Canada, New Zealand, and several other parts of the United States. Some of these migrants had moved to other parts of Britain before deciding to emigrate. Generally, however, migration to Dubuque from Swaledale took place in one move.

Apart from the positive effect of favourable comments from earlier migrants some emigrants were recruited by the government of the recipient countries through lecture tours in England. In 1873 the Rev. G. M. Binks, who had emigrated in 1868, was sent back to England by the Dakota government. During his tour he visited his native Castle Bolton:

\[\text{to represent the advantages offered by that government to any who choose to go and settle in the New World.}\]

Not all who wished to emigrate had the necessary means.
Others were so desperate to emigrate that they resorted to theft in order to get the money to pay for their passage. Most emigrants remained in their adopted country but a few returned permanently for a variety of reasons. Others returned for a short visit, on occasions with a specific purpose, for example, to get married.

Emigration from the dales, particularly to America, continued into the twentieth century. Many of the migrants kept in contact with those remaining at home. These contacts were maintained by subsequent generations and some are still retained today.

VI

Whether out-migration was to another part of the United Kingdom or to a distant land and whether it was due to the decline of the lead-mining industry or to the changing fortunes of agriculture, the impact of the exodus from the two dales reverberated throughout the community. The increasing pace of out-migration affected all aspects of local life. For example, the effect on school rolls was severe and the religious life of the dales was affected as lead-mining members of the local non-conformist churches left the area in search of employment. In the Wensleydale lead-mining community of Preston-under-Scar, membership of the Methodist chapel fell from 62 members in 1862 to 25 at the turn of the century. This was due to out-migration rather than lapsed membership. In Gunnerside in Swaledale 115 members of the chapel left the
area between 1871 and 1891, 35 of these leaving in 1885 alone. Local tradesmen also suffered. In 1890 a Reeth shopkeeper wrote:

Nothing but poverty; getting worse and worse and worse. Mines still poor, Trade horribly bad. I offer many things at below cost price.

There were many who felt that it was the best workers who were leaving and this further lowered the productivity of the area.

Some observers testified to the disintegration of the local community:

The closing of the lead mines and the agricultural depression which has been greatly felt in the Yorkshire dales beyond Richmond has driven an enormous number of residents to the manufacturing districts of Lancashire.

The physical disintegration was also graphically described:

A melancholy array of deserted Hamlets in Swaledale, and to some extent in Wensleydale, are eloquent of its [the lead mining industry] recent departure.

Even at the beginning of the worst decade of 1881-90, Swaledale and upper Wensleydale had respectively 11.3 and 8.7 per cent of their houses uninhabited. In the lower dale dereliction was less widespread with a more modest 5.6 per cent of houses standing empty in 1881 (see Table 15.11).
TABLE 15.11
INHABITED AND UNINHABITED HOUSES IN UPPER AND LOWER WENSLEYDALE AND SWALEDALE, 1881.

<table>
<thead>
<tr>
<th></th>
<th>Total Houses</th>
<th>Inhab.</th>
<th>%</th>
<th>Uninh.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper W/d</td>
<td>1304</td>
<td>1190</td>
<td>91.3</td>
<td>114</td>
<td>8.7</td>
</tr>
<tr>
<td>Lower W/d</td>
<td>605</td>
<td>571</td>
<td>94.4</td>
<td>34</td>
<td>5.6</td>
</tr>
<tr>
<td>Swaledale</td>
<td>1194</td>
<td>1059</td>
<td>88.7</td>
<td>135</td>
<td>11.3</td>
</tr>
</tbody>
</table>

Source: PRO, RG 11/4873-8, CEB, 1881, upper and lower Wensleydale and Swaledale.

VII

To what extent was migration from the dales typical of rural migration nationally? During the course of the nineteenth century the net loss of population in the two dales through migration was substantial. Swaledale lost probably in excess of 12,000 people between 1801 and 1911, upper Wensleydale over 8000 and lower Wensleydale over 3500 (see Tables 15.1 and 15.4). This was proportionately far greater than in many other rural areas. Whereas Cairncross noted that the rural outflow nationally between 1841 and 1911 was three-quarters of the 1841 population, in upper and lower Wensleydale and Swaledale the proportion of the 1841 population was 98.5, 88.9 and 119.5 per cent respectively.107 However, although the level of out-migration from the dales was considerable, it was less
spectacular than from some other marginal areas, such as parts of the Highlands of Scotland, which were almost totally depopulated during the clearances of the late eighteenth and early nineteenth centuries.\textsuperscript{100}

As has been noted, the loss of population, whether through out-migration or emigration, did not take place at a constant rate (see Tables 15.1 and 15.4). Contemporary sources attest to waves of migration and attendant emigration from the dales, particularly in the 1830s, 1840s, 1870s and 1880s.\textsuperscript{109} Conversely, there is no evidence that the large scale out-migration and emigration, which occurred elsewhere in the early 1900s, took place in the dales. On the contrary, at this time the dales, if not actually enjoying a recovery, experienced relative population stability (see Table 15.4).

There has been some speculation as to whether or not rural migrants substituted emigration for internal migration during the national emigration peaks in the 1880s and 1900s.\textsuperscript{110} It is not possible to establish the proportion of dales' out-migrants who actually emigrated. However, given that the Swaledale community in the key destination of Dubuque comprised no more than a few hundred by the 1870s the overall figure of nineteenth-century Swaledale emigrants was probably not high.\textsuperscript{111} From the evidence of contemporary writers and such limited statistical data as exists, it would appear that out-migration from the dales to places within Britain and emigration were complementary rather than substitutive at
any given period. The contrast between the limited employment opportunities which were available in the dales and the potential of the expanding industrial towns and the developing new lands overseas provided a powerful stimulus for out-migration. Nevertheless, the decision to migrate cannot have been easy for the dalesman who was accustomed to living in an insular community where mobility was a relatively recent phenomenon. The upheaval attendant on a move into Lancashire or Durham let alone to the New World or Australia must have been viewed with considerable trepidation. Those who did migrate sought to minimize the social disruption by settling within existing communities of dales' migrants. Many, however, chose not to migrate, whether due to inertia or to the fact that family ties and attachment to the area were regarded as more important than economic considerations. For whatever reasons, many chose to accept a lower standard of living rather than leave the area.

Out-migration from Wensleydale and Swaledale was a necessary corollary of an expanding population in an environment with declining employment opportunities. Much of the out-migration was undoubtedly preceded by financial suffering due to loss of employment and was possibly accompanied by emotional distress arising from the severing of family and community ties. However, once migrants, particularly those who had emigrated, became established in their new homes, most appear to have been well satisfied.
with the decision to migrate. By the beginning of the twentieth century, although the population of the two dales was much diminished, a more balanced and potentially healthier economic and social structure had begun to emerge.
NOTES - MIGRATION


5 A. Wilson Fox, 'Agricultural Wages in England and Wales during the Last Fifty Years', JRSS, LXVI, 1903, p311; J. Caird, 'General View of British Agriculture', JRASE, 2nd ser., 14, 1878, p303; Lawton, op cit, p211.

6 Wilson Fox, op cit, pp311-2; BPP, 1894, XVI-iii, RC on the Agricultural Depression, Minutes of Evidence, evidence
of T.H. Hutchinson, farmer, Richmond, near Yorkshire. 843,880, labourers were not finding local employment 'they are being starved out of the small country villages which are becoming depopulated; not that these people dislike the country or want to leave the country, but ... they are obliged to seek employment elsewhere'; Anon, 'Changes in the Agricultural Population, 1830-61', JRSS, XXIV, 1861, p412. See also Saville, op cit, p7.

7 Wilson Fox, op cit, p311; Wensleydale Advertiser, 23 June and 7 July 1846; the 'pull' factors were sometimes more apparent than real. A correspondence developed concerning the extent to which settling in Wisconsin, U.S.A. enhanced both the standard of living and the quality of life.

There was frequently a shortage of houses in rural areas with such as existed being of poor quality; there was a marked lack of social amenities such as existed in towns, and the agricultural labourer and his wife desired to go 'where life was less monotonous'. Some observers felt that migration in the late nineteenth century was due 'to the desire for greater travelling' and that there was often a 'sentimental' desire on the part of the potential migrant to join a member of the family or community of local people who had already migrated. In some cases the move was made with the desire to improve social status; Wilson Fox, op cit, pp302,311,315,320; Caird, op cit, 1878, p301; BPP, 1894, op cit, 043,739; Saville, op cit, p7; Lawton op cit, p218; Darlington and Stockton Times, 28 September.


S. Saville, op cit, p7.


Wrigley & Schofield, op cit, pp473-6.

1801-30 - The calculation is based on an estimated average annual rate of natural increase of 1.6 per cent for the whole of the North Riding, P. Deane and W. A. Cole, British Economic Growth 1688-1959, Cambridge, 1969, p115. This figure is possibly rather high for the dales, particularly where there was a net out-migration in the previous decade but in the absence of other data it provides a useful base.

1831-60 - Although Civil Registration commenced in 1837 relevent details for the local registration district were not consistently produced until 1861. The returns for 1831-60 have, therefore, been estimated. The method of calculation is detailed in Appendix XVIII.
Many of the poor families in this dale [upper Wensleydale] are very numerous ... that the contry [sic] is not able to find support for all the inhabitants, insomuch that a great part of the youth when old enough are compelled to migrate'. It is estimated that between the 1670s and 1801 Askrigg and Aysgarth parishes lost 37.0 and 48.5 per cent of their natural increase respectively. Conversely, over the same period, the two Swaledale lead-mining parishes of Grinton and Marrick enjoyed a 30.0 and 13.0 per cent increase in total population respectively. P. J. Asquith, 'Population Change in Selected Parishes in Swaledale and Wensleydale in the Seventeenth and Eighteenth Centuries', unpublished undergraduate dissertation, Oxford University, c1978, pp37-8. This does not mean that Swaledale did not suffer from depression and out-migration prior to the nineteenth century. 'Some years ago ... the gentry freeholders and mining adventurers of this district [Arkengarthdale] became discouraged and relinquished their works nearly altogether, much to the injury of the poorer classes ... many families [were] ruined and driven to emigration ... ', Romney, op cit, p222; Lawton, op cit, p206; M. Yasumoro, 'Industrialization and Demographic Change in a Yorkshire Parish', LPS, 27, 1981, p23, Yasumoro notes that there was a 13.4 per cent out-migration between 1801-11 in Methley, an agricultural parish on the outskirts of Leeds.

There is, of course, no precise data on the migratory
flows within a decade and no information as to the exact proportion of native born who were leaving.

16 NYCRO, PP 19/17, Census Enumeration Abstract for the County of York, 1851, Askrigg.

17 Marshall & Walton, op cit, p84, a similar movement occurred in parts of rural Cumbria where pockets of mining existed but in that area the industrially stimulated in-migration peaked in the 1870s and 1880s, much later than in the dales.

18 J.Harland, A Glossary of Words used in Swaledale, Yorkshire, 1873, pp1-2.

19 In 1780 and 1815 the inhabitants of Muker complained that a great many poor people had recently arrived in the area to work in the mines. These people had gained a settlement in the township and, as a consequence, the poor rate had increased from Is 3d in 1770 to 10s in 1816. Fieldhouse and Jennings, op cit, p303. In 1817 more than half the paupers in Reeth were immigrants who had come to work in the mines and the poor relief expenditure had risen from £949 in 1811-2 to £2054 in 1816-7. Journal of the House of Commons, Vol 72, 1817, pp13,19,53-4; Vol 74, 1818, pp153,169,208-9, quoted in Raistrick and Jennings, op cit, p303. The sufferings of the population and subsequent migration is reflected in the fall in rents which took place in both dales; WYAS/L, Vyner MSS, 5444, Earl de Grey, Valuation of ... Wensleydale, 1842; 5529 Account Books of Rents of the Earl of Ripon, 1854; Barker MSS, 5/8/2, 5/8, Barker Account Book, 1823-55,1819-91.
However, there were still many people in receipt of poor relief. Expenditure on poor relief was rising in Swaledale in the early 1840s. For example, in the lead-mining townships of Reeth, Arkengarthdale and Muker expenditure between 1838/9 and 1840/1 rose by 54.3 per cent, 52.4 per cent and 44.0 per cent respectively, Barker MSS, 9/3, Expenditure of the Townships of Reeth Union, 1838-1841.

NYCRO, PP 19/8, Census Enumeration Abstract for the County of York, 1831, Arkengarthdale, the Arkengarthdale enumerator stated that 'the low price of labour has induced miners to go to other places in search of work; hence the decrease in population'. Likewise, the Grinton enumerator reported that the labourers in the vicinity were not agricultural but lead and coal miners and because of the low price of lead there was emigration for 'want of employment'. Similar reasons were given for the decline in 1841, NYCRO, PP 19/10, Census Enumeration Abstract for the County of York, 1841. See also Barker MSS, 2/5/2, Garth Day Book, 1830.

Out-migration had a major impact on birth rates. The most mobile sections of the population were young and healthy workers with or without a family. Their departure in search of work led to an altered age structure weighted towards an older, less-fertile population. Romney, op cit, pp110-1; W.Armstrong, 'The Flight from the Land,' in G.E.Mingay(ed), The Victorian Countryside, 1981, Vol 1, p133; A.J.Cairncross, Home and Foreign Investment,
Local birth rates were much lower than in some similar mining communities in Cornwall. There, the failure of the copper industry in 1866 resulted in a decline in the 1871 birth rate to 29 per 1000 in Redruth and 37 per 1000 in St Just. M. Brayshay, 'Depopulation and Changing Household Structure in the Mining Communities of West Cornwall, 1851–1871', *LPS*, 25, 1980, p35.

Wrigley & Schofield, op cit., p475.

Lower Wensleydale forms part of Leyburn Registration District. Between 1851 and 1911 birth and death rates are available only for the whole district and it is these which are discussed here.

The decline in the birth rate and consequently the rate of natural increase was not confined to the dales. Northern England, generally, and other upland areas such as the South West and Wales were also affected by early losses of population due to migration and an ageing population; Lawton *op cit*, p202. Table 15.1 suggests that the rate of natural increase was declining in the dales from at least the 1830s. Lawton notes that even by 1841 the rate of population increase in rural areas was diminishing rapidly, *ibid*.

This is contrary to the situation in neighbouring Westmorland which was able to maintain its high rate of increase and produce a steady outflow of young people without experiencing an absolute loss of population during the nineteenth century, Marshall & Walton, *op cit*, p19.
The figure for Swaledale is much higher than that given by Cairncross. He recorded a loss of only 78.6 per cent of the calculated natural increase in the northern residues between 1841 and 1911, Cairncross, *op cit*, p78, Table 16.

Baines, 1981, *op cit*, p145; Thomas, *op cit*, pp125-6; Saville, *op cit*, p11. Saville notes that migration from the countryside, in absolute terms, reached a peak in the 1870s and 1880s. He maintains that the rural exodus reached one of its peaks during the 'High Farming' period prior to 1875 although he acknowledges there were marked regional differences. The dales, as has been noted, experienced their greatest decline a decade later. This follows Cairncross's findings that migration in the northern rural residues was most marked between 1881 and 1891 whereas migration in similar areas in the south was most marked between 1871-81. Cairncross, *op cit*, p76, Table 15. The exodus of the lead-mining population appears to have been at its height between 1880 and 1883. The value of Swaledale lead halved between 1882 and 1884 and employment in the lead industry fell by 36.9 per cent between 1890 and 1883, PRO RAIL 1060/16-8, ZHC 1/4688,4622, Mineral Statistics, 1880-4. See also A.Raistrick and B.Jennings, *A History of Lead Mining in the Pennines*, 1965, repr. Ilkley 1983, pp325-6.

Paradoxically, the railway, which eventually aided economic recovery in the area, also facilitated the departure of migrants not only in providing transport but also in enabling the interchange of information concerning
wages "such as have not hitherto been known in these secluded dales", Thomas Sopwith, lead mine agent, 1866, quoted in C.J.Hunt, The Lead Miners of the Northern Pennines in the eighteenth and nineteenth centuries, Manchester, 1970, p196.


30 Population of Swaledale: 1921 = 2532, 1931 = 2311. Population in upper Wensleydale also settled in the early twentieth century to about 4300. Lower Wensleydale, however, moved from 2058 in 1921 to 2627 in 1931. NYCRO, PP 19/43,46, op cit, 1921 and 1931; see also Cairncross, op cit, p77 for comments concerning the law of diminishing returns operating to protect agriculture and what was left of rural industry in the early twentieth century.

31 The counter-current was weak with relatively few outsiders moving into the area. Some of these immigrants will have been non-native children returning with the native parents; Ravenstein, op cit, p187.

32 This is higher than in other areas such as the Derbyshire Peak District or the rural mining village of Bow Street in Cardiganshire and much higher than in urban areas. For example, only 48 per cent of the population of Preston in 1851 was born within the town; R.Hall, 'Occupation and population structure in part of the Derbyshire Peak District in the mid-nineteenth century', East Midland Geographer, 6, 1974, pp73-4; G.J.Lewis, 'The Demographic Structure of a Welsh Rural Village during the
Mid-Nineteenth Century', Ceredigion, 5, 1967, p295; Anderson, op cit, p37; see also Marshall and Walton, op cit, p85.

33 BPP, 1881, XVI,RC on the Depressed Condition of Agricultural Interests, Reports of Assistant Commissioners, Mr Coleman’s Report, p138.

34 This supports Ravenstein’s theory that many of those moving into an area did so for business reasons, Ravenstein, op cit, p187.

35 Cairncross, op cit, p68, also makes this point.


37 Leyburn was a thriving market town 1851 to 1881, and contrary to most other townships in the study area, showed a consistent increase in population. ‘The rising importance of the town is such, chiefly on account of its having retained its market, that it is now considered the “capital of Wensleydale”. ... About half of the houses have been erected since 1801’; T. Whellan, History and Topography of the City of York and the North Riding of Yorkshire, Beverley, 1859, p136.

38 It is impossible to identify how many of the upper dale people moved from Leyburn during the subsequent dale people moved from Leyburn during the subsequent periods of declining population. In this respect Ravenstein’s Wave Theory cannot be tested. The miles distant of recorded birthplace has been calculated from the central village in the township where the immigrant resided at the census. The
returns of these townships have been aggregated into upper and lower Wensleydale and Swaledale areas. PRO, HO 107/2379, CEB, 1851, Leyburn and West Witton.

30 PRO, RG 9/3668, CEB, 1861, Castle Bolton and Redmire.

Anderson, op cit, passim.

Ibid, p37.

Ibid.


44 PRO, RG 9/2380,3672-3, RG 10/4872-3, RG 11/4877-8, CEB, 1851-81, Swaledale, passim.

Anderson, op cit, pp152-3.

J. Rowe, The Hard-Rock Men: Cornish Immigrants and the North American Mining Frontier, Liverpool, 1974, passim, for example see pp28-9, 49-50, 90-1, 99-102, 233. See also Baines, 1985, op cit, pp27-8

Ibid, pp74-5; Rowe, op cit, passim.


There is little documentary evidence as to the migration of females from the dales but there is a strong local oral tradition to this effect. This accords with patterns noted elsewhere; see Ravenstein, op cit, pp196-8.

Marshall & Walton, op cit, pp86-7, also noted this desire to move close to people from the migrant's native community. Anderson further stresses that the establishment of close-knit communities of people from the native rural districts provided vital support for the new
immigrant; Anderson, op cit, pp152-4. See also Wilson Fox, op cit, p311. For example, in 1871 in each of two streets in Burnley there were seventeen people who had been born in upper Wensleydale and one of the streets also had two people who had been born in Arkengarthdale, PRO RG 10/4179, CEB, 1871, Burnley.

Cairncross, op cit, pp72-3 notes that the textile towns enjoyed a heavy gain in the 1840s, a small net loss in the 1850s, an increase in the 1860s and 1870s which, in Burnley, continued into the 1880s and 1890s. There does not appear to have been a two step migration as far as the dales' people were concerned. Ravenstein identified this movement and Anderson finds some indication of it but neither was able to ascertain the extent to which the same people were involved in the different stages. For further discussion see Armstrong, op cit, p125. Although some of the dales' people (apart from miners) moved several times, generally, the movement was to a specific place, particularly where there were already local contacts. Wensleydale and Swaledale migrants who settled in north-east Lancashire maintained contact with the dales' community they had left behind, Hartley MSS, Diary of H.Storey, 23 December 1899, records visiting relations and friends in Burnley and Colne. The tradition was continued by subsequent generations and annual reunions were still being held in the 1930s, E.Pontefract and M.Hartley, Swaledale, 1934, p97. Even in the present day local people still visit branches of the family settled in Lancashire
and many upper-dale youngsters support Burnley Association Football Club. Anderson notes a similar kinship network between Preston immigrants and their original home. He points out that it provided a safety net for the migrant, Anderson, op cit, pp152-7. A further indication of the connection between migrants and their original home is demonstrated on the gravestones of Askrigg Churchyard. Of those recorded as dying elsewhere in the nineteenth and early twentieth century, ten died in Lancashire, two each in Glasgow, the U.S.A. and Canada, and one each in Keighley (West Riding) and Osmotherley (North Riding), P.M.Litton(transcriber), Askrigg Graveyard Monumental Inscriptions, 1978, transcription in the possession of the Vicar, St. Oswald's Church, Askrigg.

- BPP, 1895, XVI iii, RC on the Agricultural Depression, Minutes of Evidence, evidence of T.H.Hutchinson, 043,878-83, 43,978, 44,001. p24; and see Cairncross, op cit, pp72-3.
- T.C.Calvert, Burtersett 70 Years Ago, Hawes, 1974, p7, and personal reminiscences recorded 10 November 1977. The population of Burtersett doubled between 1870 and 1900 due largely to the short distance migration of these stone labourers who had formerly been leadminers, H.Holroyd, Methodism in Wensleydale 1765-1965, (no page numbers), and Calvert,1974, op cit, p4.
- See the chapter on quarrying for further discussion on
this point.

PRO, HO 107/2254, RG 10/4155-6 RG 11/4160-2, CEB, 1851, 1871, 1881, Brierfield. An indication of the migratory patterns in 1881 can be gained from the following examples of birthplaces: 1851 - A forty-eight year old coal miner born in Swaledale, forty-six year old wife born in Wharfedale, two eldest children born in Swaledale and two youngest children born in Marsden (Brierfield); 1881 - A sixty-eight year old widow born in Swaledale, four children born in Swaledale and the fifth, a thirteen year old, born in Brierfield; A household of seven, a fifty-four year old widow born in Wensleydale, three children and a lodger born in Carperby, Wensleydale, one child and one grandchild born in Brierfield. 'Burnley was filled with emigres from Swaledale', many of these emigres attended Brooklands Road Chapel, Burnley, and in c1910 still had relatives in the dales. M.C.Pratt, The Silent Ancestors - The Forebears of E.J.Pratt, Toronto and Montreal, 1971, p133; E.Driver, Memories of a Heritage: Memories of Brooklands Road Methodist Chapel, Burnley, Burnley, 1982, passim.

G.Moor, The Northerners, 1956, a novel based on the actual migration of an Askrigg family to Liverpool to establish a cowhouse in the 1890s. The novel presents an interesting insight into the life of such a family. Moor's family had lived in Askrigg and his novel is based on oral sources.

Details supplied by Joan Grundy from her unpublished thesis, 'The Origins of the Liverpool Cowkeepers', M.Phil
The analysis relates only to heads of household and includes details of dales-born cowkeepers only for 1861.

Local oral sources. Further information supplied by R. Ewbank, London, 9 September, 1979, concerning the branch of his family who moved from Wensleydale to Liverpool to establish themselves as cowhouse keepers in the late nineteenth century. It is probable that the numbers of dales' cowkeepers in Liverpool declined during the early twentieth century when the transport of liquid milk direct from the dales had become firmly established (see Chapter 14).

This refers to the more permanent migrants. There were, of course, other migrants who visited the dales from time to time. These included the railway navvies (see Chapter 14) and seasonal labour, particularly Irish labourers. The Irish were employed during the hay harvest in June and July. No record exists of how many there were but local tradition maintains that they came in substantial numbers. The Irish migrant worker could still be found in Wensleydale as recently as the 1960s, local oral tradition and J.A. Jackson, The Irish in Britain, 1963, pp78,97.

For example, in 1851, 67.9 per cent of the twenty-eight inmates of Bainbridge workhouse were non-native to the parish. The situation had improved by 1861 but non-natives still formed a substantial 36.4 percent of the twenty-two inmates PRO, HO 107/2380, RG 9/3670, CEB, 1851, 1861, Bainbridge.
NYCRO, ZPD, 'Select Vestry Minutes of Bainbridge', 19 December 1822. Also see R.P. Hastings, 'Poverty and its treatment in the North Riding of Yorkshire, c1780-1847', D.Phil Thesis, University of York, 1978, pp68,70,86. Hastings provides several examples from the select vestry minute books of townships in both Wensleydale and Swaledale. The examples were mainly from the 1820s and 1830s and the vestries invariably stipulated the factories to which the paupers were to go. Pauper children were also sent; a resolution was made "that the overseers inspect the situation of the paupers to see how many children there are who are receiving assistance in order that the same above 9 years of age may have a situation procurred for them in factories", NYCRO, ZRD 5, 'Muker Select Vestry Minutes', 27 April 1836, cited in ibid, p86.


Ravenstein, op cit, Map 5; Hunt, op cit, p198, in the 1830s the vast majority of lead miners from the dales to the north of Swaledale went to the north-eastern coalfield during the depression and indications are that some Swaledale miners likewise did so. M.Sill 'Mid-nineteenth Century Labour Mobility: the case of the coal miners of Hetton le Hole, Co. Durham', LPS, 22, 1979, pp44-50, Sill notes that many of the twenty-nine Yorkshire born coal miners working in Hetton in 1851 had been born in the leadmining districts of Swaledale.

Diary of Matthias Dunn, 1832, extracts reprinted in
Hunt, op cit, p201; see also M. Sill, 'The Diary of Mattias Dunn, Colliery Viewer, 1831-36, The Local Historian, 16, 1985, p422.

Hunt op cit, p202.

Details supplied by P. Norris.

PRO, HO 107/2379, RG 10/4869,4872, CEB, 1851, Redmire, 1871, Preston-under-Scar, Redmire, Melbecks.

Although it was fairly common for miners to undertake repeat migrations, including returning to their home areas, this was less frequent with other occupational groups. While some may have migrated with the intention of accumulating wealth prior to resettling in their home area, the majority of non-mining migrants were prepared to move permanently. In this respect the dales' pattern does not follow the Irish model of migration, which was to accumulate wealth with the object of returning to the area of origin.

Hunt, op cit, p202.

E. Cooper, Men of Swaledale, Clapham, 1960, p31, extracts from Edward Broderick's diary, 24 September 1830.

This accords with D. Baines' findings that emigration to the U.S.A rose substantially after 1815, Baines, 1985, op cit, p58. There were, of course, earlier emigrants. John Terry of Redmire mill emigrated to Australia in c1819, Wensleydale Advertiser, 7 and 21 July 1846; for an account of some specific emigrant families see M. Hartley & J. Ingilby, Dales Memories, Clapham, 1986, pp84-103.

Cooper, op cit, p31, 3 September 1830.
reference is made to a farmer selling land prior to emigrating in early 1835; - 2/5/2, Garth Day Books, 1820-47, Garth makes several references to farmers selling their land prior to emigrating. Cooper op cit, pp27-40, passim. Details are given of two of Broderick's friends selling their goods and leaving for America in 1833. Broderick stated that at least seven others of his acquaintance left Swaledale for America in that year. Baines notes that most of those emigrating in the first half of the nineteenth century were farmers or skilled artisans, Baines, 1985, op cit, pp74-5.

BPP, 1833, V, Select Committee on the Present State of Agriculture and Persons Employed in Agriculture, Minutes of Evidence, Q 6588, evidence of Robert Blamire, an east Cumberland farmer; see also E. Cooper, Muker: the Story of a Yorkshire Parish, Clapham, 1948, p92, Muker select vestry paid the passage for at least one pauper to emigrate to America. Many migrants were assisted with their passage, particularly those travelling to Australasia, Baines, 1985, op cit, pp85-6.

Cooper, 1960, op cit, pp53, 58.

Wensleydale Advertiser, 18 June 1844, 1 April 1845, refer to 'several families' and 'over fifty people' respectively.

Ibid, 3 March 1846.

Ibid, 20 January 1846. Unfortunately the workhouse master was somewhat unscrupulous and arranged for the
illegal emigration of some of the paupers in his care. As a result he lost his agency, R.P. Hastings Essays in North Riding History, 1780-1850, NYCRO, 28, Northallerton, 1981, p142.

77 Cooper, 1960, op cit, pp39-40, 2 March 1833. 'About a fortnight ago Wm. Woodward received a letter from Metcalfe Bell in which he ... describes America in such flattering terms as to induce William seriously to think of going'. The Woodward family left for America on 24 April 1833. The family were still in contact with their Swaledale relations in the early twentieth century, Barker MSS, Letter from James Woodward of Dubuque, 1 April 1902.


82 Ibid, p11, and Baines, op cit, p159.

83 Horton, op cit, pp11-2.


86 Ibid, p50, for example, he examined some cows which he estimated would have been worth about £15 each in England but in Dubuque were worth about £5 each. So the small farmer could establish himself more easily.

87 Ibid, p58. One dollar was equivalent to about four shillings in 1876, ibid, p117.

88 Ibid, p58, 'agent' refers to a lead mine agent. Feetham
is in Melbecks township, Swaledale.

"Ibid, pp70-1, many other similar examples are given in the diary.


"Ibid, passim.

"Richmond and Ripon Chronicle, 12 July 1873.

"Walter White, A Month in Yorkshire, 1861, p159.

"Wensleydale Advertiser, 2 January 1844, a fifty-two year old man was charged with stealing from his uncle. He claimed that he wanted ten pounds in order to emigrate to America.

"Horton, op cit, p94.

"Wensleydale Advertiser, 22 October 1844.

"T. Hiscock, Wensleydale and Swaledale Almanack, Hawes, c1903, advertisement encouraging people to emigrate to America. B. Thomas notes that in the latter part of the nineteenth century, two out of three farmers emigrating from Britain went to America and over 75 per cent of unskilled labourers went to the U.S.A. and a further 20 per cent went to Canada. In 1890 miners born in England and Wales provided a high proportion of the mining workforce in the U.S.A., Thomas, op cit, pp59,145. One reference has been found referring to families emigrating from Swaledale to Spain. Leeds Mercury, 1896, quoted in Long and Davies, op cit, p22, it is not unlikely that several did emigrate to that country as it was partly due to the opening of lead mines in Spain that the Swaledale mines went into decline.

"Information supplied by the late T. C. Calvert,
H. Kirkbride, and M. Hartley and J. Ingilby.


Holroyd, op cit.

Batty, *op cit*, p50.


Darlington and Stockton Times, 3 August 1895.


Cairncross, *op cit*, p77; Cairncross notes that in some areas, particularly in the south, suffered a heavier loss.


Horton, *op cit*, passim; Barker MSS, 2/5/1-6, 5/8/2, *op cit*, passim. This would seem to indicate that the rate of
migration did not remain constant. This is contrary to the pattern noted elsewhere, Cairncross, op cit, pp68-9, 75, 211, Cairncross notes that there was a steady outflow from the Northern Rural Residues to urban areas from the 1840s to the 1870s but in the 1880s there was a heavy emigration.

110 Cairncross, op cit, p211; for a critique of the work of Brinley Thomas see Baines, 1981, op cit, pp159-60.

111 Horton, op cit, p13, notes that a few hundred of the 980 English in Dubuque were from Swaledale. A figure of 2000 emigrants from Swaledale is probably not unreasonable, given oral tradition about routes, places of settlement and emigrant communities. Although the dales experienced their greatest loss through migration in the 1880s there is no positive indication that this was also the decade for the greatest emigration of dales' migrants.

112 However, it may be the case that some dales' people who settled in Lancashire did emigrate, particularly during periods of depression. Joseph Smithson of Swaledale who knew many dales' settlers in Lancashire commented on the depression there, Hartley & Ingilbly MSS, Diary of Joseph Smithson, February 15 1842; Pratt, op cit, pp95-6, and passim; Baines's recent findings also lend support to the view that emigration and internal migration were not substitutive, Baines, 1985, op cit, pp248-9.
CHAPTER 16

CONCLUSION

This analysis of the economy and society of nineteenth-century Wensleydale and Swaledale shows the value of the long-term local study to our understanding of economic and social change. Although hampered by the lack of comparable British studies, it demonstrates the subtle and complex mix of continuity and change which co-existed in even a remote, peripheral, upland region. At different periods and in different ways the region, or its constituent sub-regions, locked into the expanding industrial economy of Britain. Striking temporal, sectoral, and spatial contrasts, therefore, emerged in the development of the region's economy and in the long-term process of its integration into the national economy, primarily as a producer of minerals and agricultural products.

Novel data used in conjunction with the detailed local analysis of conventional material have enabled a long-term quantification of the principal sources of dales' income, and that of the sub-regions, to be produced. Previously unexploited tithe material has been used in order to quantify agricultural output in the early part of the nineteenth century. A further set of unique source material, the detailed returns of rail traffic and revenue from 1868 to the twentieth century, has provided
information which both quantifies the impact of the railway on the region and throws light on the leading sectors of the local economy. Finally, the existence of a farming-family day book covering the whole of the period under study has allowed an invaluable insight to be gained of local farming practices and the impact of change at the personal level. The use of these sources in conjunction with both other unique local data sets and standard sources such as Enclosure and Tithe Awards; MAFF, Census, Mineral and Railway returns; Parliamentary Papers; Newspapers; Diaries; and Estate and Personal Papers has enabled, for the first time, a detailed and quantitative longitudinal study of a remote upland region to be undertaken.

The results of the study reveal subtle, and often unexpected, elements in the process of change. Contrary to what might be expected of such a peripheral area, analysis shows that it had a relatively complex economy. Examination of the leading economic sectors over the nineteenth century shows how continuity, and gradual and sudden change can all be operating simultaneously within an economy. The work provides, therefore, a valuable corrective to simple generalizations and assumptions which might, a priori, be applied to such a remote region. Conversely, the study also demonstrates how closely all aspects of the economy are interlinked.

A further refinement has been undertaken. At a more general level economic historians may regard the study area under as an homogeneous region and, indeed, the area does
exhibit some common characteristics. However, one of the contributions of this intensive local study has been to identify three distinct sub-regions which have been subject to clearly definable and separate influences. Each sub-region has frequently followed a different course from its neighbours and, consequently, has assumed an individual identity.

I

Analysis of data for Wensleydale and Swaledale for the period between the late eighteenth and early twentieth centuries has enabled a time scale to be placed on the changing fortunes of the area's economy. As can be seen from Table 16.1 the broad periodization traditionally assigned to agricultural history requires modification at the micro-level. For example, the economy of the two dales did not suffer a severe decline in the post-Napoleonic War period; it enjoyed a long period of growth in the second and third quarters of the nineteenth century; and it did not experience severe depression in agriculture in the last quarter of the century.
TABLE 16.1

OUTLINE CHRONOLOGY OF THE FORTUNES OF THE ECONOMY OF WENSLEYDALE AND SWALEDALE 1795-1914.¹

1795-1812 Sharp rise in prices and output during French Wars.
1812-1833 An initial slight decline followed by recovery and terminating in a depression in 1829-33.
1834-1875 Rising output and prices.
1876-1895 Decline in prices and output.
1896-1915 Recovery.

¹ Dates are approximate.

Although Table 16.1 provides an overview of the economy as a whole, in examining the principal sources of regional and sub-regional income over time it becomes apparent that the different sectors of the economy sometimes moved against the general trend. Further, as Figure 16.1 shows, the principal generators of the dales' income changed during the period.¹ Lead receipts, which accounted for over half the dales' income at the beginning of the nineteenth century, had fallen to one-quarter by the 1870s and were insignificant by the end of the century. Conversely, receipts from agriculture comprised a third of the dales' income in the early nineteenth century but by the outbreak of the First World War accounted for 90 per cent. These receipts, however, were not strictly compensatory as total income at current prices fell over the century from approximately £293,000 to approximately £186,000.

Analysis of data for the sub-regions provides a further refinement of the economic profile (see Figure 16.2) and
PRINCIPAL SOURCES OF DALES' INCOME AT CURRENT PRICES, 1795-1915.

L = Lead
A = Agriculture
T = Textiles
To = Tourism
S = Stone

Note: dates and receipts are approximate. The peak receipts for each period have been used.

Source: see relevant chapter.
PRINCIPAL SOURCES OF INCOME AT CURRENT PRICES IN UPPER AND LOWER WENSLEYDALE AND SWALEDALE, 1795-1915.

Note: dates and receipts are approximate. The peak receipts for each period have been used.

Source: see relevant chapter.
enables the processes which contributed to the disintegration of the area's traditional isolation to be identified. The sub-regional analysis clearly demonstrates that the economic structures of upper Wensleydale, lower Wensleydale and Swaledale were markedly different. Figure 16.2 amply demonstrates the dangers of generalizing about the economy of even a small region as not only were the total receipts of each sub-region different but also the leading sector in each area frequently differed from that of its neighbours. The variations in the economic patterns displayed by the lower-lying and more accessible area of lower Wensleydale and those of the other two areas might have been anticipated. It is somewhat unexpected, however, to find marked differences in the economies of the apparently similar areas of upper Wensleydale and Swaledale.

In the late eighteenth century upper and lower Wensleydale and Swaledale, in common with many other areas of the country, exhibited features which were indicative of incipient industrialization. However, differences between the area and the nation at large and within the two dales were becoming increasingly apparent. The economy of upper Wensleydale failed to industrialize to any significant degree; lead mining was insignificant and the substantial textile manufacture remained essentially a cottage industry. Accordingly, the upper dale concentrated on its limited natural advantages and developed agriculture into an industry which supplied regional and national markets.
Agriculture gained an increasingly dominant position in the economy of upper Wensleydale as the century progressed and when, from the 1870s, agriculture nationally suffered competition from imports, the farmers of upper Wensleydale were fortunate in being able to move into the naturally protected liquid milk market. In lower Wensleydale, after a period of intense lead-mining activity in the 1850s and 1860s when its share of the total income of the three areas leapt from 6 per cent in the period 1813-33 to 21 per cent in 1834-75, the economy settled into one in which agriculture, together with crafts and services, predominated. While the economy of the lower dale was more diverse and slightly less dependent on agriculture than that of upper Wensleydale, the agricultural profile was broadly similar.

Agriculture had been an important element in the pre-industrial economy of Swaledale but for most of the nineteenth century farming was subsidiary to lead mining. Although some produce was 'exported', agriculture in Swaledale was geared to serving the substantial local non-farming population. Thus, although the contribution of agriculture to the Swaledale economy was largely 'invisible' to the outside world, it was, nonetheless, very significant locally. Agriculture remained subordinate to lead mining until the last quarter of the nineteenth century when the rapid decline of the lead industry precipitated a reversion to a more traditional rural economy in which agriculture was again the central element.
The changing fortunes of the principal generators of dales' income over the nineteenth century, therefore, resulted in markedly different levels of wealth being created even at the micro-level within the two dales. Swaledale probably enjoyed its greatest prosperity during the first decade of the nineteenth century and was also prosperous in the 1820s, 1840s and 1850s while the periods of greatest prosperity in Wensleydale were the 1860s, early 1870s and the first years of the twentieth century.

Although Wensleydale had an increasing agricultural output and a buoyant textile industry in the early nineteenth century, the wealth created by the local lead industry meant that Swaledale during this period probably enjoyed an income well in excess of twice that of the whole of Wensleydale. For example, in the early years of the nineteenth century agriculture and textiles in Wensleydale probably produced goods to a value of £88,000 at current prices, while in Swaledale the value of lead alone was £150,000 and agriculture and textiles possibly had a combined value in the region of £56,000. It was only from the late 1850s that Wensleydale, with a high output from lead and agriculture, rivalled Swaledale in income. Thereafter, as the Swaledale lead industry entered a period of sustained decline, the fortunes of the two dales were reversed. The increasing commercialization of farming in Wensleydale from the early nineteenth century coupled with the advantage of the railway in the latter part of the century resulted in the economy of Wensleydale generating
more than twice as much income as Swaledale by the early twentieth century. For example, in the latter part of the nineteenth century receipts for agricultural produce in Wensleydale, at current prices, were in excess of £100,000 while stone, textiles and tourism together were probably worth in the region of £23,000. In Swaledale at the same period agricultural produce receipts were only £51,000 while receipts from the extractive industries and textiles combined probably totalled only £5,000 by the late 1890s. Whereas in the early part of the century Swaledale contributed 70 per cent of the total dales' income, by the period 1896-1915, this had more than halved and had fallen to 32 per cent. Conversely, upper Wensleydale's contribution over the same period almost doubled, rising from 25 per cent to 47 per cent, while that of lower Wensleydale quadrupled, rising from 5.5 per cent to 21.5 per cent. A closer analysis of the material further emphasises the adjustments which were being made throughout the century. Although total money income in the two dales fell by 37 per cent between 1795-1812 and 1896-1915, in real terms income rose by 13 per cent, and, due partly to large-scale out-migration, per capita real income rose by 82 per cent over the period. When the sub-regional incomes are examined, differences between the three areas again become apparent. Between 1795-1812 and 1896-1915 real income per capita in upper Wensleydale rose by 250 per cent, in lower Wensleydale by 500 per cent and in Swaledale by a relatively modest 43 per cent. These differences
represent the changing fortunes of the leading economic sectors in each area as the century progressed.

II

Although the economies of upper and lower Wensleydale and Swaledale were markedly different for much of the nineteenth century, agriculture was an important element in the economic structure of all three areas. Nationally during the nineteenth century agriculture had moved from a position of dominance in the country's economy to one of relative insignificance as its share of the total national product fell from a peak of 35.7 per cent in 1811 to 6.4 per cent in 1901. In Wensleydale and Swaledale, however, almost the reverse situation occurred and by the early twentieth century agriculture in both dales had achieved a dominance in the local economy unknown since at least the eighteenth century.

While agriculture in the three areas exhibited significant differences, it also displayed many common features. Contrary to national trends, the small owner predominated in the region but, surprisingly, these owners let a high proportion of their land. In marked contrast to other parts of the country, in the dales both the owner-occupier and tenant showed a fierce attachment to the land, an attitude which can be identified with a persistence of the pre-industrial, even 'peasant' regime. Another feature of the dales was the continuance of dualism of employment, which enabled the owner of tiny plots to
subsist and remain on the land for much of the nineteenth century. The ending of the industrial element of dual employment forced many of the peasant owners to leave and as a result the more substantial, but still relatively small, yeomen owners consolidated their position and survived into the twentieth century. Demand for land was high for most of the period, particularly in Swaledale, and land and rents were at a premium relative to other areas of the country. This situation continued even after the collapse of the lead industry, as competition for the small proportion of cultivated land remained surprisingly fierce. Local people were anxious to remain in the area and sought to own and rent land even when, at times, this no longer made strict economic sense.*

Farms in the dales remained small throughout the nineteenth century. The forty-acre farm was considered to be the minimum size for an economically-viable holding and the farm of between 50 and 100 acres was the most common. Reliance on family labour gave the local farmer flexibility, particularly in the last quarter of the nineteenth century when agricultural prices were falling and the real cost of farm labour was rising. Local farmers 'tightened their belts' and were prepared to accept lower personal incomes because their overriding priority was to remain on the land.

The analysis of previously unexploited data on the numbers of landowners and of holdings has enabled trends to be more precisely identified than has been the case in
other, more general studies on the subject. The total number of owners increased to a peak in the second quarter of the nineteenth century before entering a sustained decline. Up to the 1830s the number of holdings also increased and did not decline steeply until after 1880. While these findings are not entirely unexpected, this study, in quantifying change over time, has provided statistical evidence to support former speculation on the subject. The vulnerability of farm holdings, by size category, has also been identified and the rate of change which occurred in the different sub-regions further demonstrates the complexity of the local economy.

In the early years of the century Swaledale had the highest proportion of farms under fifty acres and as these farms were the most vulnerable, it follows that the decline in the number of farm holdings was greatest in Swaledale. All three areas suffered a major loss of holdings in the smallest category of 1-5 acres. In upper Wensleydale, however, the greatest loss in this category occurred prior to 1890 whereas in Swaledale it occurred after 1890. Lower Wensleydale, with fewer farms, maintained a relatively higher proportion in this category through to the First World War. It was not only factors endogenous to the agricultural sector which influenced the size of landownership and farm holdings, other sectors of the economy also had an impact. The ability of dales' people to continue owning or farming small holdings was closely linked to the availability of work in the lead industry,
textiles, or other by-employment.

Farming in the two dales was largely pastoral but the type of pastoral farming varied. Analysis of the tithe material for the late eighteenth and early nineteenth centuries provides a unique view of the changing emphasis within livestock farming during and after the Napoleonic War. This material used in conjunction with the later MAFF returns shows the degree to which stock and produce varied in type and level of output throughout the period. The analysis demonstrates that the dales’ farmer was supply responsive and that trends in local output differed from national trends and varied within the three study areas as farmers responded to the demands of different markets.

A major element in the dales’ agricultural economy throughout the period was dairying, specifically the production of liquid milk. Until recently agrarian historians have tended to neglect the dairying industry, particularly the production of liquid milk outside the urban fringe in the pre-railway era. The use in this study of, perhaps, unique tithe material demonstrates quantitatively the importance for the dales’ farmer of liquid milk sales to the local non-farming population. The detailed information relating to the railway which is available for later in the century illustrates the importance of efficient marketing. The ability of farmers to organize themselves into co-operatives in order to market liquid milk and the availability of transport to export the milk speedily could substantially affect the
prosperity of the agricultural economy of a region.

Agriculture in both dales experienced similar high output and prices in the early years of the nineteenth century, although in response to different factors. In Swaledale agriculture was mainly serving its local, lead-mining population while in Wensleydale agriculture was already moving into regional and national markets. Although there was some retardation of the local agricultural economy after the Napoleonic War, the dales did not suffer the acute depression identified elsewhere, particularly in the corn-growing regions. Locally, the post-1815 period saw an upward trend in overall agricultural output and revenue until the 1829-33 depression. The multiplier effect of the fortunes of the different economic sectors in this relatively 'closed' area then become apparent. The local farming interest, particularly in Swaledale, suffered as the cumulative effect of the national agricultural depression, and the loss of local markets due to the decline in the lead industry took its toll. As a consequence some small owners sold their holdings and some tenants relinquished their leases. Following the revival of the local lead industry, agriculture recovered and entered a period of relative prosperity which was more sustained than that experienced by the nation as a whole.

During the period from 1839 to 1866, for which no quantitative data are available, the revenue from agricultural output in Wensleydale increased at a much
greater rate than in Swaledale. This was due to negative and positive factors in both dales. Although still expanding, agricultural output in Swaledale suffered from the out-migration of the non-farming population and had to be directed more positively towards external markets. In Wensleydale a greater part of the total land area was capable of cultivation than in Swaledale. The extensive enclosures and improvements released this potential and the increased output which resulted enhanced the contrast between the two dales. This factor, coupled with the ability of farmers from 1856 to distribute their goods speedily on the nearby railway led to Wensleydale achieving a much higher level of revenue from agriculture than Swaledale.

Receipts from farm produce in the two dales, as with agricultural prosperity nationally, probably reached a peak in the 1860s. Receipts remained high over the next decade and in 1875, when detailed data are available, Wensleydale and Swaledale received an estimated £128,000 and £51,000 respectively for cattle, lambs, wool and dairy produce. Although receipts fell from the 1870s, this was only a relative fall compared to the high prosperity of the mid-century. As with the earlier downturn, the agricultural decline experienced in the region in the latter part of the nineteenth century was partly in response to the changing fortunes of the lead industry. This resulted in a greater rate of decline in Swaledale than in Wensleydale. Receipts in the area as a whole
declined by about 20 per cent between 1875 and 1895. As rents fell by between 15 and 20 per cent over the same period and as fodder prices also declined, the experience of agriculture in the two dales supports the revisionist view that the late nineteenth century depression was not uniformly severe. The ability of farmers in Wensleydale to move into liquid milk in the 1890s, when they were experiencing lower prices for other produce, enabled total receipts in that dale to increase markedly from the mid-1890s nadir and by 1911 receipts had exceeded the 1875 level. In Swaledale the recovery from the depression was muted and by 1915 receipts were still more than one-fifth lower than in 1875.

A contemporary writer noted that the survival of agriculture in the area and the continuing high demand for farms during the final years of the nineteenth century was due to the persistence of the local farmer and the fact that:

markets and means of transport are above the average; that landlords, as a rule, are very liberal; and that ... their [the dalesman's] shrewdness, and the practice of growing meat more than grain, have enabled them to face the storm with much smaller loss [than in the south] .... in exceptional circumstances, and especially with exceptional men, farming is not yet absolutely unremunerative.
During the nineteenth century the lead industry in Swaledale and parts of Wensleydale was the main rival to agriculture as the leading economic sector. It was largely the existence of this industry which dictated that the economy of Swaledale until at least the 1870s would be very different from that of Wensleydale. Contrary to the situation in agriculture, where most of the capital required for improvement appears to have been raised locally, the dales' lead industry was developed initially by injection of external capital and expertise. However, this external interest was soon withdrawn and in its heyday the industry was run largely by local men. They invested capital which had been generated both from within the industry and from other sectors of the economy such as agriculture and, possibly, textiles. The lead industry prospered from the early nineteenth century to the late 1860s. The use in this study of statistical information from several sources forces a revision of the established chronology of the fortunes of the Swaledale industry. In terms of output, receipts and employment, the Swaledale industry was probably at its peak in the first quarter of the nineteenth century and not, as formerly suggested, in the 1840s and 1850s. In the period 1805-9, when the annual output of lead in Swaledale was estimated to be in excess of 4000 tons, the average value of the lead produced was about £150,000 per annum. The severe depression of 1829-33 was a watershed for the dale's lead industry and
although the local industry recovered and enjoyed further prosperity, it did not regain its earlier prominence. The lead industry in Wensleydale was less important and, at its peak in 1855-9, the average value of production, at £33,500 per annum, was less than half that of Swaledale's in the same period.

The collapse of the lead industry in the latter part of the century was due to a combination of factors. A fall in the world price of lead coincided with the exhaustion of most of the accessible seams and resulted in a lack of confidence in the industry. Hence, although reserves remained, the investment required to develop the mines was not forthcoming. Thereafter, agriculture became the undisputed mainstay of the economy.

IV

The other industry which, like agriculture and lead mining, had a continuity with earlier periods, was textiles. This industry, for a time, was one of the leading sectors of the dales' economy. It probably reached its peak output in the early nineteenth century and even in the early 1820s when the industry was in decline, production was valued at £40,000 per annum. In the late eighteenth and early nineteenth centuries the dales were involved, to a greater or lesser extent, in the production of linen, cotton, and woollen cloth. The attempts made locally to mechanize textile production largely failed and
the dales' textile industry became a casualty of the centralization of the processes of production.

The manufacture of cotton in the dales provides a further example of the early tendency of this industry to disperse. The local industry also demonstrates that when cotton production ceased to be dependent on water power, access to markets became a major locational factor. Thus, the local cotton industry enjoyed only a brief existence. However, mechanization of the woollen industry survived in a limited form and mills were used to prepare yarn for the local hand-knitting industry. This cottage industry exhibited a remarkable tenacity and, although much diminished in size, continued into the early twentieth century.

Aspects of the organization of the textile industry in Wensleydale and Swaledale display similarities with the proto-industrial model identified by F. Mendels. However, the local experience does not fit easily into the proto-industrialization model. Apart from a brief foray into the area by cotton producers from the West Riding and Lancashire, the proponents of mill-centred industry were local and employed capital derived from local sources. Although the dales' textiles were sold in regional and national markets, this pattern of distribution had been a feature of the industry from at least the early eighteenth century. The local industry suffered from the fundamental disadvantages experienced in many other pastoral areas. The dales were relatively isolated and lacked the efficient infrastructure and industrial
organization which would have enabled the industry to expand. The dynamics of the textile industry in Wensleydale and Swaledale, therefore, accord more closely with other models relating to industries in pastoral and, specifically, upland areas.¹¹

V

Recent research on the establishment of turnpikes in Great Britain has suggested that capital for their development was generated largely within the individual localities.¹² This was not the case with regard to at least one of the turnpiked roads in Wensleydale and Swaledale. As in the lead industry, external capital was employed in the construction of the Richmond and Lancaster Turnpike. The promoters of this turnpike had little interest in the dales' economy, rather they were concerned with linking the east and west coasts. However, although motivated by external interests, the turnpike was of significant benefit to the dales' community.

Similarly, in the late nineteenth century when a railway was built throughout the length of Wensleydale, external capital was again used. The interest of the promoters was in the provision of a through route linking not only the east and west coasts but also the industrial areas to the north and south of the dales. Further, the NER Company was motivated by strong territorial considerations and was determined to forestall any possible encroachment by other companies on what it considered to be its area.
Wensleydale was the greatest beneficiary of both turnpike and railway developments. It was fortunate in being a natural trans-Pennine route whereas Swaledale was effectively closed off from contact with the west. As most of the produce of the local industries prior to the late nineteenth century was carried on the hoof and followed pack-horse or drove roads, the absence of a turnpike throughout Swaledale was not critical. In the late nineteenth century, however, when speed and easy carriage of bulky goods had become crucial to the local economy, the lack of rail communications in Swaledale proved a major handicap.

The Wensleydale railway provided a vital service in assisting the local economy to remain viable and the dales' people, unlike those in some other rural areas, responded positively to the potential the railway offered. They exploited the creative and substitutive capabilities of the rapid and bulk-carrying transport system. The dalesman could now compete in regional and national markets on a similar footing to other producers. The price paid by the local community for the railway was the eventual loss of rural crafts and services as mass-produced goods became easily available in the dale. However, the loss was not immediate and many rural crafts and services survived well into the twentieth century. Their final demise was probably as much the result of the arrival of motor transport as of the railway.

The existence of a railway in Wensleydale and not in
Swaledale provides a useful opportunity to examine closely the impact of a railway on a rural economy. When statistical data and other information concerning the railway is related to the long-term trends already identified, the net benefits of this mode of transport for the local economy can be assessed. The local railway substantially aided the recovery of agriculture in Wensleydale and it also enabled the new industries of stone and tourism to be developed, all of which helped the ailing economy and assisted in slowing down out-migration.¹⁴

VI

The population and migration patterns identified in Wensleydale and Swaledale for the whole of the nineteenth century provide a useful local addition to the recent national and regional studies on migration. The relatively long time period covered in this study and the combined use of the Census Enumerators’ Books, the Registrar General’s Reports and local material on migration provide a valuable insight into the dynamics and vectors of migration.

Throughout the nineteenth century the dales had an unusually high proportion of the population born within the area.¹⁵ For example, in 1851 upper Wensleydale and Swaledale had 80.6 and 86.4 per cent respectively of their population born within the parish, while lower Wensleydale, partly reflecting its size and greater accessibility, had 63.9 per cent. It follows, therefore, that the region was a relatively ‘closed’ area and that the migratory flow was
predominantly outward. However, there were significant differences at the sub-regional level, demonstrating the complexity of migration patterns even within a small area. For example, in the first decade of the nineteenth century, while people were leaving upper Wensleydale, Swaledale was experiencing a brief in-migration as workers responded to expanding employment opportunities in the lead industry.

The traumatic experience of Swaledale, especially during the 1829-33 depression and in the early 1880s, graphically illustrates the vulnerability of a large workforce dependent upon a single, non-farming industry in a rural area. As in some other mining areas, the demise of the lead industry resulted in a catastrophic loss of employment to which out-migration was the inevitable response. In the absence of alternative employment, the local population had to be reduced to a level which could be supported largely by agriculture. Upper Wensleydale had been adjusting to this more or less steadily throughout the nineteenth century and between its population peak in 1831 and 1911 it lost a relatively modest one-quarter of its population. In Swaledale, which lost an astonishing two-thirds of its population between its peak in 1821 and 1911, out-migration came in a series of sudden outflows concentrated in the decades 1821-31, 1851-61 and 1881-1901. In the decade of heaviest out-migration, 1881-91, Swaledale lost almost one-quarter of its 1881 population. In lower Wensleydale, despite the loss of one-third of its population between the peak in 1861 and 1911, there was, overall, a slight
increase in population over the nineteenth century as a whole. The removal of the surplus population, although involving hardship for those affected, meant that a sustained drain upon the resources of the local economy was avoided. The capital generated within the area, therefore, could be used productively and thus help provide an economy which could sustain a viable community.

The destinations of dales' migrants followed a similar pattern to that identified in other studies: the places chosen were frequently ones where a community of former dales' people had been established. As with the destination of Cornish miners, many of the dales' miners emigrated to North America in search of similar work. Recent research by D.E. Baines would suggest that internal and international migration were complementary rather than substitutive. Analysis of the pattern of migration in the dales, while providing some evidence of stage migration, generally supports this view. Out-migration from the dales to Lancashire and other places in Britain took place at the same time as emigration to North America and Australia and most migrants appear to have migrated in one move to their final destination.

VII

The long run of data enabling aspects of the agricultural, lead and textile industries to be quantified coupled with the information on population, migration and transport provides a penetrating insight into the mechanics
of the economy of a relatively remote upland region. The study has demonstrated how a 'closed' area could continue, until the late nineteenth century, with its pre-industrial economic and social structure virtually intact. Even in the difficult period of the 1880s and 1890s when Wensleydale and Swaledale lost a substantial proportion of their population and a few lead-mining hamlets were actually abandoned, there was sufficient diversity of occupations to enable the local village communities to survive, if somewhat diminished in size.

The thesis highlights the inter-dependence of the different elements of the economy over a long period and demonstrates how the economic structure of one period affects the fortunes of another period. For example, viewed from the perspective of the 1860s and 1870s, Swaledale had clearly become unduly dependent on the lead industry; therefore, the legacy of the past had a catastrophic impact when the price of lead collapsed. Unexpected details emerge, such as the early significance of liquid milk output; the tenacity with which local people fought to remain on the land; and the continuing high value of land even after the demise of the lead industry. The so-called boom and depression of the second part of the nineteenth century has been assessed in the light of detailed information covering the whole period from the late eighteenth to the early twentieth centuries. A period of buoyancy and increased wealth has been identified as occurring in the 1850s and 1860s. However,
in the last quarter of the nineteenth century, although the lead industry had collapsed, the two dales did not suffer a severe or prolonged agricultural depression. The relationship between national and local economic patterns has been examined. While, in general terms, the local economy followed the national trend, it has been shown that there were significant differences such as the limited local economic decline after 1812 and the substantial recovery in Wensleydale from 1895. These, and many other details would have been missed if the study had been approached in the traditional way using only standard sources.

In order to test the typicality or otherwise of the results of this study, more research needs to be undertaken on similar areas using non-standard material, much of which is still in private hands. These sources should be used in conjunction with standard sources (a large proportion of which have not been subject to detailed study at local level). Such studies would enable historians to gain a greater insight into the mechanics of change and would demonstrate the extent to which the intricate nature of the social and economic change identified in this study is common to other rural, and specifically rural upland, areas in nineteenth century Britain.
NOTES - CONCLUSION

1 In the absence of detailed statistical data for the whole of the period, the income shown in Figure 16.1 provides only a rough guide to the relative importance of the different sectors and is not intended to be taken as a precise and accurate quantification.

2 Figure 16.2 suffers from the same limitations as identified for Figure 16.1. No attempt has been made to quantify the contribution of crafts and services to the economy. This omission has had the effect of understating total income in all three areas but particularly in lower Wensleydale, which had a relatively more important craft and service sector than upper Wensleydale and Swaledale.


4 This situation still pertains today, information supplied by J. L. Barker, landowner; H. Kirkbride, owner/farmer; D. Middleton, owner/farmer; and other residents of Wensleydale and Swaledale.

5 Although there is a lack of quantitative data for the period 1839-66 narrative sources attest to the increasing growth of agricultural output and revenue during the mid-nineteenth century.

6 Based on receipts for dairy produce, and wool.


D. Defoe, A Tour Thro' the Whole Island of Great Britain 1724-5, 1727, 1928 ed., p222.


D. Howell, Land and People in Nineteenth-Century Wales, 1977, pp126,149.

A recent Swedish study further demonstrates the importance of the railway for the local economy, J. Moller, 'The landed estate and the railway', JTH, 8, 1987, pp147-163.


APPENDIX I

CATEGORIES OF OCCUPATIONS

Occupations recorded in the Census Enumerators' Books, 1841-81, for Wensleydale and Swaledale and categorized primarily on the basis of Booth's classification.

FARMERS

FARMER'S FAMILY (excl. wives & children under 15 yrs unless stated to be working on the farm)

SPECIFIED AGRICULTURAL WORKERS

Shepherd  Huntsman  Forester
Molecatcher  Gamekeeper  Castrator
Dairymaid  Cowman  Cattle dealer
Hind  Drover  Farm carrier
Woodcutter  Sawyer

UNSPECIFIED AGRICULTURAL WORKERS

NON-AGRICULTURAL WORKERS AND UNSPECIFIED LABOURERS

CRAFTSMEN (INCLUDING APPRENTICES)

Millwright  Tinner  Stone mason
Pattenmaker  Cordwainer  Clogger
Shoemaker  Tailor  Milliner
Plasterer  Plumber  Carpenter
Taxidermist  Blacksmith  Engineer
Needlewoman  Seamstress  Dressmaker
Staymaker  Glazier  Cooper
Joiner  Painter  Wagoner
Woodturner  Builder  Printer
Iron founder  Bookbinder

TRADESMEN & SHOPKEEPERS.

Draper & Tailor  Grocer  Tallow chandler
Butcher  Cheese factor/mgr  Bacon factor
Butter factor  Ironmonger  Cattle dealer
Confectioner  Horse dealer  Draper
Flour dealer  Maltster  Bread baker
Corn factor  Corn miller  Barber
Hairdresser  Carter  Carrier
Huckster  Lead carrier  Coal carrier
Rag collector  Fellmonger  Chimney sweeper
Cattle jobber  Hosier

INNS & LODGING HOUSES.

KNITTING - HOME
TEXTILES - HOME
TEXTILES - MILL
MINING - COAL
MINING - LEAD
WORK ASSOCIATED WITH THE LEAD INDUSTRY
QUARRYING

PROFESSIONAL

Ministers of Religion  School teacher  Doctor
Lead mine agent  Land agent  Coal agent
Book agent  Insurance agent  Auctioneer
Registrar B.D.M.  Chemist  Druggist
Inland Revenue officer  Toll collector  Farm bailiff
Lay preacher
<table>
<thead>
<tr>
<th>MANUFACTURERS AND OWNERS OF BUSINESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mill-owner</td>
</tr>
<tr>
<td>Colliery-owner</td>
</tr>
<tr>
<td>Quarry-owner</td>
</tr>
<tr>
<td>SERVANTS</td>
</tr>
<tr>
<td>Housekeeper</td>
</tr>
<tr>
<td>Domestic</td>
</tr>
<tr>
<td>Nursemaid</td>
</tr>
<tr>
<td>Washerwoman</td>
</tr>
<tr>
<td>Charwoman</td>
</tr>
<tr>
<td>Groom</td>
</tr>
<tr>
<td>Coachman</td>
</tr>
<tr>
<td>Gardener</td>
</tr>
<tr>
<td>Butler</td>
</tr>
<tr>
<td>INDEPENDENT MEANS</td>
</tr>
<tr>
<td>Landed proprietor</td>
</tr>
<tr>
<td>Property owner</td>
</tr>
<tr>
<td>Share owner</td>
</tr>
<tr>
<td>Gentleman</td>
</tr>
<tr>
<td>Annuitant</td>
</tr>
<tr>
<td>Pensioner</td>
</tr>
<tr>
<td>CLERICAL AND MISCELLANEOUS</td>
</tr>
<tr>
<td>Postman</td>
</tr>
<tr>
<td>Postmistress</td>
</tr>
<tr>
<td>Clerk</td>
</tr>
<tr>
<td>Letter carrier</td>
</tr>
<tr>
<td>Parish clerk</td>
</tr>
<tr>
<td>Overseer</td>
</tr>
<tr>
<td>Workhouse governor</td>
</tr>
<tr>
<td>Police</td>
</tr>
<tr>
<td>Librarian</td>
</tr>
<tr>
<td>&quot; matron</td>
</tr>
<tr>
<td>Station master</td>
</tr>
<tr>
<td>Rly worker</td>
</tr>
<tr>
<td>Racehorse trainer</td>
</tr>
<tr>
<td>Jockey</td>
</tr>
<tr>
<td>Photographer</td>
</tr>
<tr>
<td>Newspaper rpter</td>
</tr>
<tr>
<td>Warehouseman</td>
</tr>
<tr>
<td>Racehorse grm</td>
</tr>
<tr>
<td>Highway surveyor</td>
</tr>
<tr>
<td>Relieving offr.</td>
</tr>
<tr>
<td>Ordnance survr.</td>
</tr>
<tr>
<td>NO OCCUPATION</td>
</tr>
<tr>
<td>Daughter at home</td>
</tr>
<tr>
<td>NO OCCUPATION RECORDED</td>
</tr>
<tr>
<td>Housewife (i.e. married with no occupation recorded)</td>
</tr>
<tr>
<td>Children 14 yrs &amp; under, not working</td>
</tr>
<tr>
<td>&quot; &quot; &quot; &quot; &quot; working</td>
</tr>
<tr>
<td>Scholars, over 14 yrs</td>
</tr>
<tr>
<td>RETIRED</td>
</tr>
<tr>
<td>PAUPERS</td>
</tr>
</tbody>
</table>

APPENDIX II
SIZE OF HOLDINGS IN SWALEDALE, 1844

Data on the size of holdings for the whole of Swaledale are not available until the 1870 MAFF returns. The MAFF returns for 1870 have been used in conjunction with the 1844 tithe award for Melbecks township, which has been selected as representative of the dale as a whole, to project size of holdings for the whole of Swaledale in 1844. The proportion of holdings by size category in Melbecks in 1844 and 1870 is presented below. The change in the proportion of holdings in the various size categories in the township between 1844 and 1870 has been used to project the 1870 data back in order to estimate the proportion of holdings in the various size categories in Swaledale in 1844.

<table>
<thead>
<tr>
<th>Acres</th>
<th>1-5</th>
<th>6-50</th>
<th>51-100</th>
<th>101-300</th>
<th>Over 3000</th>
<th>Tot.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melb</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1844</td>
<td>56.4</td>
<td>42.3</td>
<td>0.7</td>
<td>0.7</td>
<td>-</td>
<td>149</td>
</tr>
<tr>
<td>1870</td>
<td>55.3</td>
<td>43.3</td>
<td>0.7</td>
<td>0.7</td>
<td>-</td>
<td>141</td>
</tr>
<tr>
<td>Change</td>
<td>-1.1</td>
<td>+1.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>S/d</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1870</td>
<td>26.0</td>
<td>58.4</td>
<td>7.8</td>
<td>6.9</td>
<td>0.9</td>
<td>578</td>
</tr>
<tr>
<td>Change</td>
<td>+1.1</td>
<td>-1.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1844</td>
<td>27.1</td>
<td>57.4</td>
<td>7.8</td>
<td>6.9</td>
<td>0.9</td>
<td>603</td>
</tr>
</tbody>
</table>

1 By percentage.
2 See Table 6.4, footnote 3.
3 Number of holdings.

Source: Barker MSS, 7/16, Valuation for Tithe Commutation, 1844, Melbecks; PRO, MAF 68/268, MAFF Parish Summaries of June Returns, 1870, Swaledale.
APPENDIX III

SIZE OF HOLDINGS IN WENSLEYDALE, 1844.

Data on the size of holdings for the whole of Wensleydale are not available until the 1870 MAFF returns. The MAFF returns for 1870 have been used in conjunction with the Askrigg and Redmire tithe awards, which have been selected as representative of upper and lower Wensleydale respectively, to project size of holdings for the whole of Wensleydale in 1844. (N.B. although these tithe awards date from 1839 and 1843 respectively, for ease of reference both have been attributed to 1844.)

The 1844 tithe awards are not available for all Wensleydale townships. However, the total number of holdings in Wensleydale in 1844 has been estimated at 1026 (see Table 6.1, note 6). The division of holdings between upper and lower Wensleydale can be calculated for 1870 and the proportion of the total number of holdings in the two parts of the dale in that year can be projected back to 1844 to produce estimates of the number of holdings in each area.

Out of a total of 905 holdings in Wensleydale in 1870, 656 (72.5 per cent of 905) were in the upper dale and 249 (27.5 per cent of 905) were in the lower dale. Applying the 1870 proportions to the 1026 holdings in the whole of Wensleydale in 1844 would give totals of 744 and 282 holdings in the upper and lower dale respectively.
The proportion of holdings by size category in Askriigg and Redmire townships in 1844 and 1870 are presented below. The change in the proportion of holdings in the various size categories in the two townships between 1844 and 1870 has been used to project the 1870 data back in order to estimate the proportion of holdings in the various size categories in upper and lower Wensleydale in 1844.

<table>
<thead>
<tr>
<th></th>
<th>1-5</th>
<th>6-50</th>
<th>51-100</th>
<th>101-300</th>
<th>over 300</th>
<th>Tot.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Askr.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1844</td>
<td>25.6</td>
<td>56.4</td>
<td>10.3</td>
<td>6.4</td>
<td>1.3</td>
<td>78</td>
</tr>
<tr>
<td>1870</td>
<td>16.9</td>
<td>62.0</td>
<td>15.5</td>
<td>4.2</td>
<td>1.4</td>
<td>71</td>
</tr>
<tr>
<td>Change</td>
<td>-8.7</td>
<td>+5.6</td>
<td>+5.2</td>
<td>-2.2</td>
<td>+0.1</td>
<td></td>
</tr>
<tr>
<td>U. W/d</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1870</td>
<td>21.0</td>
<td>45.6</td>
<td>16.9</td>
<td>13.4</td>
<td>3.0</td>
<td>656</td>
</tr>
<tr>
<td>Change</td>
<td>+8.7</td>
<td>-5.6</td>
<td>-5.2</td>
<td>+2.2</td>
<td>-0.1</td>
<td></td>
</tr>
<tr>
<td>1844</td>
<td>29.7</td>
<td>40.0</td>
<td>11.7</td>
<td>15.6</td>
<td>2.9</td>
<td>744</td>
</tr>
</tbody>
</table>

|        |      |      |        |         |         |      |
| Redm   |      |      |        |         |         |      |
| 1844   | 45.9 | 37.7 | 8.2    | 6.6     | 1.6     | 61   |
| 1870   | 43.4 | 49.0 | 5.7    | 1.9     | -       | 53   |
| Change | -2.5 | +11.3| -2.5   | -4.7    | -1.6    |      |
| L. W/d |      |      |        |         |         |      |
| 1870   | 34.9 | 49.8 | 6.8    | 6.8     | 1.6     | 249  |
| Change | +2.5 | -11.3| +2.5   | +4.7    | +1.6    |      |
| 1844   | 37.4 | 38.5 | 9.3    | 11.5    | 3.2     | 282  |

1 By percentage.
2 See Table 6.4 footnote 3.
3 Number of holdings

Source: Ellis MSS, Tithe Commutation Award, 1839, Askriigg; WYAS/L, Tithe Award, 1843, Redmire; PRO, MAF 68/268, op cit, 1870, upper and lower Wensleydale.
APPENDIX IV

SIZE OF DAIRY HERD IN UPPER AND LOWER WENSLEYDALE AND
SWALEDALE, 1795-1839.

Cows in milk or in calf are recorded in the extant tithe collection data. Tithe collection records are available for 1795, 1823, 1833, and 1839 for Swaledale and for 1803, 1811 and 1819 for Wensleydale.

The tithe data available for Swaledale relate to Grinton Ecclesiastical Parish (GEP). In 1874-7 dairy cattle in GEP comprised 75.6 per cent of all Swaledale dairy cattle and this proportion has been used to project numbers for the whole of Swaledale for the years 1795, 1823, 1833 and 1839.

The tithe data available for Wensleydale relate to the townships of Bainbridge, Hawes, High Abbotside and Low Abbotside. In 1874-7 dairy cattle in these townships comprised 45.3 per cent of all Wensleydale dairy cattle and this proportion has been used to project numbers for the whole of Wensleydale for the years 1803, 1811 and 1819.

In order to provide as extensive a coverage as possible, the extant data for Swaledale for 1795, 1823, 1833 and 1839 have been projected to Wensleydale and the extant data for Wensleydale for 1803, 1811 and 1819 have been projected to Swaledale. While the numbers of dairy cattle in the two dales fluctuated from one year to another it has been assumed for the purpose of this exercise that the proportion of dairy cattle in the two dales remained
constant relative to one another. The figures for dairy cows in Swaledale in 1803, 1811 and 1819 have been derived by averaging the 1795, 1823, 1833 and 1839 returns and expressing the result as a proportion of the average of the 1803, 1811 and 1819 Wensleydale returns. This procedure has been used in reverse to apply the Swaledale data to Wensleydale. The estimated average for Swaledale dairy cows constitutes 65.5 per cent of the Wensleydale average and the estimated average for Wensleydale dairy cows constitutes 153.5 per cent of the Swaledale average. The resultant dairy cattle numbers are shown in Table 10.1.

Source: Barker MSS, 7/3,6,10,12, Tithe Collection Records, Grinton Ecclesiastical Parish, 1795-6, 1823, 1833, 1839; Calvert MSS, Tithing Books for the Constabulary of Bainbridge, upper Wensleydale, 1803, 1811, 1819; PRO, MAF 68/382, 439, 496, 553, MAFF Parish Summaries of June Returns, upper and lower Wensleydale and Swaledale, 1874-7.
APPENDIX V
SIZE OF FLOCK IN UPPER AND LOWER WENSLEYDALE AND SWALEDALE, 1795-1839.

The extant tithe collection data record only fleeces and lambs. This means that hoggs (last year's lambs retained as flock replacements) are not included. Although the number of hoggs retained by the farmer varied, it is current practice locally for hoggs to constitute one-fifth of the adult flock. This proportion has been used as the basis for calculating the total flock. Therefore the flock = the number of fleeces plus one-fifth of that number plus the number of lambs. (The tithe data under-represent the number of fleeces. For example, Quakers refused to pay tithes. In 1803 twenty Quakers had their goods sequestered to the amount of £106 7 6d and in 1819 eleven Quakers had goods sequestered to the amount of £70 14 4d.)

The tithe data available for Swaledale relate to Grinton Ecclesiastical Parish (GEP). In 1874-7 sheep in GEP comprised 68.3 per cent of all Swaledale sheep and this proportion has been used to project numbers for the whole of Swaledale for the years 1795, 1823, 1833 and 1839. The tithe data available for Wensleydale relate to the townships of Bainbridge, Hawes, High Abbotside and Low Abbotside. In 1874-7 sheep in these townships comprised 56.5 per cent of all Wensleydale sheep and this proportion has been used to project numbers for the whole of Wensleydale for the years 1803, 1811 and 1819.
In order to provide as extensive a coverage as possible, the extant data for Swaledale for 1795, 1823, 1833 and 1839 have been projected to Wensleydale and the extant data for Wensleydale for 1803, 1811 and 1819 have been projected to Swaledale. While the numbers of sheep in the two dales fluctuated from one year to another it has been assumed for the purpose of this exercise that the proportion of sheep in the two dales remained constant relative to one another.

The figures for sheep in Swaledale in 1803, 1811 and 1819 have been derived by averaging the 1795, 1823, 1833 and 1839 returns and expressing the result as a proportion of the average of the 1803, 1811 and 1819 Wensleydale returns.

This procedure has been used in reverse to apply the Swaledale data to Wensleydale. The estimated average for Swaledale sheep constitutes 87.8 per cent of the Wensleydale average and the estimated average for Wensleydale sheep constitutes 113.8 per cent of the Swaledale average. The resultant sheep numbers are as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Wensleydale</th>
<th>Swaledale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1795</td>
<td>52,085</td>
<td>41,454</td>
</tr>
<tr>
<td>1803</td>
<td>41,262</td>
<td>35,452</td>
</tr>
<tr>
<td>1811</td>
<td>41,721</td>
<td>36,518</td>
</tr>
<tr>
<td>1819</td>
<td>39,667</td>
<td>34,714</td>
</tr>
<tr>
<td>1823</td>
<td>38,534</td>
<td>33,724</td>
</tr>
<tr>
<td>1833</td>
<td>42,388</td>
<td>37,097</td>
</tr>
<tr>
<td>1839</td>
<td>38,004</td>
<td>29,978</td>
</tr>
</tbody>
</table>

Source: Barker MSS, 7/3, 6, 10, 12, Tithe Collection Records, Grinton Ecclesiastical Parish, 1795-6, 1823, 1833, 1839; Calvert MSS, Tithing Books for the Constabulary of Bainbridge, upper Wensleydale, 1803, 1811, 1819; PRO, MAF 68/382, 439, 496, 553, MAFF Parish Summaries of June Returns, upper and lower Wensleydale and Swaledale, 1874-7.
APPENDIX VI

PRICES OF LIQUID MILK, CHEESE AND BUTTER IN WENSLEYDALE AND SWALEDALE, 1795-1839 AND 1874-7 TO 1914-7.

1795-1839

As with the price of many other agricultural products, the price of liquid milk, cheese and butter is difficult to determine accurately. The prices which have been used represent a 'rule of thumb' guide.

The prices of the three commodities varied at different times of the year and, in the case of cheese, according to age and quality. For most of the extant data, however, it is possible to identify comparable price movements.

The price data available for the late eighteenth and early nineteenth centuries is sparse. This has necessitated using estimates of prices for many of the dates under study. Where possible the estimates are based on the relationship between the prices of the three commodities.

The price of liquid milk in Swaledale was reported by Young to have been 1d more expensive than in Wensleydale and this differential has been retained for all dates between 1795 and 1839. The difference between the price of milk per gallon and cheese per pound was at most 1/2d in the late eighteenth century, and by the early nineteenth century extant data indicate that the commodities often sold at the same price. Butter per pound was about 5d.
dearer than cheese and, unless extant data indicate otherwise, this differential has been used.

Source and price: all prices have been estimated except those relating to the sources noted here. Where estimates are used they are based on these sources.


Cheese: 1795 - Hartley MSS, George Terry, Miller, Account Book, Bainbridge, 1794, 3 1/2d; 1811 - Barker MSS, 5/8/1, Garth Day Books, prices for 1810-2 passim; 1823 - M. Hartley & J. Ingilby, A Dales Heritage, Clapham, 1982, p64; and 1833 - estimated from George Terry, op cit, 6d in 1825.

Butter: 1795 - Barker MSS, 2/5/1, op cit, 1797; 1803 - George Terry, op cit, 10d in 1802, 1s in 1804; and 1839 - estimated from Wensleydale Advertiser, passim, 1844, 10 1/2d.

1874-7 to 1914-7

The value of liquid milk, cheese and butter is calculated on the farmers' wholesale price.

Source and price: some of the cheese and butter prices are averages for the year derived from available market prices quoted at either Hawes or Leyburn markets. For example, the 1907 butter price is the average of prices at market for 42 weeks.

Liquid milk: 1874-7 = 8d per gallon, T.W. Fletcher,
'Lancashire Livestock Farming during the Great Depression',
in P.J.Perry, British Agriculture 1875-1914, 1973, p105; 
1884-7 = 7 1/2d, estimated from E.Wetham, 'The London Milk 
Trade, 1860-1900', EcHR, 2nd ser., XVII, 1964-5; 1894-7, = 
Bd, Darlington and Stockton Times, 14 December 1895; 
1904-7, = 7d, ibid, 1907, passim, average at London 
Stations = 8 1/2d, 1 1/2d has been allowed for freight 
costs; 1914-7 = 7 1/2d, ibid, 31 October 1914 average at 
London stations = 9d, 1 1/2d has been allowed for freight 
costs.

Cheese: 1874-7, = 8 3/4d per pound, ibid, 20 October 1873;
1884-7, = 8d, Upper Dales Folk Museum, R.Hunter, 
Shoemaker's Day Book, Askrigg, 1887; 1894-7, = 6 1/2d,
M.Hartley & J. Ingilby, A Dales Heritage, Clapham, 1982,
p18; 1904-7 = 7d, Darlington and Stockton Times, 1907,
passim; and 1914-7 = 6 1/2d from information relating to 
c1915, information supplied by the late R.Hugill, former 
manager, Askrigg Dairy.

Butter: 1874-7 = 16 1/2d per pound, Bedale and 
Northallerton Times, 1875, 1878-9, passim; 1884-7 = 14d
ibid, 1884-6, passim; 1894-7 = 10d, ibid, 1894, passim and
Darlington and Stockton Times, 1895, passim; 1904-7 = 11d,
ibid, 13 July 1907; and 1914-7 = 12d, price pertaining in 
c1915, information supplied by the late R.Hugill, former 
manager, Askrigg Dairy.
APPENDIX VII

SHORTHORN MILK YIELD

It is difficult to estimate with any accuracy either the average annual yield of the nineteenth-century Wensleydale and Swaledale shorthorn or the quantities of the different end products of that yield. However, certain assumptions have been made in an attempt to construct a picture of the dairy industry in the two dales between the late eighteenth and early twentieth centuries. The estimates based on these assumptions provide only a guide to trends and cannot be regarded as numerically accurate.

There are many estimates, both contemporary and recent, of the yield of dairy cattle in the late nineteenth and twentieth centuries. In 1892 Henry Rew, as a result of his extensive survey of contemporary literature on the subject of milk output of dairy cattle, estimated the net national average yield per dairy cow as 360 gallons per annum (i.e. after the 10 per cent 'unproductive' milk was removed). However, Rew estimated a much higher annual average yield of 476 gallons per head per annum for dairy shorthorn cattle in Yorkshire. Dr. Ojala estimated that the United Kingdom average yield for dairy cattle in 1904-10 was 404 gallons per annum and he projected this back into the nineteenth century on the assumption that the milk yield per dairy cow increased at the rate of two gallons per year between 1867 and 1913. So Ojala estimated that in 1867-9 the average annual yield per head of dairy cattle
was 326 gallons.\textsuperscript{3} Other twentieth-century estimates suggest that the national average annual yield rose from 350 gallons in 1860 to 420 gallons in 1911. Similar figures are also suggested for the yield of dairy cattle in Lancashire.\textsuperscript{4} As the dales were a specialized dairying district they probably had a higher average yield than the national or Lancashire averages for the late nineteenth and early twentieth centuries.

In the twentieth century the dales' dairy shorthorn herds were producing an average annual yield of about 500 gallons per head. This figure takes into account heifers not in full milk, cows in calf and drying out, and also the milk used for calves (c.24 gallons per calf).\textsuperscript{5} Taking this information into account, it seems reasonable to assume an average annual yield of 400 gallons per head for the dairy herd of cows and heifers in milk and in calf between 1874-7 and 1914-7 in the two dales.\textsuperscript{6} Allowing for the fact that milk yields increased between the early and later years of the nineteenth century, an average annual yield of 300 gallons per head for the dales' dairy cow in the early part of the nineteenth century appears to be a reasonable assumption. This has been derived from Ojala's estimate that the yield of U.K. dairy cattle increased at the rate of two gallons per head per annum.\textsuperscript{7} This suggests that there was an increase of approximately 100 gallons in milk yield per dairy cow between the early and late nineteenth century. The two averages, 300 and 400 gallons, are applied throughout each period, 1795 to 1839 and 1874-7 to
1914-7 respectively, as any over-estimation in the early part of each period is likely to be compensated for by under-estimation in the later part.

NOTES


2 Ibid, p255.


5 T.W.Fletcher, op cit, p85.

6Local oral sources, H.Kirkbride (farmer), D.Middleton (farmer), late T.C.Calvert.
T.W.Fletcher estimated that the average per head milk consumption in Lancashire was 0.25 of a pint per day in 1870 rising by 25 per cent to 0.33 of a pint per day in 1894-98. R.H. Rew in 1892 estimated a national average of 0.43 pints per head per day. Wensleydale and Swaledale were rural areas where, usually, the population had easy access to liquid milk. 'The poorer class subsist chiefly on oat-bread and milk, which they buy of the neighouring farms'. It would seem reasonable, therefore, to assume that the consumption of milk in the dales was higher than both the Lancashire and national averages. So, it has been estimated that milk consumption in the dales was 0.5 of a pint per head per day in the 1870s and that this rose progressively by a total of 50 per cent to 0.75 of a pint by the First World War. Local consumption of milk is, therefore, estimated as follows: 1870s - 0.5 of a pint per head per day (PHD); 1880s - 0.6 PHD; 1890s - 0.65 PHD; 1900s - 0.70 PHD; 1910s - 0.75 PHD.

The local consumption of milk in the early part of the nineteenth century has been estimated at 0.25 of a pint per head per day. This is based on the assumption that milk consumption increased steadily over the century to reach the 1870 level. As the estimate for the early part of the century is only speculative, the figure of 0.25 PHD has
been applied to the whole of the period 1795-1839.

NOTES

1 Fletcher, *op cit*, p85.


3 BPP, 1843, LXII, *Reports of Special Assistant Poor Law Commissioners on the Employment of Women and Children in Agriculture*, evidence of W. Balderston, Hawes, p348.

4 See Taylor, *op cit*, p592, Taylor suggests that the national average rose from 0.2 PHD in 1860 to 0.3 PHD in 1900.
APPENDIX IX

PROPORTION OF MILK USED IN CHEESE AND BUTTER PRODUCTION.

In 1892 R.H. Rew estimated that of the milk used in butter and cheese production, 73 per cent was converted into butter and 27 per cent into cheese.\(^1\) In Wensleydale and Swaledale the output of cheese was higher than that of butter. Contrary to Rew's estimate, it has been assumed that 70 per cent of the milk remaining after liquid sales was used in cheese making and 30 per cent was used in butter making. These proportions have been assumed to apply throughout the nineteenth century.

Tables A and B below give the quantity of milk used in the production of cheese and butter for the periods 1795 to 1839 and 1874-7 to 1914-7.

TABLE A

QUANTITY OF MILK USED IN THE PRODUCTION OF CHEESE AND BUTTER IN WENSLEYDALE AND SWALEDALE, 1795-1839.\(^1\)

<table>
<thead>
<tr>
<th>Year</th>
<th>Residual milk</th>
<th>Cheese</th>
<th>Butter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1795</td>
<td>303,877</td>
<td>212,714</td>
<td>91,163</td>
</tr>
<tr>
<td>1803</td>
<td>779,377</td>
<td>545,564</td>
<td>233,813</td>
</tr>
<tr>
<td>1811</td>
<td>753,604</td>
<td>527,663</td>
<td>226,141</td>
</tr>
<tr>
<td>1819</td>
<td>751,377</td>
<td>525,964</td>
<td>225,413</td>
</tr>
<tr>
<td>1823</td>
<td>913,977</td>
<td>639,784</td>
<td>274,193</td>
</tr>
<tr>
<td>1833</td>
<td>882,747</td>
<td>617,923</td>
<td>264,824</td>
</tr>
<tr>
<td>1839</td>
<td>927,206</td>
<td>649,044</td>
<td>278,162</td>
</tr>
</tbody>
</table>
TABLE A cont.

Swaledale

<table>
<thead>
<tr>
<th>Year</th>
<th>Swaledale</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1795</td>
<td>185,639</td>
<td>129,947</td>
<td>55,692</td>
<td></td>
</tr>
<tr>
<td>1803</td>
<td>498,539</td>
<td>348,977</td>
<td>149,562</td>
<td></td>
</tr>
<tr>
<td>1811</td>
<td>469,300</td>
<td>328,510</td>
<td>140,790</td>
<td></td>
</tr>
<tr>
<td>1819</td>
<td>469,081</td>
<td>328,357</td>
<td>140,724</td>
<td></td>
</tr>
<tr>
<td>1823</td>
<td>571,981</td>
<td>400,387</td>
<td>171,594</td>
<td></td>
</tr>
<tr>
<td>1833</td>
<td>558,928</td>
<td>391,250</td>
<td>167,678</td>
<td></td>
</tr>
<tr>
<td>1839</td>
<td>587,717</td>
<td>411,402</td>
<td>176,315</td>
<td></td>
</tr>
</tbody>
</table>

1 In gallons.

Source: see Table 10.1.

---

TABLE B

QUANTITY OF MILK USED IN THE PRODUCTION OF CHEESE AND BUTTER IN WENSLEYDALE AND SWALEDALE, 1874-7 TO 1914-7.¹

<table>
<thead>
<tr>
<th>Year</th>
<th>Residual milk²</th>
<th>Cheese³</th>
<th>Butter⁴</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wensleydale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1874-7</td>
<td>1,545,485</td>
<td>1,081,840</td>
<td>463,645</td>
</tr>
<tr>
<td>1884-7</td>
<td>1,636,615</td>
<td>1,145,631</td>
<td>490,984</td>
</tr>
<tr>
<td>1894-7</td>
<td>1,529,063</td>
<td>1,070,344</td>
<td>458,719</td>
</tr>
<tr>
<td>1904-7</td>
<td>1,072,215</td>
<td>750,551</td>
<td>321,664</td>
</tr>
<tr>
<td>1914-7</td>
<td>911,737</td>
<td>638,216</td>
<td>273,521</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Residual milk²</th>
<th>Cheese³</th>
<th>Butter⁴</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swaledale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1874-7</td>
<td>634,697</td>
<td>444,288</td>
<td>190,409</td>
</tr>
<tr>
<td>1884-7</td>
<td>588,472</td>
<td>411,930</td>
<td>176,542</td>
</tr>
<tr>
<td>1894-7</td>
<td>588,996</td>
<td>412,297</td>
<td>176,699</td>
</tr>
<tr>
<td>1904-7</td>
<td>617,917</td>
<td>432,542</td>
<td>185,375</td>
</tr>
<tr>
<td>1914-7</td>
<td>630,412</td>
<td>441,288</td>
<td>189,124</td>
</tr>
</tbody>
</table>

¹ In gallons, average of four years in each decade.
² Residual milk = total milk minus liquid milk.
³ 70 per cent of the residual milk.
⁴ 30 per cent of the residual milk.

Source: See Table 10.5.
NOTES - APPENDIX IX

1 Rew, op cit, p272, Rew estimated that in 1892 milk used in cheese and butter comprised 60 per cent of all milk produced. Taylor, op cit, p589, Taylor estimates that nationally milk used in cheese and butter in the 1860s was 70 per cent of all milk produced. For further estimates see G.E.Fussell, The English Dairy Farmer, 1966, p317. In the 1890s over 85 per cent of all milk produced in Wensleydale and Swaledale was used in cheese and butter production but by 1914-7 the proportion in Wensleydale had fallen to less than 45 per cent.

2 Late R.Hugill, former manager, Askrigg Dairy; late T.C.Calvert, former director and manager, Wensleydale Cheese Factory, Hawes.
APPENDIX X
LAMB OUTPUT AND PRICE IN WENSLEYDALE AND SWALEDALE.

Output

In order to calculate the number of lambs brought to sale it has been necessary to calculate the number of lambs retained for flock replenishment. Although using present day methods to calculate lamb sales in the nineteenth century is less than satisfactory, in the absence of contemporary information the present day system, as shown in the following example, has been used.

A present day upper Wensleydale farmer has 350 Swaledale ewes. He crosses 140 with Swaledale rams to produce pure Swaledale lambs to replenish his flock. The remaining 210 ewes (i.e. 60 per cent of the total flock) are crossed with Leicester rams to produce half-bred lambs. All these lambs are sold in autumn, the wethers for meat and the gimmer lambs for breeding in lowland areas.¹

It has been assumed that, over the whole of the nineteenth century, ewes produced an average of one lamb each per year. The lambs for sale in the early part of the nineteenth century are assumed to have been the black-faced breed, while all those offered for sale in the latter part of the century have been calculated as being half-bred lambs. (Although in the latter part of the century not all the lambs were half-bred, the majority were.) As half-bred lambs realized a higher price than Swaledale lambs, any
over-estimation of the number of half-bred lambs will have inflated total receipts.

Price.

Black-faced lambs
1795 - M. Hartley & J. Ingilby, A Dales Heritage, Clapham, 1982, p66, 1790, 6s.
1823 - Barker MSS, 5/8/2, Account Book, 1824, 12s 4d.
1833 - Ibid, 1830, 13s 4d.

Half-bred lambs
1864 - Upper Dales Folk Museum MSS, R. Hunter, Shoemaker's Day Book, 1864, 19s
1875 - Bedale and Northallerton Times, 1874, 17s-27s = 22s average.
1885 - Bedale and Northallerton Times, 1884, 18s-21s = 19s 6d average.
1895 - Darlington and Stockton Times, 1895, half-bred lambs estimated from the price of twice-crossed lambs at Middleham Moor Fair. In 1907 twice-crossed lambs were 11s 6d more than half-bred. In 1895 twice-crossed were 31s so half-bred were 19s 6d.
1905 - Ibid, 9 November 1907, Middleham Moor Fair, 20s-23s = 21s 6d average.
1915 - Ibid, 7 November 1914, 18s-28s = 23s average.
APPENDIX XI
WOOL OUTPUT AND PRICE IN WENSLEYDALE AND SWALEDALE.

Output

The Swaledale (and Scotch) sheep produced a fleece of about four-pounds weight. The Wensleydale breed which only became popular in the latter part of the century and could only be kept on the lower pastures produced a fleece of about nine-pounds weight. The wool produced in the early part of the century in Wensleydale and Swaledale is assumed to have been solely the four-pound fleece. From 1874-7 it has been assumed that one-third of lower dale sheep were of the Wensleydale breed. It is not possible to be precise and the numbers of Wensleydale sheep may have been greater than one-third in 1914-7 and less than one-third in 1874-7. However, the estimates based on this proportion provide a reasonable guide to output. The estimates are based, therefore, on one-third of the lower Wensleydale flock having a nine-pound fleece and two-thirds having a four-pound fleece.

Price

1795 - 5d, Barker MSS, 7/3, Account of Grinton Tithes, 1795.

1803 - estimated at 11 1/2d. In 1807 Swaledale wool was 85.75 per cent of the price of Kent long wool. The 1803 price of Swaledale wool represents approximately 85.75 per
cent of the 1803 price (13 1/2d) of Kent long wool.


1811 - estimated at 11d on same basis as 1803.


1823 - 6d, Barker MSS, 7/6, Tithe Collection Records, Grinton Ecclesiastical Parish, 1823.

1833 - estimated at 6 1/2d. In 1825 Swaledale wool was 45.7 per cent of the price of Lincoln Half-Hogg. The 1833 price of Swaledale wool represents approximately 45.7 per cent of the 1833 price (14d) of Lincoln Half-Hogg wool. Mitchell and Deane, op cit, p495

1839 - estimated at 8d on same basis as 1833.

1875 - estimated at 10d for Swaledale wool, Barker 2/5/3, Garth Day Books, 1873, and 20d for Wensleydale wool. All the Swaledale and upper Wensleydale wool is assumed to be from the Swaledale breed. Two-thirds of lower Wensleydale wool is assumed to be from the Swaledale breed and one-third from the Wensleydale breed. In 1875 Wensleydale wool commanded twice the price of Swaledale wool and this proportion has been applied to 1875.

1885 - estimated at 5d Swaledale wool, 10d Wensleydale wool, Richmond Observer, 31 December 1887, Scotch hoggs 5 1/2d, and Mitchell & Deane, op cit, p495.
1895 - 5 1/2d Swaledale, 9 1/2d Wensleydale, Darlington and Stockton Times, 19 October 1895. Scotch hoggs 5-6d, Wensleydale, 9 1/2d

1905 - 8d Swaledale, 11 1/2d Wensleydale, Darlington and Stockton Times, 5 October 1907.

1915 - 11d Swaledale wool. In 1906 Swaledale wool was 62.9 per cent of the price of Lincoln Half-Hogg wool. The 1915 price of Swaledale wool represents approximately 62.9 per cent of the 1915 price (17 3/8d) of Lincoln Half-Hogg wool. Mitchell and Deane, op cit, p496, 15d Wensleydale wool, estimated on the basis of Swaledale wool being 73.9 per cent of the price of Wensleydale wool in 1907.
APPENDIX XII
MINERAL RIGHTS AND MINE MANAGEMENT

The manor of Arkengarthdale, which had been owned by the Bathurst family who were very active in lead mining in the late seventeenth and eighteenth centuries, became concentrated in the hands of George Brown and his descendants through purchases in 1808 and 1811 and later through marriage.¹ Marrick manor was in the hands of Josias Morley, who had purchased it from the Paulet family in 1817 and who took a keen interest in developing mines both within the manor and elsewhere in Swaledale.² The mineral rights of the manors of Muker and Healaugh were reserved to Lord Wharton's family when his estate was sold in 1738 and subsequently passed through indirect descent to the Pomfret-Denys family, who played a major role in the mining industry both as operators and lessors.³ The mineral rights of Grinton manor were Crown property.⁴ In Wensleydale, the mineral rights north of the river in the upper dale were purchased by the Wortley family (later Earls of Wharncliffe) and held by them throughout the nineteenth century whilst those in the mid-dale were owned by Lord Bolton.⁵ South of the river the mineral rights in the upper dale were held by the Lord's Trustees of the Manor of Bainbridge, who had purchased them in 1663, and those in the middle and lower dale were held by various individuals (see Map 14).⁶
WENSLEYDALE & SWALEDALE:

MANORS

--- Manorial boundaries.
----- Approximate manorial boundaries.
--------- Approximate boundary of Lord Bolton's estate in the 19th Century.

1. Nappa.
2. Woodhall.
3. Carperby.
4. Low Bolton.
5. Redmire.
7. Leyburn.
8. Wensley.
9. West Witton.
10. West Burton.
13. Worton (Barony).
15. Aysgarth.
16. Thoresby.

* Renamed the 'Manors of High and Low Abbotside' in the 18th Century.

Source: The Victoria County History, Yorkshire North Riding.
The London Lead Company (sometimes called the Quaker Company) and the Company of Mine Adventurers were the two most important speculative joint stock companies. The London Lead Company took leases in Swaledale between 1733 and 1747, during a period when the Company was acquiring leases all over the country. Some of their leases in Swaledale were for large and extremely profitable mines. These two companies relinquished their leases in the area in the late eighteenth century.

The major Swaledale mines in the late eighteenth and early nineteenth centuries were leased by William Chaytor, a landowner with extensive estates in the North Riding; Thomas Hopper, a lead merchant of Newcastle; and George and Thomas Alderson, who were lead merchants in London. The whole of the productive Arkengarthdale field was leased by Easterby, Hall and Company, lead merchants and manufacturers based in Newcastle. The intervention of lead merchants in Swaledale was not on so extensive a scale as that found in some other lead-mining areas, such as Derbyshire, where external capital appears to have dominated the industry.

Within the dales local partnerships remained an important component of the industry and a significant proportion of the capital in the late eighteenth century came from local people. The local lessees were different from their earlier miner-farmer counterparts in that they did not all have working experience of the lead industry and some of the partners were men with capital. For example, in 1801 a small mine in upper Swaledale, Lane End mine, was leased.
by a local partnership of ten men whose occupations were as follows: mine agent, gentleman, solicitor, hosier, and six miners. The local lessees included professional people such as bankers, doctors, land agents and surveyors. However, most of the mine leases in Swaledale and Wensleydale were held by a few local families who had accumulated capital during the Napoleonic War: the Barkers were lead miners, farmers, rentiers and money lenders; the Knowles's were originally miner-farmers and hosiers; and the Tomlins were Richmond solicitors. Some landowners also had interests in lead mining; the Chaytors were wealthy hereditary landowners with large estates in the North Riding; the Jaques's, who were the largest mining investors in the area, owned an estate near Richmond; and there were several small landowners who had interests in the lead mines.

The Garth family were small landowners with an intermittent interest in lead mining throughout most of the nineteenth century and an examination of their activities serves as an example of involvement by the local yeoman. From 1800 to 1810 Francis Garth was one of ten partners holding the lease of the Lane End mine in upper Swaledale, which he took an active part in running. Later, in 1818, the family worked some small mines near their home in Grinton township. This interest dwindled after 1820, when the depression affected the area, and activity in lead mining was not renewed until 1843, when the Garths took an interest in the larger Whitaside mine in Grinton township.
This interest was maintained until 1851 but for the remaining years of the 1850s the Garths appear not to have been directly involved with the mine. Finally, from 1860 the family again took an active interest in Whitaside and also briefly in the smaller Crackpot mine. Involvement in Whitaside continued until 1876 when, in a final reference to the lead industry, Francis Garth commented that plant at the Whitaside mine was to be valued. Presumably the partnership had decided to relinquish the lease and to sell the plant.¹⁷
NOTES - APPENDIX XII


2 Ibid., p98.

3 Ibid., p237; Clarkson, op cit, p311.

4 VCH, op cit., p237.

5 Ibid., pp207-8, 270-2, 274-5. Lord Bolton's estate is predominantly in lower Wensleydale but part of the estate is in upper Wensleydale (see Chapter 4). Most of the lead mines were in the lower dale.

6 Ibid., pp205-10.

7 W.J. Lewis, Lead Mining in Wales, Cardiff, 1967, p11.


11 Ibid, pp77-8.

12 Raistrick & Jennings, op cit, p257.

13 Ibid.

14 Jennings, op cit, p80. A similar situation occurred in
Wales where in the 1840s local men including tradesmen, gentlemen, merchants and farmers with only a little capital took leases, Lewis, op cit, p177.

15 Jennings, op cit, pp258-61. For example, between the 1820s and 1870s the Jaques family, who were also partners in a local bank, were partners in Old Gang, Arkengarthdale, Surrender and West Swaledale mining leases; the Tomlin family had interests in the Old Gang, Arkengarthdale, and Blakethwaite, Lownathwaite and Swinnergill mines; and the Knowles family were partners in the Old Gang, Arkengarthdale and Beldi Hill mining leases.

16 Jennings, op cit, p259.

APPENDIX XIII
OUTLINE HISTORY OF THE LEAD MINING AREAS OF SWALEDALE AND WENSLEYDALE.

An examination of the fortunes of the individual groups of mines provides an indication of the impact of lead mining on the local economy.

ARKENGARTHDALE

The Arkengarthdale mining field, which was situated west of Langthwaite, was one of the most productive in the area. In the eighteenth century it was managed by several different partnerships and companies. In the latter part of the century, however:

owing to the veins being lost the gentry freeholders and mining adventurers ... became discouraged and relinquished their works nearly altogether.2

Easterby, Hall and Company took leases on the Arkengarthdale mines between 1799 and 1801 and established the Arkengarthdale and Darwent Company.3 In 1805 it was observed that due to the:

very superior management of the mining company's concerns [by Frederick Hall] this dale has lately become extremely populous.4

In the early nineteenth century the Company invested £50,000 in a new smelt mill, the Octagon, and associated
WENSLEYDALE & SWALEDALE:
SMELT MILLS

MAP 15

[Map of Wensleydale and Swaledale showing various locations such as Keldside, Swinnergill, Bald Hill, Spout Gill, Sargill, Blakethwaite, Lowthwaite, Old Gang, Surrender, Cupola, Low Marrick, High Marrick, Grinton, Apedale, Bobscar, Cobsar, Keld Heads, Preston, Octagon, CB, Slel Gill, Lownthwaite, Moulds, New, Scott's, Groovebeck, Summer Lodge, and others.]

637a
works (see Map 15). The heavy investment appears to have been justified. By 1805 the lead industry in Arkengarthdale was thriving, the price of lead was high and, on occasions, the value of the weekly production of the mill was over £3600. The situation changed during the post-war depression and in 1821, after output had fallen in response to declining prices, the leases were relinquished. Hall left the area and a group of local men formed the Richmond and Swaledale Company to lease the mines. The new local lessees were reported to be:

very opulent, steady and skilful men; with a fair share of that adventurous spirit which miners ought to possess; ..."

Annual production in 1821 was relatively low, being estimated at 650 tons of lead, but the new partnership invested further capital in the mines and output steadily improved. In 1824, New Mill (or CB Mill), which incorporated many innovations, was constructed. Output at the mines continued to increase and later in the 1820s it was estimated to be one of the most productive fields in the country, with an output of 2000 tons per annum. The mines probably suffered during the 1829-33 depression but had recovered by the 1840s, when output was in excess of 1000 tons of lead per annum. The revival was short-lived and by the 1850s, when the productivity of the mines began to decline, a new company, the Arkendale Mining Company (sometimes known as the C.B. Mining Company), was formed.
Despite hopes to the contrary, this Company failed to stop the decline which continued until the early 1870s. In 1874 rich seams of lead ore were discovered and output increased dramatically. Between 1877 and 1886 output of ore, which in 1872 had been as low as 601 tons, never fell below 1600 tons per annum and in 1878 reached a peak of 2459 tons. Over the period 1870 to 1887 the Company, despite low lead prices, had a cumulative profit of £45,591. From the early 1880s, however, the Arkengarthdale field began to decline again. The Octagon Mill was closed in 1883 as New Mill was proving adequate to deal with all the lead ore produced. After 1888 output declined more steeply. From the 1890s many of the mines were standing idle and those that were still in production were only producing a little ore. New Mill closed in 1901, and in 1902 only 72 tons of ore were extracted. By 1906 the mines had ceased working. In an attempt to revive the industry the Stang and Cleasby Company was formed and, from 1907, worked some of the mines. However, lead ore was extracted only between 1907 and 1909 at two of the mines and between 1910 and 1912 at a third mine. The Company cut its losses and finally abandoned the mines in 1913. 

OLD GANG

The Old Gang mines were centred on Hard Level Gill on Melbecks Moor. They worked the rich Friarfold/Old Rake/Watersykes complex of veins and were an extremely profitable group of mines. In the late eighteenth century Lord Pomfret, the owner of the mineral rights, had
invested in the mines in order to improve production and take advantage of the relatively high price of lead, and, as a result, output had greatly increased. In 1811 the mines were leased to George and Thomas Alderson and in 1821 were producing an estimated 500 tons per annum. The Aldersons invested heavily in the lead industry in both Swaledale and in Wales, and in the post-war depression found themselves in serious financial difficulties. In 1828 they were obliged to relinquish the Swaledale leases. A local partnership, comprising representatives of the Jaques, Tomlin, Knowles and Robinson families, took over the leases in 1828 and continued to manage the mines until 1887. Unlike many other mines in the area, the Old Gang group was hardly affected by the 1829-33 depression. The local partnership benefited from the earlier investments and a new smelt mill was constructed in 1841 to cope with the increased output as the mines continued to expand during the 1830s and 1840s. The mines reached their peak output in 1839-43, when over 10,000 tons of lead were produced. Output was maintained at a generally high level until 1875 but thereafter the mines suffered a fairly rapid decline in output. By 1887, when the partners surrendered their lease, production of lead had fallen to 78 tons. In 1889 a new company, the Old Gang Lead Mining Company Ltd, was formed to work both the A.D. Company leases and the Old Gang fields. The new Company struggled on until 1906, continuing to produce lead in very small quantities, but production finally
BLAKETHWAITE/LOWNATHWAITE/SWINNERGILL

The Blakethwaite group of mines, situated between West Stonesdale and Gunnerside Gill, had a very chequered history. The group included the Beldi Hill, Swinnergill, Blakethwaite, and Lownathwaite mines. In the eighteenth century these mines were, at different times, worked by the mineral-rights owners, adventurers and local people and, as the profitability of mining increased, they were the subject of heated boundary disputes. In the late eighteenth century some of the mines were worked directly by the owner, Lord Pomfret. In the early nineteenth century the mines were further extended and developed by both local companies and 'new' adventurers. For example, by 1812 Lownathwaite and Swinnergill were leased by Messrs Hopper of Newcastle. Fresh investment and the discovery of rich veins of ore resulted in increased output. In the early 1820s the Lownathwaite and Swinnergill mines, for example, produced about 200 tons of lead per annum and between 1820 and 1826 output at the Blakethwaite mine rose from nothing to over 530 tons per annum. The increased output was not sustained and for a time during the 1829-33 depression Blakethwaite and Lownathwaite stood idle. Edward Broderick, a local land agent, visited the mines in 1830 and commented on their failure:

I wandered about the ... [smelting] mill. ...
It was built by Mr. Hopper not many years ago,
but like so many mining speculations it turned out nearly useless. They never got out much ore. Such is the precarious nature of mining that it is never known till too late. 30

Broderick's pessimism was not totally justified. The mines were not exhausted and in 1836 the Blakethwaite Company, which was formed by local people, took the Lownathwaite and Swinnergill leases and ran the mines until 1867. During that time there was additional investment as the Company built a new smelt mill to accommodate increased production and, in 1842, further developed the mines by installing an engine of a new design. 31

Most of the mines continued in production through the 1850s and 1860s but decline was established in the early 1870s and some of the mines probably ceased working at that time. For example, there are no detailed returns of Blakethwaite output after 1872 and Blakethwaite smelt mill closed in 1878. 32 Beldi Hill, which had been productive intermittently throughout the eighteenth and nineteenth centuries, was abandoned in 1880. It went into production again for a short time in the early 1880s but was not successful and closed in about 1882. 33 Swinnergill continued in production and in 1873 Sir George Denys established the A.D. Company to run the mines. The Company opened up a new level in the hope of finding exploitable veins but did not make the anticipated discovery. Output ceased in 1884 and the Company abandoned Swinnergill in 1887. The Old Gang Mining Company Ltd and its successor
took the mine’s lease between 1888 and 1906 but the venture was not a success and the mine went into liquidation in 1906 and was abandoned in 1910.54

SURRENDER

The Surrender mine was situated on the boundary of Reeth High Moor and Whaw Moor, in the heart of the richest ore-bearing ground in Swaledale. In the nineteenth century it was leased to different groups of local people. It was first held by the Chaytor and Breare families but by 1821 it was under lease to a company which included Josias Morley who owned the Hurst mineral rights.35 In the early 1820s the Surrender mine was producing about 400 tons of lead per annum.36 Output at the mine declined during the 1829-33 depression. However, from the mid-1830s other local men, including Jaques and the local medical practitioner, Dr Robinson, joined the company and this further injection of capital resulted in increased output.37 This led to improvements and in 1838 and 1842 respectively, a new mill and peat house were built.38 The expansion of the mine was not sustained, as the most accessible veins were worked out and costs of production increased. Decline in output was firmly established in the early 1860s and output remained low until the mine ceased production in 1885 and was finally abandoned in 1910.39

GRINTON/ELLERTON MOOR

The Grinton Moor mines were not as productive in the nineteenth century as many of the other mines so far discussed.40 Little is known of their early management
but in 1833 the mines were worked by four men, including Francis Morley of Hurst mines, who took leases for twenty-one years not only for Grinton Moor but for all the Crown mines south of the Swale. From 1860 to 1897 no less than six different companies were involved in the operation of the mines. Throughout this period the production of lead was low and in some years the mines stood idle. In the period 1872 to 1893, when the mines last produced lead, the highest annual output appears to have been the fifty-one tons produced in 1892.

MARRICK/HURST

The Marrick and Hurst mines were at the eastern extremity of the great west-east complex of veins which traversed the moors north of the Swale valley. They were among the oldest in the dales and had been worked intermittently since the Roman period. At the beginning of the nineteenth century national demand and the high price of lead resulted in the mines being further developed. In 1814 they were leased by Thomas Stapleton of Richmond and production was relatively high. After the difficulties of the early 1830s the mines were subject to further investment and in 1840 were probably at their peak with an output of 600 tons of lead a year. Little is known about their management in the mid-nineteenth century but they were probably under lease to local people. By 1857 the Hurst Company was managing the mines and raised production to a peak of 750 tons of lead in 1867. Thereafter production fell, reaching a low point of forty-three tons in 1880.
The Yorkshire Lead Mines Company Ltd took over the mines in 1882 and encouraged local optimism that the industry could be revived:

some enterprising gentlemen have taken the mines and brighter days are evidently in store for the dales' folk.\textsuperscript{50}

In 1885 the Company was fortunate in finding a rich vein of ore and was encouraged to invest further by installing new plant.\textsuperscript{51} The optimism was partly realized when output of lead ore rose to 1003 tons in 1887 but output was not sustained and the mines succumbed both to the low national price of lead and to a deterioration in the vein and by 1891 stood idle.\textsuperscript{52} Attempts to restart production were made over the following six years but without success and the mines were finally abandoned in 1897.\textsuperscript{53}

WEST SWALEDALE

The mines of west Swaledale were not as productive as those further east and their nineteenth-century development was generally on a small scale. The mines were on the western edge of the main mining field and the partnerships which took leases in 1825-59 were formed largely of miners working with very limited capital.\textsuperscript{54} Due to the inaccessibility and poverty of the veins, the mines failed in the 1860s, and appear to have ceased production altogether by the 1870s.\textsuperscript{55}

WENSLEYDALE

Vein mineralization in Wensleydale was less extensive
than in Swaledale and the veins were generally not as rich. Nevertheless, at times lead mining played an important part in the economy of the area. As in Swaledale, the development of the lead industry in the eighteenth century is associated with adventurers who took leases and injected capital into the industry. In 1734 the London Lead Company leased all the mines in the Sargill area of upper Wensleydale and around Burton-cum-Walden in Bishopdale. The London Lead Company relinquished these leases in the 1760s in order to concentrate their activities on other areas of the country and from that date lead in Wensleydale was again extracted by small partnerships of miners working the leases.

During the early part of the nineteenth century, in response to increased demand, many lead mines in Wensleydale were developed and for a short time during the 1850s and early 1860s some of these mines were at the height of their production. The two main areas of development in Wensleydale in the nineteenth century were Sargill in upper Wensleydale and Lord Bolton's estate, which was predominantly in lower Wensleydale. Mining occurred also in several other localities, although on a small scale. The Burton-cum-Walden mines were one of the smaller ventures which enjoyed some capital investment in the nineteenth century. These mines probably reached a peak of output in 1864 when 280 tons of ore were produced. After this date only very small quantities of ore were extracted and the mines, after struggling to stay in
existence, closed in the early 1880s. Other small mines in Wensleydale, including those at Woodhall in Askrigg township and some in the manor of Bainbridge, were undertaken by partnerships, predominantly of local people with limited capital. Most of these mines were worked, at least intermittently, until the late nineteenth century as the miners were always hopeful of 'striking lucky' and finding substantial veins.

The only mining area of any significance in upper Wensleydale, Sargill, was worked by small partnerships. The discovery of a rich vein of ore resulted in increased profits which enabled the mine to be further developed. A smelt mill was constructed in about 1840 to accommodate the increased output but the vein of lead ore was quickly worked out and from the 1860s the mine produced ore only intermittently and as a consequence the smelt mill was closed in 1870. There was a revival of interest in the mine during the early 1880s when Messrs Winn, who also had an interest in some of the Swaledale mines, managed the mines and produced lead for a few years. However, the revival was not sustained and production, which had been forty tons of lead in 1883, plummeted to under four tons in 1885, after which the mine ceased production.

It was only lower Wensleydale which attained a level of lead-mining activity which approached that of parts of Swaledale. During the nineteenth century several mines were developed on Lord Bolton's estate, of which Keld Heads mine was the largest. The Keld Heads mine had been opened,
probably in the early nineteenth century, by Darwen and Company but it had remained in production for only a few years. However, in the early 1840s, after the price of lead had recovered from its low point in the early 1830s, the mine was reopened by the Leeds Mining Company. This Company was short-lived and by the 1850s the mine was being run by the Keld Heads Company. The mines were further developed during this period and increased output led to a new mill being constructed in 1851 to serve Keld Heads and other nearby mines. The mines continued to increase output and by the late 1850s the mill was smelting about 1400 tons of lead annually. Several other mines in the district were exploited and the lower Wensleydale industry reached its peak during this period. By the late 1850s the Wensleydale lead industry was showing signs of decline and, despite the fact that Keld Heads and a few nearby mines were still in production, some of the lessees of other mines in the area were selling their plant. Keld Heads mine still had accessible, rich veins of ore and a peak of output was attained in 1864 with 932 tons of lead. Thereafter Keld Heads followed other local mines and production declined rapidly to only 300 tons in 1867. Although there was a slight recovery to 419 tons of lead in 1872 the workable seams were virtually exhausted and in a period of falling prices more capital investment was not forthcoming. The mine ceased production in 1888 and was finally suspended in 1894. There was renewed hope of a revival in the lower Wensleydale lead industry in the late
1880s and at least two mines were reopened and some lead was produced. The success was short-lived and the closure of Apedale smelt mill in the mid-1880s marked the end of the industry.
NOTES - APPENDIX XIII


4 Romney, *op cit*, p222.

5 Ibid, p223.


8 Clarkson, *op cit*, p311.


13 Jennings, op cit, p159.
15 Ibid, pp5,25,51,68.
16 A. Raistrick & B. Jennings, A History of Lead Mining in the Pennines, 1965, this ed., Ilkley, 1983, p260. The clerk who kept the Old Gang accounts from about 1830 to 1860 estimated the total profit for the period to be £100,000.
17 Ibid, pp204,277.
18 Jennings, op cit, p79; Clarkson, op cit, p311.
19 Jennings, op cit, p111; W. J. Lewis, Lead Mining in Wales, Cardiff, 1967, p173, Sir George Alderson was an alderman and lead merchant in London but he and his brother were Yorkshire men, probably from the dales. Their fortunes did not improve and in 1834 they were declared bankrupt and had to surrender their leases in Wales.
20 Jennings, op cit, p261-2.
21 Raistrick & Jennings, op cit, p280.
22 Hartley & Ingilby MSS, Diary of J. Smithson, February and May 1841, 1843.
23 Fieldhouse & Jennings, op cit, pp221,493-4; Burt et al, op cit, p51; PRO RAIL 1060/12-27, ZHC 1/4688,4622, op cit,
1876–1903; Jennings, *op cit*, p196.


25 Jennings, *op cit*, p79; and see Clarkson, *op cit*, p311.


33 Jennings, *op cit*, p262.

34 Clarkson, *op cit*, p311.

35 Jennings, *op cit*, p262.

36 Hartley & Ingilby MSS, *op cit*, 1838–9, 1840.

in 1873 (although it reopened a short time later). Denys commented that by 1873 £250,000 worth of lead had been raised from the mine; Jennings, op cit, p177; Burt et al, op cit, p72.

40 BPP, 1864, RC(Kinnaird), Epitome of Evidence taken before the Commission appointed to inquire into the Condition of all Mines in Great Britain, Q.17,809, evidence of G. Robinson, Grinton Moor Mine.

41 PRO B/121, Appendix to Report on Schedules from the Select Committee on Land Revenues, 1833. The area covered by the leases included Grinton, Whitaside, Harkerside, Summer Lodge and Cogden.

42 Burt et al, op cit, p31.

43 Ibid.

44 Burt et al, op cit, p31.


46 Clarkson, op cit, p311; Jennings, op cit, p253; Raistrick, op cit, Vol I, p78.

47 White, op cit, p655.


49 Ibid; PRO RAIL 1060/12-27, ZHC 1/4688,4622, op cit, 1876-1903; Jennings, op cit, pp202-3.

50 Richmond Observer, 3 September 1887; Burt et al, op cit, p35.

51 Richmond Observer, 3 September 1887; Raistrick, op cit, Vol I, p78.

52 PRO RAIL 1060/12-27, ZHC 1/4688, 4622, op cit,
1876-1903.

** Spencer, *op cit*, p19; Burt et al, *op cit*, p35.
** *Ibid*, p94.

1 In 1849 one local man took a lease to search for lead in the Manor of Bainbridge and in 1854 the Wensleydale Mining Company was formed and included two local yeomen, a gentleman from Harrogate, two Leeds wool merchants and a mining agent from Wharfedale. In 1856 the lease was amended to include an iron merchant, a cloth manufacturer and a man with no specified occupation, all from Leeds, and a cloth manufacturer and a draper, both from Selby. There are no further records of the Wensleydale Mining Company. A final lease was taken in 1874 by two men, one from London.
and the other a draper from Manchester. This demonstrates that although much of the capital in mining in the mid-century was from within the dales, on the fringes of the mining field there was interest from both outside the area and from people with non-mining occupations. NYCRO ZPG 7/1/33,34,36,37, Records of the Manor of Bainbridge, 1849,1854,1856,1874, passim.


Bulmer, op cit, p620; Wensleydale Advertiser 10 October 1848; Whellan, op cit, p145.


Whellan, op cit, p145; employment in the lead mines reached a recorded peak in 1851, PRO, HO 107/2379, CEB, 1851, lower Wensleydale.

H. Speight, Romantic Richmondshire, 1897, p397; Raistrick & Jennings, op cit, p333.


Speight, op cit, p397; Raistrick & Jennings, op cit, p333, Burt et al, op cit, p37.

Bulmer, op cit, p624. In 1887 J. Rodwell of Keld Heads Mines reopened eight mines in Swaledale in an attempt to revive the industry, Richmond Observer, 12 November 1887.
## APPENDIX XIV

**OUTPUT OF LEAD AT SELECTED SWALEDALE MINES AND THE PRICE OF LEAD ON THE LONDON MARKET, 1785-1849.**

<table>
<thead>
<tr>
<th>A.D. group</th>
<th>A/d</th>
<th>Grinton</th>
<th>Lead price</th>
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</thead>
<tbody>
<tr>
<td>1785</td>
<td>-</td>
<td>709</td>
<td>35</td>
</tr>
<tr>
<td>1786</td>
<td>632</td>
<td>493</td>
<td>44</td>
</tr>
<tr>
<td>1787</td>
<td>869</td>
<td>503</td>
<td>36</td>
</tr>
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<td>1788</td>
<td>469</td>
<td>566</td>
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</tr>
<tr>
<td>1789</td>
<td>544</td>
<td>487</td>
<td>40</td>
</tr>
<tr>
<td>1790</td>
<td>706</td>
<td>505</td>
<td>78</td>
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<td>1791</td>
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<td>551</td>
<td>35</td>
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<tr>
<td>1792</td>
<td>1183</td>
<td>-</td>
<td>21</td>
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<td>1793</td>
<td>1100</td>
<td>-</td>
<td>70</td>
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<td>1794</td>
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<td>79</td>
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\(^1\) Price per ton to the nearest £.
\(^2\) A.D. group includes Old Gang, Surrender, Blakethwaite, Lownathwaite, South Swaledale, Lane End and Keld Side; all these mines were on the Pomfret-Denys royalty. Returns for 1795 and 1812-16 are missing.
\(^3\) Arkengarthdale mines details available for 1785-1799 only with 1792-3 missing. The returns for 1795 and 1796 may be repeated with the return of 1218 tons appearing for both years.
\(^4\) Details available for Grinton mines for 1785-1801 only.
\(^5\) Return includes 1792.
\(^6\) Return includes 1796.
\(^7\) Return includes 1799.
\(^8\) Part year only.
\(^9\) Returns for 1810 missing.

Note: prior to 1811 the returns are only approximately accurate.

Source: derived from Jennings, op cit, pp342-3, Appendix B, Table I, information concerning Jennings data, see ibid, pp339-41. Grinton details, Fieldhouse and Jennings, op cit, p492, Appendix 5, Table A.
APPENDIX XV


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1 To the nearest ton.
2 To the nearest £.
3 Price per ton to nearest £.
4 Surrender mine output is estimated.
5 Held Heads and Sargill mines output is estimated.
6 OLd Gang and Sir Francis mines output is estimated.
7 Held Heads and Virgin Moss mines output is estimated.
8 Whitaside mines output is estimated.
9 No detailed return given.

The above records are usually referred to as Mineral Statistics, they were consulted under the following references:

1867-70, PRO, POWE 7/6.
1872-5, PRO, POWE 7/8-11.
1876-81, PRO, RAIL 1060/12-17.
1882-83, PRO, ZHC 1/4688,4622.
1884-93, PRO, RAIL 1061/18-26.
1894-6, PRO, ZHC 1/5808,5908,6021.
1897-1903, PRO, RAIL 1060/27.

Any returns not cited in the above references are to be found in R.Burt et al, The Yorkshire Mineral Statistics 1845-1913, Exeter, 1982, passim.

APPENDIX XVI

BUILDING ACTIVITY IN NORTH-EAST LANCASHIRE IN THE LATE NINETEENTH CENTURY

From the mid-nineteenth century north-east Lancashire developed into an important centre for the textile industry. In the late 1860s cotton output was growing rapidly. Although there was a decline in the cotton trade between 1872 and 1884, this affected mainly the old-established textile area centred on Manchester rather than north-east Lancashire, where cotton output continued to rise steadily until the outbreak of the First World War.¹

From 1850 to 1880 Burnley had been an important cotton spinning area but after this date Burnley could not compete with the more modern techniques used in the spinning industry in Oldham, and the industry in Burnley declined.² However, despite the decline in spinning, the economic condition of Burnley remained buoyant. In the late 1840s full mechanization of cotton weaving was making 'quick though belated progress' and a specialist weaving industry was developing in the area.³ Further, from 1847 improved rail connections assisted the development of the Burnley/Blackburn coalfield. The growth of the textile and coal industries in north-east Lancashire was accompanied by a boom in mill and house building, particularly in Burnley, in the second half of the nineteenth century.⁴ The number of houses built annually in the latter part of the
nineteenth century rose quickly to a peak of 589 in 1897. This was followed by a decline to a low point of 142 in 1904 and a recovery to 1913 when 425 houses were constructed. The extent of building activity in Burnley is shown clearly in the following running total number of dwellings built: 1851 - 5000, 1871 - 9000, 1881 - 12,000, 1891 - 18,000, 1901 - 21,000. Similar levels of building activity took place elsewhere in north-east Lancashire.

While most of the Wensleydale stone was used in public buildings, factories or large houses rather than for ordinary domestic housing, the foregoing statistics provide an indication of the scale of building activity in north-east Lancashire. The trends in house construction reflect building activity generally and, apart from domestic buildings, many non-domestic buildings, particularly in the town centre of Burnley, were constructed between the 1870s and 1900. A new market hall was built in 1870, in 1888 a new town hall was opened and in 1897 the 'Centre' was built. The towns of north-east Lancashire, therefore, experienced intense building activity, particularly during the 1880s and 1890s, creating a demand for building materials, including quality stone, which upper Wensleydale was able to supply.
NOTES - APPENDIX XVI


3 Freeman et al, op cit, pp208-9; Bennett, op cit, pp95-6.

In 1886 Burnley looms produced more cloth than any other town in the world, *ibid*, pp96-7.

* Freeman et al, op cit, pp101, 209. For example in 1860, which was not an exceptional year, a corn mill, three cotton mills, seven weaving sheds, a foundry, and a size works were all in the course of erection. In single years the following were built: 1866 - 500 houses and shops, four new mills, two printing works, a public hall and railway station buildings; 1877 - 738 houses and shops, thirteen mills, five churches and four public buildings. 1888 - 846 houses and shops, three weaving sheds, seven warehouses, one school, Bennett, *op cit*, pp8, 33-4. Many of the working-class houses in Burnley at this time were also stone built.


* *Ibid*.

7 Bennett, *op cit*, p33. The population of Burnley rose by approximately 10 per cent between 1901 and 1911 to a peak
of 106,322 in 1911, ibid, p57. Although the annual rate of house building increased during this period, it never reached the intensity of activity experienced in the 1890s.

Activity in the public or industrial building sectors does not appear to have been so great, ibid, p85.

a Lewis, op cit, pp107, 314-5.
b P. Barrett, Barrett's Directory of Burnley and District, 1896, p10; Bennett, op cit, pp32-3, 85.
### APPENDIX XVII

SANDSTONE FORWARDED FROM HAWES STATION ON THE MIDLAND RAILWAY COMPANY NETWORK, 1879-1919. ¹

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<td>6,124</td>
</tr>
<tr>
<td>1887</td>
<td>7,559</td>
</tr>
<tr>
<td>1888</td>
<td>12,332</td>
</tr>
<tr>
<td>1889</td>
<td>13,170</td>
</tr>
<tr>
<td>1890</td>
<td>11,148</td>
</tr>
<tr>
<td>1891</td>
<td>9,886</td>
</tr>
<tr>
<td>1892</td>
<td>11,614</td>
</tr>
<tr>
<td>1893</td>
<td>10,336</td>
</tr>
<tr>
<td>1894</td>
<td>7,887</td>
</tr>
<tr>
<td>1895</td>
<td>7,607</td>
</tr>
<tr>
<td>1896</td>
<td>6,456</td>
</tr>
<tr>
<td>1897</td>
<td>5,898</td>
</tr>
<tr>
<td>1898</td>
<td>3,501</td>
</tr>
<tr>
<td>1899</td>
<td>4,637</td>
</tr>
<tr>
<td>1900</td>
<td>3,819</td>
</tr>
<tr>
<td>1901</td>
<td>3,583</td>
</tr>
<tr>
<td>1902</td>
<td>3,517</td>
</tr>
<tr>
<td>1903</td>
<td>2,991</td>
</tr>
<tr>
<td>1904</td>
<td>2,372</td>
</tr>
<tr>
<td>1905</td>
<td>2,197</td>
</tr>
<tr>
<td>1906</td>
<td>2,073</td>
</tr>
<tr>
<td>1907</td>
<td>2,567</td>
</tr>
<tr>
<td>1908</td>
<td>3,023</td>
</tr>
<tr>
<td>1909</td>
<td>3,044</td>
</tr>
<tr>
<td>1910</td>
<td>2,564</td>
</tr>
<tr>
<td>1911</td>
<td>2,234</td>
</tr>
<tr>
<td>1912</td>
<td>2,403</td>
</tr>
<tr>
<td>1913</td>
<td>2,409</td>
</tr>
<tr>
<td>1914</td>
<td>2,427</td>
</tr>
<tr>
<td>1915</td>
<td>927</td>
</tr>
<tr>
<td>1916</td>
<td>490</td>
</tr>
<tr>
<td>1917</td>
<td>919</td>
</tr>
<tr>
<td>1918</td>
<td>842</td>
</tr>
<tr>
<td>1919</td>
<td>1,263</td>
</tr>
</tbody>
</table>

¹ In tons.

Source: PRO RAIL 491/671-2,4-5, Midland Railway Company, Traffic and Expenses at Stations, 1879-1919.
APPENDIX XVIII

NATURAL INCREASE AND ACTUAL CHANGE IN POPULATION IN UPPER
AND LOWER WENSLEYDALE AND SWALEDALE, 1801-61.

<table>
<thead>
<tr>
<th></th>
<th>Total pop.</th>
<th>Incr. or decr. since prev. census</th>
<th>Natural incr. since prev. census</th>
<th>Net Migrn. since prev. census</th>
</tr>
</thead>
<tbody>
<tr>
<td>1801</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper W/d</td>
<td>5205</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower W/d</td>
<td>1951</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swaledale</td>
<td>5739</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1801-10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper W/d</td>
<td>5170</td>
<td>-35</td>
<td>896</td>
<td>-931</td>
</tr>
<tr>
<td>Lower W/d</td>
<td>2308</td>
<td>+357</td>
<td>335</td>
<td>+22</td>
</tr>
<tr>
<td>Swaledale</td>
<td>7040</td>
<td>+1301</td>
<td>987</td>
<td>+314</td>
</tr>
<tr>
<td>1811-20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper W/d</td>
<td>5621</td>
<td>+451</td>
<td>889</td>
<td>-438</td>
</tr>
<tr>
<td>Lower W/d</td>
<td>2701</td>
<td>+393</td>
<td>397</td>
<td>-4</td>
</tr>
<tr>
<td>Swaledale</td>
<td>7480</td>
<td>+440</td>
<td>1211</td>
<td>-771</td>
</tr>
<tr>
<td>1821-30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper W/d</td>
<td>5796</td>
<td>+175</td>
<td>967</td>
<td>-792</td>
</tr>
<tr>
<td>Lower W/d</td>
<td>2818</td>
<td>+117</td>
<td>465</td>
<td>-348</td>
</tr>
<tr>
<td>Swaledale</td>
<td>7020</td>
<td>-460</td>
<td>1287</td>
<td>-1747</td>
</tr>
<tr>
<td>1831-40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper W/d</td>
<td>5725</td>
<td>-71</td>
<td>922</td>
<td>-993</td>
</tr>
<tr>
<td>Lower W/d</td>
<td>2463</td>
<td>-355</td>
<td>437</td>
<td>-792</td>
</tr>
<tr>
<td>Swaledale</td>
<td>6758</td>
<td>-262</td>
<td>1130</td>
<td>-1392</td>
</tr>
<tr>
<td>1841-50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper W/d</td>
<td>5635</td>
<td>-90</td>
<td>836</td>
<td>-926</td>
</tr>
<tr>
<td>Lower W/d</td>
<td>2655</td>
<td>+192</td>
<td>340</td>
<td>-148</td>
</tr>
<tr>
<td>Swaledale</td>
<td>6820</td>
<td>+62</td>
<td>1014</td>
<td>-952</td>
</tr>
<tr>
<td>1851-60</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper W/d</td>
<td>5649</td>
<td>+14</td>
<td>749</td>
<td>-735</td>
</tr>
<tr>
<td>Lower W/d</td>
<td>2999</td>
<td>+344</td>
<td>324</td>
<td>+20</td>
</tr>
<tr>
<td>Swaledale</td>
<td>6196</td>
<td>-624</td>
<td>948</td>
<td>-1572</td>
</tr>
</tbody>
</table>

1 Upper Wensleydale is conterminous with Askrigg (later Aysgarth) Registration District.
2 Lower Wensleydale comprises part of Leyburn Registration District. The natural increase figures from 1841 have been estimated on the basis of the proportion of the population of the lower dale to the population of the whole of Leyburn Registration District.
Swaledale is conterminous with Reeth Registration District.

Note: natural increase 1801-31 is based on an estimated average annual rate for the North Riding of Yorkshire of 16.3 per thousand (i.e. 1.6 per cent). This estimate might be a little high for Wensleydale and Swaledale but it relates to a period when the North Riding was predominantly rural and, therefore, there is unlikely to be much discrepancy:

<table>
<thead>
<tr>
<th>Year</th>
<th>Upper W/d</th>
<th>Lower W/d</th>
<th>Swaledale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1801</td>
<td>5205</td>
<td>1951</td>
<td>5739</td>
</tr>
<tr>
<td>1810</td>
<td>6101</td>
<td>2286</td>
<td>6726</td>
</tr>
<tr>
<td>1801-10</td>
<td>17.2%</td>
<td>17.2%</td>
<td>17.2%</td>
</tr>
</tbody>
</table>

Note: natural increase 1851-60 is estimated from returns.

As there are no reliable returns for the registration districts in the study area prior to the 1850s, the natural increase and the rate of natural increase for 1831-40 and 1841-50 have been estimated on the basis of the 1821-30 and the 1851-60 figures, assuming a constant decline over the intervening period. The rates of natural increase for the periods 1821-20 and 1851-60 are as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Upper W/d</th>
<th>Lower W/d</th>
<th>Swaledale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1821-30</td>
<td>17.2</td>
<td>17.2</td>
<td>17.2</td>
</tr>
<tr>
<td>1851-60</td>
<td>13.3</td>
<td>12.2</td>
<td>13.9</td>
</tr>
</tbody>
</table>

The calculations have been made as follows:
Upper Wensleydale 17.2-13.3 = 3.9 divided by 3 (for each decade 1831-61) = 1.3; so, 1831-40, 17.2-1.3 = 15.9, 1841-50, 15.9-1.3 = 14.6
Lower Wensleydale 17.2-12.2 = 5.0 divided by 3 = 1.7; so, 1831-40, 17.2-1.7 = 15.5, 1841-50, 15.5-1.7 = 13.8.
Swaledale 17.2-13.9 = 3.3 divided by 3 = 1.1; so, 1831-40, 17.2-1.1 = 16.1, 1841-50, 16.1-1.1 = 15.0.

Note: natural increase 1851-60 is estimated from returns.
for the years 1855-6, 1858-60, as returns are available for only these years.


NYCRO, PP 19/1, 3, 5, 8, 10, 17, 22, *Census Enumeration Abstracts for the County of York*, 1801-61.

## APPENDIX XIX

### NATURAL INCREASE AND ACTUAL CHANGE IN POPULATION IN UPPER AND LOWER WENSLEYDALE AND SWALEDALE, AND GREAT BRITAIN, 1861-1911.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Incr. or Natural Net Migrn.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>pop.</td>
</tr>
<tr>
<td></td>
<td>prev. census</td>
</tr>
<tr>
<td>1861</td>
<td></td>
</tr>
<tr>
<td>Upper W/d</td>
<td>5649</td>
</tr>
<tr>
<td>Lower W/d</td>
<td>2999</td>
</tr>
<tr>
<td>Swaledale</td>
<td>6196</td>
</tr>
<tr>
<td>G.B.</td>
<td>23.13</td>
</tr>
<tr>
<td>1861-70</td>
<td></td>
</tr>
<tr>
<td>Upper W/d</td>
<td>5473</td>
</tr>
<tr>
<td>Lower W/d</td>
<td>2703</td>
</tr>
<tr>
<td>Swaledale</td>
<td>5370</td>
</tr>
<tr>
<td>G.B.</td>
<td>29.71</td>
</tr>
<tr>
<td>1871-80</td>
<td></td>
</tr>
<tr>
<td>Upper W/d</td>
<td>4742</td>
</tr>
<tr>
<td>Lower W/d</td>
<td>2337</td>
</tr>
<tr>
<td>Swaledale</td>
<td>3217</td>
</tr>
<tr>
<td>G.B.</td>
<td>33.03</td>
</tr>
<tr>
<td>1881-90</td>
<td></td>
</tr>
<tr>
<td>Upper W/d</td>
<td>4508</td>
</tr>
<tr>
<td>Lower W/d</td>
<td>1998</td>
</tr>
<tr>
<td>Swaledale</td>
<td>2520</td>
</tr>
<tr>
<td>G.B.</td>
<td>37.00</td>
</tr>
<tr>
<td>1891-1900</td>
<td></td>
</tr>
<tr>
<td>Upper W/d</td>
<td>4262</td>
</tr>
<tr>
<td>Lower W/d</td>
<td>2058</td>
</tr>
<tr>
<td>Swaledale</td>
<td>2396</td>
</tr>
<tr>
<td>G.B.</td>
<td>40.83</td>
</tr>
</tbody>
</table>
Upper Wensleydale is conterminous with Askrigg (later Aysgarth) Registration District.

Lower Wensleydale comprises part of Leyburn Registration District. The natural increase figures have been estimated on the basis of the proportion of the population of the lower dale to the population of the whole of Leyburn Registration District.

Swaledale is conterminous with Reeth Registration District.

Millions of people.

Net emigration.

Source:

Wensleydale and Swaledale,

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Great Britain

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T(ZBO) PUS, Valuation for Tithe Commutation, 1841, Preston-Under-Scar;

T(PR) MAR, Valuation for Tithe Commutation, 1851, Marrick;

T(PR) MUK, Valuation for Tithe Commutation, 1844, Muker;

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(late) C. Chapman, former Lords Trustee of the Manor of Bainbridge, Hawes.
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E. Cooper, local historian, Arkengarthdale.
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R. Ewbank, veterinary surgeon, Liverpool.
M. Hartley & J. Ingilby, writers, Askrigg.
(late) R. Hugill, former manager, Askrigg Dairy.
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