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MINING HERITAGE AND THE YORKSHIRE DALES NATIONAL PARK

Robert White

The 1949 National Parks and Access to the Countryside Act was one of the series of socially enlightened pieces of legislation passed in the aftermath of the Second World War. Seventy-seven years after the world's first national park, Yellowstone, had been created, it set up the National Parks Commission and a framework for National Parks in England and Wales, albeit one with what we now perceive as a limited concept of what national parks were for: *'preservation and enhancement of natural beauty'* and *'the promotion of public enjoyment…'*.

In the decades after the designation of the first English National Park, the Peak District, in 1951, landscape historians such as W.G. Hoskins and, particularly relevant to the NMRS, Arthur Raistrick, helped change public perception about the landscape of these islands with the recognition that what we see around us is as much a cultural product as one of natural forces. Today we recognise that even some apparently geomorphological features such as the grassed-over terraces beneath the Hungry Hushes in Arkengarthdale are a largely cultural product (Figure 1).

In practice however the National Parks Commission and its successor body, the Countryside Commission and the National Park Committees[2] took a view that cultural heritage was part of their remit. In 1972 the North Riding National Park Committee used Building Preservation Notices to prevent the demolition for building materials of the Grinton and Surrender Lead Smelting Mills. This was probably the first time any planning authority had used this legislation with regard to industrial monuments. The first full-time National Park Archaeologist was appointed in Dartmoor in 1982. Nevertheless the 1991 National Parks Review Panel reported that *'archaeology is to some degree a poor relation in the National Park world and has received disproportionately little attention'*.[1]

This review led to the Environment Act 1995 which created the current independent National Park Authorities and new national park purposes: *'to conserve and enhance the natural beauty, wildlife and cultural heritage of the National Park'* and *'to promote opportunities for the understanding and enjoyment of the special qualities (of the National Park) by the public'*.

This Act also required National Park Authorities to develop management plans for their national park, not just for planning their own activities, and effectively to define the special qualities of each national park. The special qualities of the YDNP as enumerated in the current National Park Management Plan state that *'The legacy of former rural industries adds to the character and interest of its landscape. Their influences on the area's social character and fabric are still evident today. The park is scattered with the remains of former mineral extraction and processing sites, especially lead and lime industry remains most of which date from the 18th century and 19th century'*.[2]

Figure 1. A solitary cow house punctuates this lead and chert mining landscape between CB yard and the Hungry Hushes in Arkengarthdale. In the top centre is an inclined plane for the twentieth century chert workings

THE LANDSCAPE LEGACY

The most obvious remains are those resulting directly from extraction and its associated spoil heaps and processing plants but many influences are far wider and more subtle. The road improvement works necessary for today's quarry traffic have their counterpart in the development of the turnpike system, most notably the route from Reeth to Brough, turnpiked in 1770 in large part to facilitate transport of coal from Tan Hill and the road from Reeth to Richmond which was turnpiked in1836 with the principal purpose of reducing the costs of transporting lead (Figure 2). What routes were used to transport coal from Tan Hill to Richmond Castle, when the industry was first recorded in 1384, is unclear but many other roads and tracks owe their existence to the need to transport, not just the minerals themselves but the fuels necessary for their processing.

Iron smelting required vast quantities of charcoal to keep continuously charged furnaces in operation and this would have had long lasting effect on ecosystems. Conflict between foresters and and ironmakers was one of the causes of the decline of the iron industry in Skipton Chase. Foresters levied tolls on ore carried to the furnaces early in the fourteenth century but in the 1320s iron smelting ceased for Barden and neighbouring woods *'had suffered grievous injury'* from charcoal-burners and smelters. Today there is relatively little woodland in the former Forest of Barden – is this a direct legacy of the iron industry?

THE LEAD INDUSTRY OF BORDLEY TOWNSHIP

Janis Heward

INTRODUCTION

The Bordley Township Project is in its infancy and therefore to date little research into the lead industry has been done.

LOCATION

Bordley Township lies in the north of the Yorkshire Dales, it nestles between Malham and Threshfield. Hetton forms the boundary in the south and Hawkswick Clowder in the north. The mining industry is dominant in the area north of Mastiles Lane centred at (SD 933 675).

BACKGROUND

Bordley has been known since 1086[1] and in 1169 it became part of the vast estate of Fountains Abbey.[2] During 1198 Over and Nether Bordley were established as granges, which were part of an extensive pasture for the huge flocks of sheep that provided an income for Fountains Abbey. There are no references to lead mining at Bordley until 1733 when Henry Whitticar had 0.88 tons of lead smelted at Grassington.[3] The township came into the ownership of the Proctors, in 1576, where the majority of it remains today.[4]

The full history of the mineral rights in Bordley is currently unclear. Rights to minerals under the unenclosed land were certainly in the hands of the Clifford's by the early 17th century as they were working the coal in the eastern part of the township during the 1630s and 40s.[5] Thereafter they do not appear to have been retained by the Clifford's nor did they pass to the Burlingtons and then the Devonshires - 'millage' was paid on ore from Bordley smelted at the Duke of Devonshire's smelter, indicating that it originated from outside the Devonshire mineral liberties.[6] The mineral rights had probably been acquired by the Proctor family at some point after the 1640s but that has yet to be confirmed. Mineral rights under the various tenements within the Bordley township may have been included with the land, which was in multiple holdings from the late 16th century as entries in those Feet of Fines for Yorkshire available on-line do not mention any reservation of the rights to the original estate.[4] Entries in the Feet of Fines are however quite basic and title to the land and minerals might be expanded on in other documents which have yet to found.

GEOLOGY

The high limestone pastures of Bordley are characterised by long, grey, fossiliferous limestone scars. These Lower Carboniferous rocks are part of the Wensleydale Group (formerly known as the Yoredale Beds). The Lower and Upper Hawes Limestones, the Gayle Limestone and Hardraw Scar Limestones are crossed by conspicuous lines of shallow shafts with occasional deeper, stone-lined shafts, where mineral veins were once worked for galena.[7]

Figure 1. (left) Cairn and capped shaft in north of Bordley orefield. SD 93782 67524. There is an abundance of mossy saxifrage surrounding the stone cap.

Figure 2. (below) Dressing floor (A), ruins of a miner's coe (B) and row of shallow shafts on a vein on the western edge of the Bordley orefield.

Bordley lies at the southern edge of the Askrigg Block, an area rich in lead-zinc ore deposits extending as far as Stainmore. The Craven faults that run through Bordley mark this southern block and orefield. The Variscan crustal disturbances 270 million years ago ended a period of sedimentation. The Pennine hills were thrust up and the strata folded and faulted. Hydrothermal processes carried minerals, dissolved in hot fluids, from the former deep sea basin sediments into the overlying block of flatbed limestones. Here they cooled and crystallised in fissures and cracks. The mineral veins in Bordley are nearly vertical and run sub-parallel along the ground, mostly in a NE-SW alignment.[7]

FLORA

An abundance of plants which live in the toxic soil surrounding lead workings have been identified at several locations in the Bordley lead field (Figure 4). Metalliferous plants fall into three types:

metallophytes – these are indicators of lead pollution.[8]

sandwort or lead wort (*Minuatia verna*) – white, star-like flowers on a cushion of tiny grass-like leaves which flower in May-June.[9] Lead wort is able to take in and store high quantities of concentrates of heavy metal without stunting its growth and

LEAD MINES AND MINERS IN THE 19TH CENTURY CORRESPONDENCE OF THE REETH POOR LAW UNION

Alan Mills

INTRODUCTION

This paper is based upon the work of the Reeth Poor Law Group, a group of volunteers, who, on behalf of the National Archives, catalogued the correspondence between the Reeth Poor Law Union and the Poor Law Commission / Board in the period 1834-1871. The material is a rich source for social, local and family historians and although there is not a lot which refers explicitly to the local lead mines and miners there is a small amount of interesting material which is considered below.

BACKGROUND TO THE POOR LAW

In medieval times there was no formal support for the poor, who had to rely upon family, friends, neighbours and the church. The growth of towns and the dissolution of the monasteries in 1536 disrupted this simple system and was followed by much legislation from the time of the accession of Edward V1 in 1547 onwards. A law in 1547 instructed the clergy to encourage *'the good people'* of the cities, towns etc to raise funds to provide accommodation for *'the aged, impotent or lame'*.[1] The same Act said *'...if any man or woman, able to work, should refuse to labour and be idle for three days, he or she should be branded with a red-hot iron on the breast with the letter V and should be judged the slave for two years of any person who should inform against such idler'*. Fortunately this brutal punishment for simply being poor does not seem to have been carried out much and the Act was repealed quite quickly.

In 1597 a further Act called upon every parish to appoint 'overseers of the poor' to find work for those without it and provide 'parish-houses' to accommodate those unable to support themselves.[2] The overseers, or if they refused to help, the justices, were empowered to raise a rate on all property owners in the parish to fund their activities.

The 1601 Act for the Relief of the Poor saw the earlier legislation consolidated into what is often referred to as the 'Elizabethan Poor Law' or 'the 43rd Elizabeth'. This remained basically unaltered until 1834. This Act encouraged parishes to look after 'their' poor by, amongst other things, providing out-relief (benefit as we would call it now) to those in need of temporary support and also building poorhouses to accommodate the 'impotent' poor – those unable to support themselves and their families.

Over the next 200 years many parishes opened a poorhouse. In Swaledale and Arkengarthdale the township of Healaugh obtained the land to build a poorhouse in 1733 whilst Reeth, Grinton and Low Row all had poorhouses by 1752, Arkletown by 1755, Melbecks by 1766 and Muker by 1783. The cost of supporting the poor fell upon individual parishes and townships. In times of hardship this could be a significant burden upon ratepayers. This was particularly the case in the late 18th Century, which was a time of great hardship for many working people.

In 1795 the Berkshire village of Speenhamland implemented a system of out-relief which was linked to the price of bread and paid for out of the poor rate. This effectively provided for a minimum wage and was widely adopted. Out-relief exploded under this system and variants of it. Workers soon viewed it as their right to have their wages made up to the Speenhamland minimum leading to an enormous increase in the poor rate levied to pay for it.

Figure 1. Punch magazine campaigned against the 1834 Poor Law system of workhouses, which split up families.

By the beginning of the 19th Century the relief afforded to the poor varied from parish to parish; sometimes benign, sometimes harsh. As a consequence the cost to the rates varied enormously whilst over the country as a whole poor rates had risen from £1.5M in 1776 to £7M in 1832 .[3]

There was widespread belief among rate-payers that systems such as that adopted at Speenhamland were counter-productive. Unscrupulous employers could keep wages low, knowing that they would be made up to a minimum level through out-relief; this had the effect of keeping wages low, whilst rates were high, subsidising employment. Further, the whole system of out-relief in whatever form was viewed by many as encouraging idleness.

1834 POOR LAW REFORM ACT

The Act was intended to achieve some degree of uniformity in the treatment of the poor across England & Wales. It required parishes and townships which had administered the poor law previously, to join together to form Poor Law Unions. These Unions normally had one central workhouse to house the poor, rather than a number of smaller parish poorhouses. The architects of the Act intended to abolish outdoor- relief entirely, and only offer the workhouse to paupers. This was known as the 'workhouse test'-were you really that poor that you were prepared to accept the conditions in the workhouse? Underlying the Act was the belief that *'the advantage of the workhouse does not arise from assisting the poor to help themselves but from the apprehension the poor have of it'*. In the words of Captain (later Sir) George Nicholls, one of the first of three Poor Law Commissioners: *'The pauper is subjected to so many disagreeable circumstances that the desire to escape from these constantly urges him on to renewed exertion'*.[4] This of course assumes that it is possible to 'escape' from poverty.

LESSER-KNOWN SMELTING MILLS OF THE WEST PENNINES

Richard Smith and Sam Murphy

INTRODUCTION

Research into the mines and smelting mills of the West Pennines has brought the authors into contact with some mills of which they were unaware and which have received little or no mention in the historical literature. The mills were situated in the old counties of Westmorland and Yorkshire and would be a suitable subject for archaeological study as few historical accounts or other evidence has been found to date.

DUFTON

Dufton smelt mill (NY 6870 2356) is well-known and was one of the principal mills of the London Lead Company when they took over the general area leases in the West Pennine area in 1820. A house now stands on the site, although the watercourse from Burthwaite Beck leading to the mill can be traced with some difficulty.

Figure 1. Jeffrey's map of Westmorland 1770, showing the old smelting mill at Dufton. The position of the later mill is also shown. [Reproduced by permission of the Cumbria County Record Office, Kendal].[1]

Jeffrey's map of Westmorland of 17701 shows a 'Smelt Mill' to the NE of Dufton (NY 6841 2549) in Coney Garth at the junction of Eller Beck and Knock Gill (Figure 1).[1] Apart from a fragment of masonry used to revette the bank of Knock Gill, the authors were unable to find any trace of a mill. On the south side of the road bridge, the beck changes its name to Mill Gill and a waterwheel can be found in the woods, although this was part of a corn mill, shown on later maps.

Records in the Hothfield archive at the Kendal Record Office show that there was a smelting mill at Dufton in 1651 when Richard Watson, the Bailiff of Knock paid £6:15:6d for the carriage of 45 bings of lead ore from Silverband Mine to Dufton Mill. He paid Edward Barugh 30 shillings per fother for smelting 12 fothers of lead there.[2] In 1767, a lease of the Dufton Mines to John Blackwell allowed the use of the *'smelt mill and smith's shop already erected'*.[3] The Earl

A HISTORY OF MINING IN TEESDALE IN THE 16TH AND 17TH CENTURIES

William F. Heyes

INTRODUCTION

It is generally accepted that the ores of Teesdale have been exploited for many centuries. This view is based on sparse archaeological and documentary evidence, often reported as part of investigations unrelated to mining history. Thus Coggins,[1] researching the archaeology of Teesdale, discovered numerous sites with evidence of the smelting of iron ore within the dale; these ranged in date from the late prehistoric period to about AD 1200. The earliest documentary evidence occurs in the 13th century when iron ore deposits in Teesdale and Lunedale (a tributary valley of Teesdale) were leased.[2] The veins of lead ore on the watershed between the Teesdale and Weardale in the vicinity of Yad Moss were known by 1379.[3] When Austin and his co-workers were researching the history of Barnard Castle (the ancient monument, not the town) they discovered 14th century documents confirming mining in Teesdale and a document dated 1422 authorising a search for unlicensed lead and iron mines in the Forest of Teesdale.[4] A lease of a lead mine in the Forest of Teesdale in 1550 was reported by the Rev. W. Bell, Rector of Laithkirk, during antiquarian research aimed at recording the existence of old documents held by Teesdale families.[5]

After 1750 there is extensive documentary evidence for mining in Teesdale, much of it relating to the activities of the London Lead Company; this data has been reviewed by Fairbairn.[6] It is clear from Fairbairn's review that mining in Teesdale was continuous throughout the 18th and 19th centuries but it is generally assumed that very little mining activity occurred before 1750, based upon the few references cited above. The aim of this paper is to document new evidence to demonstrate that mining in Teesdale was in fact continual during the period 1500 to 1700 and to record the details of these activities.

ADMINISTRATIVE DIVISIONS IN TEESDALE IN THE 16TH CENTURY

Before discussing details of mining activities it is important to understand the division of land-ownership within the dale in the 16th and 17th centuries.

Teesdale is one of the North Pennine dales; geographically the dale is situated with Weardale to the north and Swaledale to the south. The River Tees has historically formed the boundary between the North Riding of the County of York and County Durham, though the Local Government Act of 1972 transferred a swathe of the North Riding into County Durham. Mineral veins are mostly located in the upper reaches of the dale, beyond Eggleston on the County Durham side of the river, and beyond Mickleton, on the former Yorkshire side (i.e. pre 1972).

In the 16th century, that part of Teesdale within County Durham was in the possession of the Crown and not part of the jurisdiction of the Bishop of Durham, despite many legal challenges brought, unsuccessfully, by various bishops. It was thus the prerogative

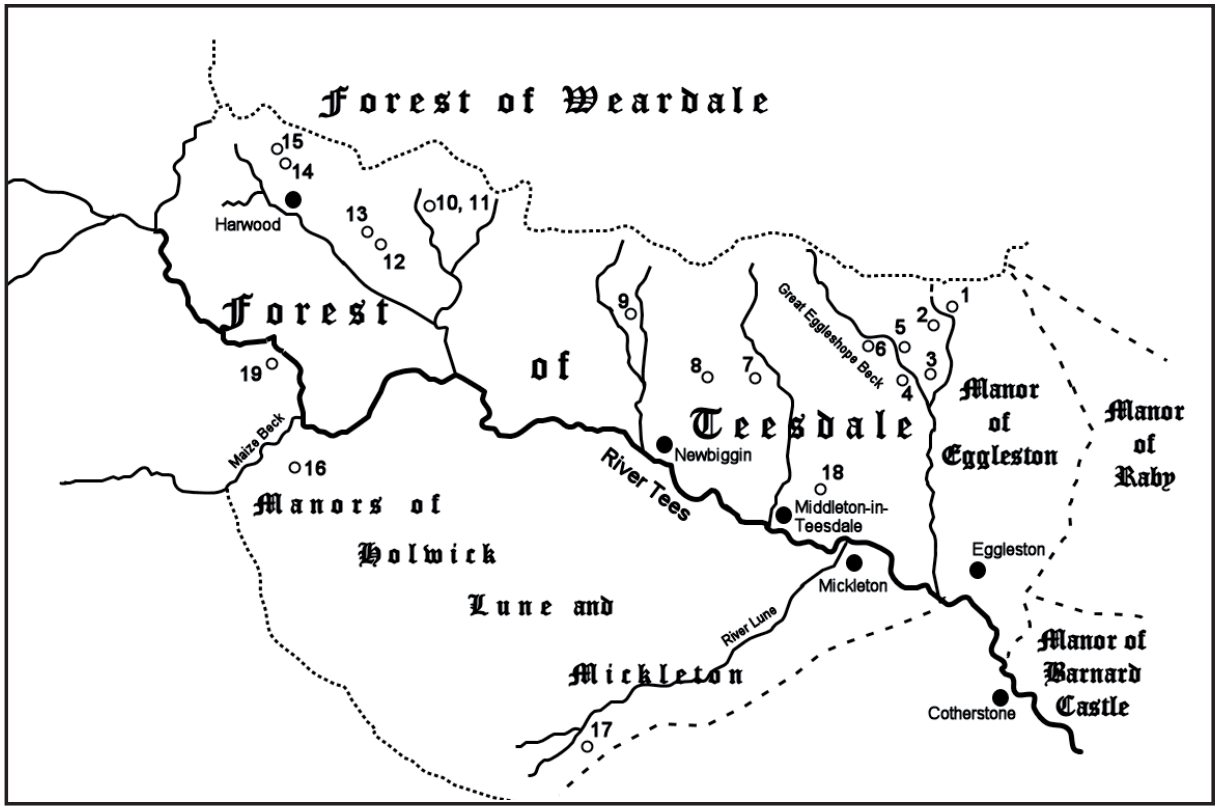

Figure 1. Upper Teesdale Administrative Boundaries and Mines in the 17th Century.

Key: 1 Flakebrigg; 2 Flakebrigg Westside; 3 Wilson's Grove (East Rake); 4 Wilson's West Grove; 5 Withgill (Wiregill); 6 Maynard Gill (Manor Gill); 7 Coldberry; 8 Reddgroves; 9 Pike Law Groves; 10 Coomes; 11 Western Harthope; 12 Trough; 13 The Bands; 14 Hawksike; 15 Grassgroves; 16 Green Mines; 17 Lunehead; 18 High Dyke; 19 Cowgreen.

of the Crown to grant leases or ownership of the manors and mineral rights in Upper Teesdale. Located on the County Durham side of the River Tees were the Manor of Eggleston, the Manor of Raby and the Manor of Barnard Castle, including the Forest of Teesdale; on the opposite bank of the River Tees were the Manors of Mickleton, Lunedale (including the Forest of Lune), Crossthwaite and Holwick. (Figure 1).

The Teesdale mineral veins situated in County Durham were mostly located within the Forest of Teesdale boundaries. Although the Forest of Teesdale was itself a part of the Manor of Barnard Castle, Wardenship of the Forest and its associated rights and duties, ownership of the Manor of Barnard Castle and lease of the mineral rights were granted individually, often to different persons. Thus it is erroneous to assume that either Wardenship of the Forest or ownership of the Manor of Barnard Castle conferred any right to the mines or minerals during the 16th and 17th centuries.

MINERAL RIGHTS AND LEASES

Manor of Eggleston

At the northern extremity of the ancient Manor of Eggleston, Flakebrigg Vein and East Rake/Sharnberry Vein cross the boundary from the Forest of Teesdale and converge.

THE IRON-AGE (NIDDERDALE) PROJECT - MINING AND SMELTING IN DACRE AND DARLEY

Jim Brophy and Gillian Hovell

THE IRON AGE (NIDDERDALE) PROJECT

Iron-Age (Nidderdale) is a community archaeology project operating with financial support from the Heritage Lottery Fund and it is now in its third year. It is, however, only the latest of a continuous sequence of projects that started with a course of evening classes organised by the Workers Educational Association (WEA) in 1998 at Summerbridge in Nidderdale which used a site on Dacre Pasture (NGR SE 1815 6025) for practical work. The site, which has been the centre of increasing archaeological activity since then, is on the south side of the ridge that separates Nidderdale from the valley of its tributary, Darley Beck and has proved to be of enormous interest with a wide range of structures from many eras. There are excellent views that extend eastward over the Plain of York to the Yorkshire Wolds 30 miles away but the shorter view to the south across the valley to Darley village and the rising ground beyond just one mile away (SE 1940 5880) is of particular significance.

That rising ground is the south side of the glacial valley of Darley Beck and the opportunity to study it from a distance while working on the main site at Dacre over several years has resulted in a clearer understanding of its terrain. An occasional walk on public footpaths in the area has resulted in more detailed knowledge and some finds of real significance that are related to historic iron extraction and smelting. These include some very obvious bell pits, numerous spoil heaps and the remains of a blast furnace. There are, as always, some features that prompt questions rather than answers. For example there are stone mullions that have been incorporated into a dry stone wall that seem to be the remains of a building of some quality and an unusual stone structure at the head of a shaft or well.

To date there has been no formal programme of scientific testing so the dating of finds and features is based primarily on typography as well as informal expert opinion and a small number of X-ray diffraction tests on slag samples. A comprehensive programme of chemical analysis of slags and archaeomagnetic dating is planned for a later stage of the project and the professional identification of geological strata and drift will be sought. A detailed study of the geology is handicapped at present because there is no modern Geological Survey map for the Dacre area, nor it seems is there any indication of a publication date.

The sequencing of landscape features does give some indication of age and one particularly useful indicator at Dacre is a layer of soot in the topsoil across the three fields at the centre of the archaeological excavations. This is pollution similar to that found in many industrial areas of the nineteenth and early twentieth centuries but it can only have been formed here during the medieval era when hundreds of bloomery furnaces were at work together with charcoal burning and other polluting activities.

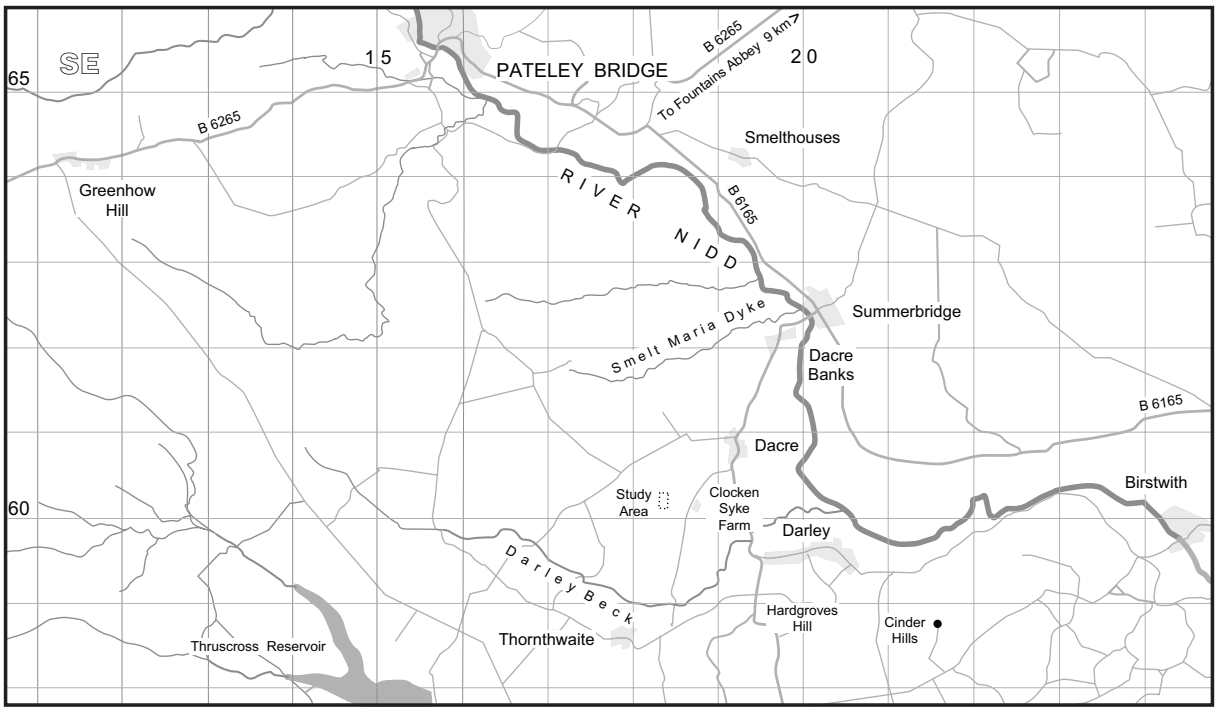

Figure 1. Nidderdale with the Upper Washburn Valley in the SW quadrant.

Records of land ownership have also helped the dating process and the fact that Dacre was held by Fountains Abbey for nearly four centuries is particularly helpful since the Cistercians were diligent at recording. After a brief interlude in the post-monastic era the land was held by the Ingilbys of Ripley Castle from the end of the 16th century and some of their documents are also available.

DACRE

The work that has been undertaken on the Dacre side of the valley has been extraordinarily productive with a variety of archaeological features including domestic and ritual features but beyond these a wide range of metal smelting and forging sites have been revealed dating from at least the Iron Age to the seventeenth century and raising the possibility that there are remains from any or all of the periods between these limits.

The earliest structure on the site is a prehistoric cairn, partly demolished but showing typical characteristics of a Neolithic long barrow and half a mile from that is a Bronze Age barrow. There are two Iron Age settlements half a mile apart and separated by a shallow valley, the western settlement has not been investigated in detail but a number of features are clearly visible. The first project started here because of a quern stone that was found by a local farmer and there followed a community archaeology project that involved no digging, the technique being a formalised method of observing and recording the visible structures and the few visible artefacts as well as field boundaries, tracks and water courses.

This worked well and a lot was discovered that was previously unknown and in particular

THE GASCOIGNES AND THE GARFORTH MINERS IN THE NINETEENTH CENTURY

Alison Henesey

The coal-mining community in Garforth was untypical of the majority of mining communities in Yorkshire in the later nineteenth century. It contrasts with the more conventional picture of capitalist companies, in which large coal organisations worked extensive collieries. The majority of the miners, employed in their thousands, were generally union members and were bound together by a strong sense of mining identity which fuelled the industrial action between men and mine owners. In Garforth however, this was not the case. The colliery was run by the Gascoigne family, the principal landowners in Garforth, until into the twentieth century. It employed between 500 and 800 men and there was little union activity.[1]

According to F.M. L. Thompson, by the nineteenth century, most of the large landowners who had coal on their estates, had leased their land to mining companies. By 1869, he suggests, less than five percent of the collieries in England were run by the landowners.[2] Thompson saw this as the last stages in a long decline which culminated in the leasing of Lord Lonsdale's Whitehaven collieries in 1888.[2] This alternative pattern of ownership and the paternalism which accompanied it, resulted in social relations which differed between the miners employed by landowners and those by coal companies. While it can be further argued that local geology, economic, social and cultural differences also determined patterns of development, it was the use made of these local factors by those who held power, which ultimately shaped the mining community and the lives of individuals within it.

The Gascoignes retained ownership of their collieries throughout the nineteenth century. The mines were not sold until 1919. This paper will examine the role that the Gascoignes played in shaping the Garforth mining community. Why did the family prefer to maintain control of the mines? What was the effect of this on the development of the town? How did the relationship between the mining community and the Gascoignes change as a result? Before attempting to answer these questions, it will be helpful to understand something of the area of Garforth and the Gascoigne family.

Garforth is situated approximately seven miles east of the city of Leeds and is located on the eastern edge of the West Yorkshire coalfield. The coal outcrops to the west of Garforth on the moor. To the east, however, the seams dip beneath a shelf of magnesian limestone which formed a natural barrier to early mining operations. The Gascoigne family had been mining in the Garforth area since at least the sixteenth century. Records of court cases show them involved in disputes regarding way leaves, rents and boundaries around Barwick-in-Elmet and Scholes just to the west of Garforth.[3] As in most early coal mining ventures, these mines were shallow, the miners getting coal from outcrops near the surface. The geologists Kendall and Wroot, on a railway journey from Leeds to York in 1924, recorded that they could see: *'on both sides of the railway, areas dimpled with ancient bell pits, formerly working the Middleton Little coal'*.[4]

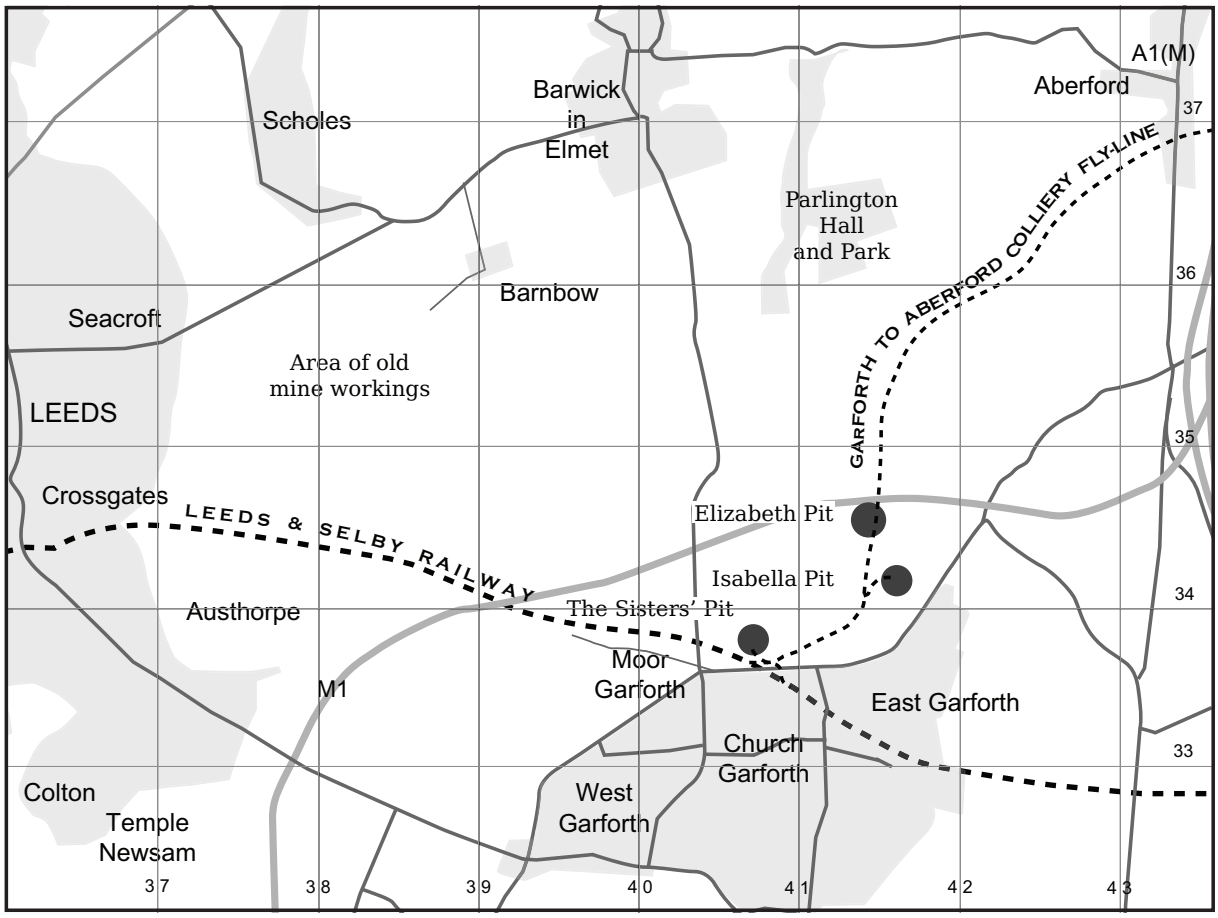

Figure 1. Map of Garforth and the surrounding area, showing the main coal mines of the Gascoignes, railway communications and Parlington Hall.

Records of baptism and marriage in the parish registers for the seventeenth and eighteenth century show a predominance of miners and farmers in the region and in many cases, their family names were still present in Garforth two hundred years later.[5] There had therefore been a long association between the Gascoignes and miners over several centuries.

Every indication suggests that the Gascoignes, the miners and the farmers formed a stable, close community with established ties and common customs. At the beginning of the nineteenth century, Garforth comprised three villages, Moor Garforth to the north, West Garforth to the south and Church Garforth in the centre. The total population of the villages in 1801 was 200 but this rose steadily to reach 3,200 by 1901.[6] Parlington Hall, situated between Aberford and Garforth was the seat of the Gascoigne family. Apart from the vicar, a few gentlemen of independent means, farmers and miners, the census for 1851 show the remainder of the inhabitants were employed as blacksmiths, carpenters and shoemakers, supporting both farm and colliery.[7] Most inhabitants rented from, or were employed by, the Gascoignes and there was a tradition of miners and farm labourers working underground in the pits or on the land as required. Both agricultural labourers and miners lived in all three of the villages.

Sir Thomas Gascoigne, who was living in Parlington Hall at the beginning of the

DISCOVERIES AT SILVER GILL MINE, CALDBECK

Warren Allison

The English Lake District is well known for its outstanding scenery but this has been fashioned by its industrial past including numerous slate quarries, mines of copper, lead, zinc, iron, silver, tungsten and barite which have operated with varying degrees of success over hundreds of years.

The first real documentation relates to the operations of the Company of Mines Royal who were responsible for introducing German/Austrian miners into the area in 1563. The Caldbeck Mines at the northernmost edge of the Lake District were an important part of this operation and although the principal German mines at Keswick and Coniston have long been known, the precise location of the Caldbeck mines was not, although old pre-gunpowder workings were known at Roughton Gill, Silver Gill and Red Gill. Historians have considered that the lead/copper mines at Roughtongill, which were the largest and most productive in the Caldbeck Fells, were probably the most logical site for the German workings but there was no evidence to confirm this. However field work combined with studies of historical documents by local enthusiasts over the past thirteen years has identified the principal German workings at Caldbeck and has also revealed an unexpectedly earlier date for mining in the Lake District as well as providing the earliest physical evidence for the use of railed transport in Britain.

EARLY HISTORY

Medieval mining

In his publication 'Mining in the Lake Counties', the well-known mining engineer W.T. Shaw states that:

> *'King Edward III made a grant of mines and appointed Robert de Barton to be keeper of silver lead mines at Silver Beck and Minersdale and copper mines at Keswick. There is little doubt that Silver Beck is Silver Gill Mine and Minersdale is thought to be the ancient name of the valley in which stands the famous old Roughtongill Mine'.*[1]
>
> *'The Caldbeck Fells were a source of minerals even before the Elizabethan times'.*[2]
>
> '*The lead and copper mines of Roughtongill... are extremely ancient and extensive... They are thought to have been started in the 12th century but were idle when taken up by the Elizabethans in 1566'.*[3]

Unfortunately he does not state his sources

However the earliest known documentary evidence for mining in Cumbria is found in the State Papers showing that in 1125 silver was discovered in the North of England and the 'Minery of Carlisle' was started up. However this title does not necessarily mean the mine was near Carlisle, only that it was in the area governed from there, i.e. Cumbria. For a time this mine was active at a fairly low level but by 1133 a rich source of silver had been discovered which over the next decade became very productive. No actual figures are

recorded but it has been estimated, by studying the flow of moneys in contemporary records that in the 90 years from 1125 to 1215 Cumberland produced 32,000 troy ounces (20 tons) of silver.[4] Although some historians dispute this estimate, it is clear that, in quite a short period of time, very large quantities of silver were produced, sufficient to warrant a mint at Carlisle. Decline set in during the 13th century and silver production faded away.

However, a century or so later, rather more specific references begin to appear. The first is at Caldbeck when the following document was signed in front of the King at York on January 15th 1319:[5]

> *'Order to sheriffs and all other bailiffs, ministers and others to be indendant to the King's clerk William Druel and John Le Balaneu, the King on learning that there was a mine of copper and silver at Caldebek and elsewhere in the parts adjacent in Cumberland and Westmoreland, having appointed the said John to survey, search and examine, he fund such a mine. The King desiring further information having appointed the said William and John to make further search and examination in the sheriff's presence and satisfy the King there of and having ordered the said sheriff to make an indenture between him and the said William and John taking that which shall be found that the King may be more fully informed of the said business and do further on what he shall think fit.'*

Then in October 1331:[6]

> *'Appointment of Robert de la Forde and Richard Campion to search for a mine of silver and lead reported to exist in Minerdale and Silverbeck, Co. Cumberland, and in Harcla, Co. Westmorland, by view of Robert de Barton, whom the king has appointed keeper of the mine.'*

'Harcla' is the manor of Hartley near Kirkby Stephen, where there are old lead mines, but Minerdale and Silverbeck are unknown. The Alston Moor mines in the east of Cumbria appear in 1359 and again in 1414[7] and in 1475 further locations are identified: Blanchland in Northumberland, Alston Moor, 'the mine of Keswyk', and Richmond in Yorkshire.[8] While the 'mine of Keswyk' is usually thought of as being the copper mine in the Newlands valley now known as Goldscope, the possibility that it was part of the Minery of Carlisle is open to debate.

The Society of Mines Royal 1564-1630

There is a wealth of detailed information for the Elizabethan period related to mining in the Lake District including Caldbeck available from the records of the Company of Mines Royal, which was a state monopoly set up in 1564 by Elizabeth I to discover and mine copper.[9] At that time, there was no domestic source of the metal required for the brass cannon used to arm her father's ships and this project was intended to obtain a secure supply. This German-English company was responsible for introducing expert German/Austrian miners and smelting technology into the area, under an experienced management team headed by Daniel Höchstetter or Hechstetter.

They opened up many copper mines in a large area of the Lake District from Kendal in the south-east to Buttermere in the north-west including Coniston, Keswick and Caldbeck. A large smelting complex was built at Keswick and they introduced new

THE GEOLOGY OF THE CENTRAL WALES OREFIELD, THE NE EXTREMITY, CWM NANT DDU TO CWM BYCHAN

David M.D. James

INTRODUCTION

The four mines discussed herein have much in common besides simply their location defining the NE productive limit of the orefield (Figure 1). At least three were sites of shallow trials and reputedly some production by local people in the early-mid nineteenth century if not earlier and all were extensively tried at greater depth during the early 1870s; almost certainly under the stimulus of the Van discovery of 1866. Our knowledge of the mines is almost entirely derived from this later period of working; short though it was before the collapse in the price of lead in 1877-8 and the poor quality of the lodes sealed their fate.

Also in common is that the four mines have been scarcely if at all researched although several had surface remains recorded during 1992-3 by the Clwyd-Powys Archaeological Trust (CPAT). None of the workings appears to have abandonment plans preserved and many of the entrances are collapsed. The records in the Mining Journal (Mining Journal) are very variably informative/interpretable, but combined with new surface and subsurface survey they allow reconstructions of the workings, and the lode geometry, that range from partially speculative to surprisingly comprehensive. David Bick wrote of these ventures, *'little more than trials but worthy of investigation'*.[1] Although recorded production is negligible Cwm Bychan and Fron Vellan found sufficient encouragement to install dressing machinery and even Cwm Nant Ddu and Ednant can be deemed technically successful major trials. Together they afford enough control on lode geometry/ore habitat to suggest a possible explanation for their commercial failure and hence for the extent of the orefield N of very productive areas around Dylife and Llannerch-yr-aur nearby.

BACKGROUND GEOLOGY

Only Cwm Nant Ddu is recorded on the 1974 Mineral Reconnaissance map which does not extend far enough N to include the other mines.[2] There is as yet no modern mapping at any of the mines but the Mineral Reconnaissance map and the earlier map of O.T.Jones[3] suggest that they lie on the NNE plunge of one of the major anticlines making up the Plynlimon Dome (Figure 1). This is confirmed in general terms by my mapping which indicates that Cwm Nant Ddu, Ednant and Cwm Bychan lie along a smaller-scale anticline within this larger structure. Fron Vellan lies on trend with a different anticline which is proven at Llanerch-yr-aur to the SSW[3] but this fold seems to die out before reaching Pen Rhiw-mwyn. Host rock strata at the mines are of Silurian age: they are monotonously muddy with well-developed slatey cleavage and lie within the Blaen Myherin Mudstone Formation as defined by the British Geological Survey[4] a few kilometres to the S. These mudstones, at the top of the Frongoch Formation of O.T. Jones[3], lie about 1,200 metres[4] stratigraphically above the massive Ordovician 'grits' of the Van Formation as defined by Jones.[3] Intervening strata are overwhelmingly muddy.

Exposure is rather variable and surface mapping of the lodes away from the mines has not proven practicable.

CWM NANT DDU

Location

The workings lie about 3.5 kilometres WSW of Bont Dolgadfan in an isolated valley containing a tributary of Nant Gwidol, just north of Moelfre hill, itself about 2 kilometres W of the Llanerch-yr-aur mine (Figure 2). Cwm Nant Ddu itself is not identified on the modern 25k O.S. map.

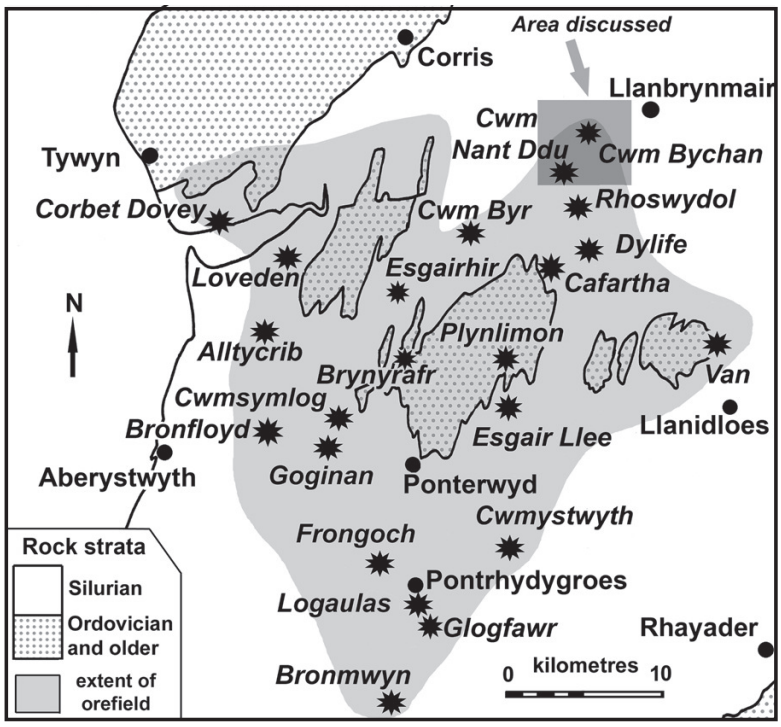

Figure1. General location map for the Central Wales Orefield.

The 1903 6-inch to one mile O.S. map shows three groups of workings. The first, around SN 847 990, comprises a 'shaft' at ca. 230 m O.D. and levels at ca. 190 and 280 m O.D. Most of this area is heavily afforested. The second, around SN 851 987, principally comprises levels at ca. 225 and 400 m O.D., the latter in a steep ravine to the south of the main valley in open country. The second group of workings is clearly the Moelfre mine of Foster-Smith who, curiously, does not mention the area around the 'shaft' ca. 600 metres to the WNW or even the name Cwm Nant Ddu.[5] A third, probably unrelated group, consists of two trials driven N in the bank of the steep ravine of Nant Gwidol at SN 8475 9942 just below the mountain road. These may well be the Rhoswyr 'mine' mentioned as 'suspended' in the Mining Journal of 1873, Rhosywir house lying ca. 1.2 km along the road to the WNW. None of these workings gets mention by O.T. Jones[3] nor appears in the CPAT survey list. Outcrop around the eastern group of workings is fair; around the western and northern very poor.

Development

Archival evidence is sparse. The Mining Journal for 1870 records renewed interest in the mine which had then not been working for 'a number of years' but which had formerly given a 'rich harvest' near surface. In 1872 the Cwm Nant Ddu Lead Mng. Co. (Ltd) was formed and two reports from Captain Joseph Roberts indicate that five lodes were targetted. Sporadic entries through 1872-1875 are difficult to relate with precision to the 1903 O.S. map. There are no signs of dressing floors, or indeed buildings. No dressing machinery is reported.

CHERT QUARRYING IN SWALEDALE AND ARKENGARTHDALE

Kay Jackson

INTRODUCTION

For over fifty years, from the late Victorian period until the 1950s, chert quarrying provided much-needed employment in Swaledale and Arkengarthdale following the decline and extinction of the long-standing lead mining in the area. This article aims to describe what chert is, where it is found locally, what it was used for, when, how and by whom it was worked and what caused the demise of the industry in the early 1950s. The term 'chert quarrying' is used as the workings in this area were described by their owners as chert quarries, e.g. Fremington Chert Quarries and Hungry Chert Quarries, and the workers called themselves 'chert quarrymen' in spite of the fact that that most of the chert was quarried underground in levels, adits or tunnels, often in areas formerly worked by lead miners.

Figure 1. (left) Chert block measuring 12" by 8" by 9" from Fremington Edge (possibly a rejected paver), now in the Swaledale Museum. [Author's photograph].
Figure 2. (right) Flint nodule at Cheddleton Flint Mill. [Author's photograph].

GEOLOGY

Chert is a crystalline rock consisting of very fine grains of quartz. Almost pure silica (SiO_2), it occurs as nodules or layers in sedimentary rocks and in the Dales it is associated with limestones which are about 340-300 million years old. It is a hard rock: on the Moh's Hardness Scale from 1(talc) to 10 (diamond) it is classified at 7. Shiny or glossy in appearance, it varies in colour; underground in this area it can appear as blue, pink or creamy-brown but when exposed tends to weather to shades of grey.

Flint is another type of silica occurring in chalk rocks of the Late Cretaceous Period (ca. 91-65 million years ago). This much younger rock occurs, mainly as nodules, in chalk areas such as the Yorkshire Wolds, Lincolnshire Wolds, North and South Downs, as well as Northern France.

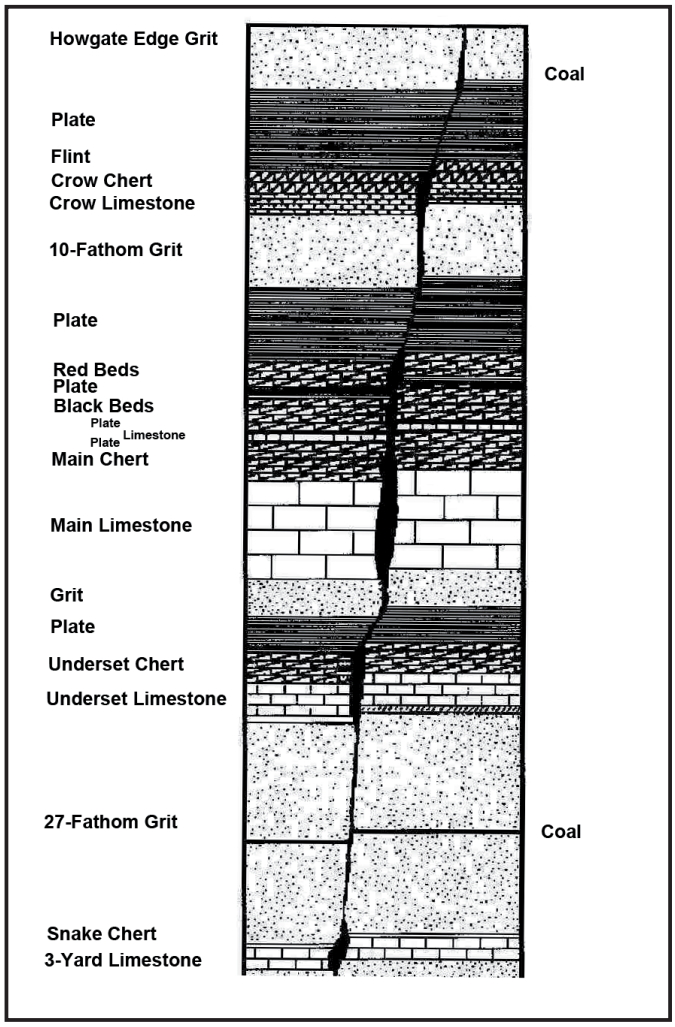

Figure 3. Section through the Yoredale Series of Carboniferous rocks in Swaledale and Arkengarthdale.[1]

The northern part of the Yorkshire Dales, including Swaledale and Arkengarthdale, is underlain by rocks of the Yoredale Series, originally deposited in Carboniferous times about 330 million years ago. The Yoredale sequence consists of repeating layers of sedimentary rocks, mainly limestone, sandstone (or grit) and shale (or plate) with some thin bands of coal. These rocks derived from sediments laid down in an area of warm sea close to the equator, into which a large delta flowed. Sea level fluctuated over time so that when sea levels were higher the hard skeletons and shells of marine creatures were deposited and eventually compressed into limestone. When sea level was low, the sandy or muddy deltaic deposits laid down eventually formed sandstone (grits) or shale (plate) and when the sea retreated temporarily, so that vegetation was able to grow, coal was the end result.

By studying the section through the Yoredale rocks of the Swaledale and Arkengarthdale area, it can be seen how the chert layers seem to be associated with the various limestone layers. The oldest limestone in the sdection is the 3-Yard Limestone which lies beneath the thin seam of the Snake Chert; the Underset Limestone lies below the Underset Chert, the Main Limestone under the Main Chert and the Crow Limestone under the Crow Chert. Chert is generally thought to originate from the silica skeletons of marine organisms such as sponges and plankton. Following burial by younger rocks, a chemical process caused limestone ($CaCO_3$) to be dissolved and silica to be precipitated in the spaces in place of the limestone and this explains why chert (and flint) occurs as nodules or in bands in or close to the limestone. It will be noticed that the strata are almost horizontal and thus convenient for quarrying. There is general faulting, indicated by the jagged line at an angle through the strata in Figure 3, with some displacement on either side of the faults; the fault lines were usually where metallic ores, including those of lead, were found.

HATHORN DAVEY AND COMPANY, LIMITED, LEEDS: MANUFACTURERS OF MINE ENGINES AND PUMPS

Rob Vernon

INTRODUCTION

Hathorn Davey Ltd, manufacturers of heavy-duty pumping machinery for both mines and waterworks was conceived in 1872. However, before becoming a private limited company it operated as a series of partnerships. The initial partnership comprised of Hugh Campbell, Alfred Davis and John Hathorn, who purchased the Sun Foundry, Leeds, from the engineering firm of Carrett and Marshall. They were already renowned as manufacturers of engines and mining machinery that included hydraulic coal cutters, so it was relatively easy for Hathorn and partners to build on their order base.

In 1873, Henry Davey a mechanical engineer from Devon joined the partnership. In his formative years he had gained much experience in engine design and manufacture, and their applications, and the company must attach a large portion of their success to Davey's innovative ideas particularly those for differential gearing and compound engines and later the triple-expansion engine favoured by water companies. In addition to pumping engines, they also manufactured a range of pumps, which gradually became the dominant part of their business.

Their reputation for producing reliable, efficient, high pumping capacity engines, eventually brought them to the attention of mining consultants John Taylor and Sons, who recommended Hathorn Davey engines for many of their world-wide projects, for example the Kolar Goldfield in India.

After some financial difficulties associated with an engineers strike, Hathorn Davey became a Private Limited Company in 1901. Unlike similar companies they survived World War 1 but unfortunately not the world recession in 1931. With falling sales and defaulters of debt Hathorn Davey Ltd appointed a receiver in 1934. The company was sold in 1936 to Sulzer Pumps who still retain the Hathorn Davey name as a registered company.

This paper is based on records held at the West Yorkshire Archive Services, Sheepscar, Leeds in the Dibb Lupton Collection (un-catalogued) and records of the Hathorn Davey Company. The surviving order books started by Carrett and Marshall and continued by Hathorn and partners provide a continuous record of the Sun Foundry's work from 1852 to 1920. The book entries vary considerably in their detail with costs, engine sizes and even dates sometimes being omitted. However some descriptions are very lengthy and detailed. Once the order number is known, it is then possible to cross-reference that number with those in the Sketch Books, also at Sheepscar. This then provides sketch/drawing reference numbers that may refer to a drawing specific to that particular engine as well as drawing numbers that relate to standard parts. The drawing may also provide details of how the engine would fit in situ once it was erected.

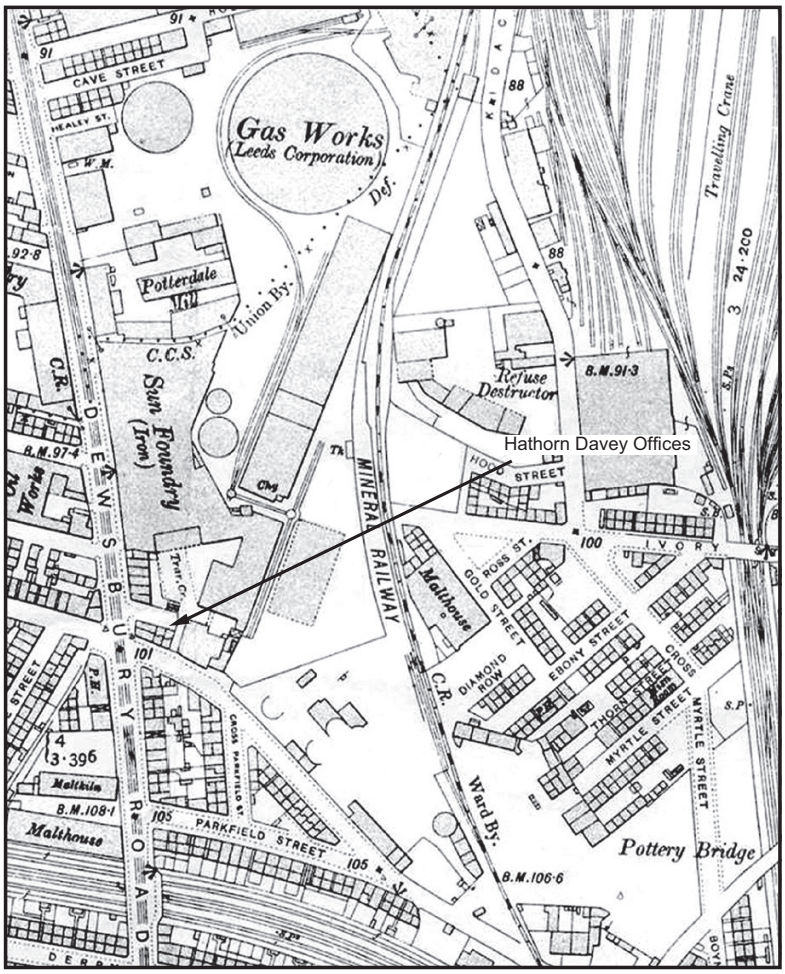

Figure 1. Hathorn Davey: location of the Sun Foundry and offices late 1800s. The company would eventually expand eastwards onto the site of the pottery and the railway.

There are also a considerable number of engine drawings; they are numbered as per the sketchbooks but are un-catalogued and are also held off site.

The Dibb Lupton collection also contains un-catalogued legal records relating to the Company's history and includes some of Henry Davey's patents. In addition, notes written by Hugh Lupton, a former Director of Hathorn Davey, provided by Robert Cox, of Bridport, has filled some of the gap between 1920 and 1936 and for this I am most grateful. Other sources include the Mining Journal and other periodicals of the day and they are referenced where appropriate.

The Hathorn Davey Company was at its peak in the transitional period between the waning of the Cornish beam engine and the introduction of electric pumps and many examples of their engines still survive today. This paper provides a brief history of the company and provides details of some of the many fine Hathorn Davey mine pumping engines that were in operation in Great Britain and elsewhere in the world.

THE SUN FOUNDRY AND THE ORIGINS OF HATHORN DAVEY

The Sun Foundry was located on the northeast side of the intersection of the Dewsbury Road and Jack Lane, Hunslet, Leeds (See Figure 1). The original site covered about four acres and underwent several phases of expansion during its history. The site is now partly covered by a motorway interchange.

It is believed that a firm of fulling machinery manufacturers originally established the Sun Foundry in the mid-1800s. At that time this part of the Hunslet area was associated with pottery manufacture and is still known today as Pottery Field.[1]

In 1846, the Sun Foundry was taken over by Charles Todd, locomotive manufacturer,

MINING LAW IN ENGLAND AND WALES: DEFINING BOUNDARIES IN THE LANDSCAPE

Peter Claughton

There is a general perception today that, in contrast to the rest of Europe, the ownership and the right to work minerals in the United Kingdom (England, Wales, Scotland and the north of Ireland), are individual property and rest with the owner of the land. The position is not so simple today and it has changed significantly over the last two thousand years. The State and its predecessor the English Crown, have played an important role as a mineral owner whilst acknowledging that the right to work the minerals was not necessarily governed by ownership. Understanding developments in mining law is a necessary part of understanding the pre-industrial mining landscape.

This paper deals with English law. Scotland and much of Ireland had their own framework of mining law which developed independently to that in England and Wales. The ownership of minerals, and the manner in which working was regulated, had a direct impact on the landscape; the structure of the mines; their relationship with other activities, particularly agriculture and the development of infrastructure, such as the settlement pattern.[1]

INTRODUCTION: THE ORIGINS OF MINING LAW

From the early medieval period there is an apparent presumption that mineral ownership in England and Wales was linked to land ownership and that all minerals, even precious metals, might be worked in common. There is no evidence that the state control of mining in place during Roman occupation survived beyond their departure from Britain in the 5th century. In fact there is clear evidence for Ireland in the 8th century, outside the area formerly occupied by Rome, that silver, gold and base metal ores were then regarded as personal property.[2] Later evidence does suggest that minerals had similar status and might be worked as a right in common across England and Wales, in areas under both Celtic and Anglo-Saxon influence prior to the conquest of 1066 and the existing rights were respected as custom by the new Norman kings.[3]

With the occupation of England along with parts of Wales by the Normans all land and the minerals, effectively became the property of the new English Crown. The king did, however, grant land and the minerals (including, in some cases, silver-bearing minerals) to lesser lords. The largest example for which is the grant in the 12th century to the Bishop of Durham giving him control over the whole of what is now county Durham in north-east England.[4] By the 13th century those lesser lords were transferring ownership, including the minerals, to large monastic houses such as the abbeys at Fountains and Byland, whose boundary dispute in 1225 centred on the ownership of group of lead mines adjoining Greenhow Hill in Yorkshire.[5] However, the right to minerals was not just a function of ownership; consideration has to be given to the customs which governed working.

In the north of England, in the Pennine uplands close to the border with Scotland, there

Figure 1. 'Meer stone' originally defining a linear working area along lead veins on Grassington Moor, Yorkshire; maintaining a form of regulation rooted in custom [Photograph by Janis Heward].

were significant silver-bearing mineral deposits on Crown land, although the right to work the ores was a customary right held by the miners, a right which was upheld even during a period of Scottish control in the mid-12th century. Significant amounts of silver were mined during the 12th century but the Crown did not become directly involved, choosing instead to lease or farm out its interest in that portion of the ore due to it according to custom. Administration of the leasing was left to Crown officials in Carlisle whilst the mining community was allowed a large degree of self regulation.[6] In granting land in the area to lesser lords, with the exception of that granted to the Bishop of Durham, the Crown evidently reserved the minerals; i.e. the Crown retained the ownership of the minerals and acknowledged the miners' rights.[7] Thus, by the late 12th century, there was already a three way split:

1. Land ownership
2. Mineral ownership
3. The right to work the minerals

The right to work base metals could also be subject to regulation according to custom. It was a widespread practice but documentary evidence for its use is limited to those areas where it survived into the 13th century and later. Lead mining in areas such as Hope Dale, Englefield, and Bromfield and Yal, in north-east Wales, the Peak District of Derbyshire, Mendip in North Somerset and parts of the Yorkshire Pennines, all had some form of customary regulation. Tin working in the Stannaries of south-west England and iron mining in the Forest of Dean, in Gloucestershire, were similarly regulated. A limitation on the amount of ground that a miner, or group of miners, could work was an element in all these forms of regulation. The use of custom to regulate economic activity in general was quite widespread and the common features seen in the laws regulating mining are not evidence of a common source for those laws but a reflection of the similar working conditions they were to address. There were, nevertheless, variations in the regulations, even between adjoining mining areas or liberties, which cannot be commented on in detail in this overview.

INCREASED CROWN INVOLVEMENT IN MINING

Prior to the mid-13th century, the English Crown had no direct involvement in mining, confining itself to taking an income as mineral lord. However, with a decline

THE HISTORICAL DEVELOPMENT OF LEAD MINING IN THE WENSLEYDALE AREA TO 1830

Ian M. Spensley

EARLY MINING

With Roman mining activity in Swaledale and Wharfedale, it is unlikely that the Wensleydale area would have been ignored totally, even if restricted to prospecting. Ivy Scar near Woodhall, is just one place where mineralisation cuts a prominent outcrop under a thin layer of soil. Two bales (smelting sites), one on Haw Bank above Woodhall and the other in Apedale to the north of Castle Bolton, have been radiocarbon dated to the end of the Saxon period (the Haw Bank bales to AD 1010-1080 and the Apedale bales to AD 900-1030).[1] Both these sites are associated with shallow opencast workings; other undated bales have been found at Braithwaite near East Witton and Wegber to the north of Carperby;, another at Bishopdale Gavel is mentioned below.

A stray find of lead slag has also been found by Matt Kirkby at the side of the river Ure between West Witton and Redmire. Whether it was smelted there or lost in transit is not known, but at an early date, it could be argued that this point on the river was at the highest possible navigable point by small boats. Equally this would also have been a handy point to cross and transport old slag to West Witton Smelt Mill.

MEDIEVAL MINING

Not surprisingly there is a dearth of documentation of mining from the Norman Conquest to the beginning of the sixteenth century and what there is can only be used in a general sense.

While the monks of Jervaulx Abbey were granted large tracts of land in Wensleydale in the twelfth century and the right to search for iron and lead within the pastures of the Forest in 1145, it has not been possible to assign any mining sites to them.[2] Obviously they would have made efforts to expand their business interests and may well have encouraged miners to work lead mines. As time progressed, their lands were restricted or exchanged leaving them with High and Low Abbotside in Wensleydale, although the bulk if not the whole of the work at Stags Fell and Sargill belongs to a much later date.

In 1281 the Earl of Richmond gave leave for the monks to cut wood in his forest to smelt iron *'and to make two small sheds* (loggias) *without nail, bolt, or wall'*, so that if the smelters moved to another place, they should pull down the sheds and erect others (one shed was probably a bloomery and the other a forge).[3] They were also granted large tracts of land for grazing in Colsterdale in 1254, (outside the scope of this article) where they worked or took rent from a coal mine but they were specifically prevented from using wood for smelting iron in 1333/4.[4] Iron mining of unknown date has been identified by Stephen Moorhouse in Bishopdale.[5]

Further documentation of a more general nature, gives an indication of the size of the

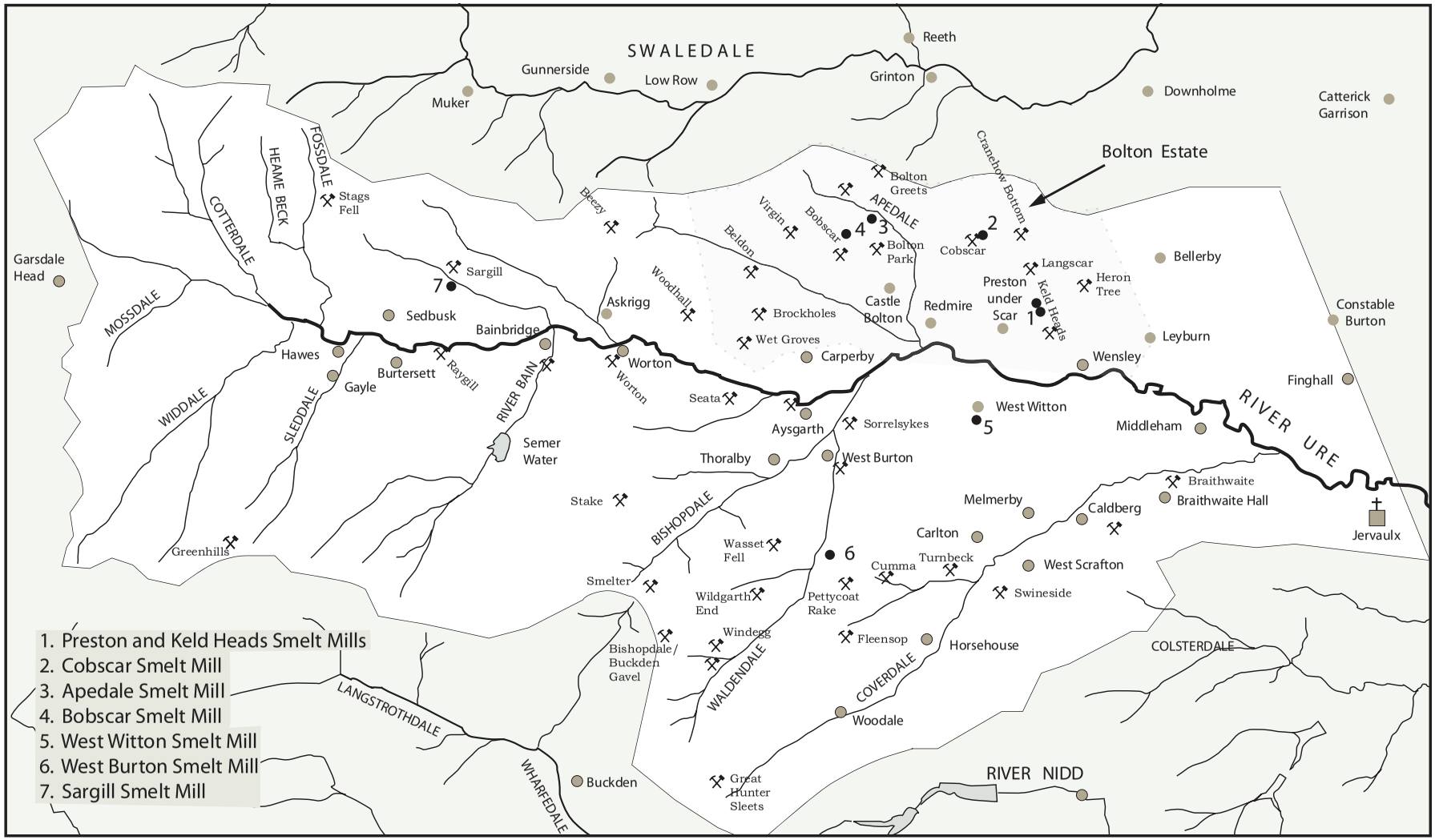

Figure 1. Map of Wensleydale, showing the mines, smelting mills and the boundaries of the Bolton Estate.

BRITISH MINING No.90

50 Years of Mining History

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