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YORKSHIRE LEAD MINING - BEFORE 1700

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SYNOPSIS

This paper re-assesses the nature of the pre-eighteenth century lead mining industry in Yorkshire. Hitherto, this subject has usually been relegated to the introductory paragraphs of works which concentrate on later periods and specific areas. Now, for the first time, the data and the current interpretations of it are presented and discussed in the form of a broad overview of the county. The evidence is synthesised and new models proposed.

In the five northern counties, the question of ancient mining has been largely ignored but in Derbyshire, Cornwall and the Mendip its scale is clear from the number of papers devoted to it.¹ Even the major exception, Collingwood's study of copper mining at Keswick, is the story of German immigrants and their techniques.² This, and the ready availability of Agricola, has engendered the notion of technological transfer from, in this case, the Germans to the English.³ A recent study of Tudor tin working in Cornwall has demolished the commonly used example of stamps, however, by pushing back to 1493 the earliest known reference to them in England.⁴

Evidence of pre-17th century lead mining in the north is fragmentary and, unlike Derbyshire, the Domesday Survey reveals nothing.⁵ From the twelfth century onwards, however, there was modest activity and the King's Yorkshire mines made £20 profit in 1162-63.⁶ Around this time, the Bishops of Durham were promoting mining in Weardale, the Crown was encouraging the development of Alston Moor and it was a similar story in Yorkshire.^{7,8}

Recent work on Swaledale and Wharfedale archives has increased our knowledge of the eighteenth and nineteenth century industry.⁹ It has also produced pieces or serendipity from which deductions may be made. There is, however, a need for archaeological fieldwork to provide additional data, against which the emerging model could be tested.¹⁰

For simplicity, this paper has been split into the following areas: Swaledale and Arkengarthdale, Wensleydale, Airedale and East Lancashire, Nidderdale and Wharfedale.

Swaledale & Arkengarthdale

This was Yorkshire's principal lead mining area but, with the exception of two reputed finds of pigs, both since lost, there is little evidence of activity during the Roman or Dark Ages.¹¹ Mining was established by the thirteenth century, however, as in 1285 an Arkengarthdale mine returned a profit of £4.00.¹² Seven "Lead Merchants" from Arkengarthdale, plus five from Wensleydale, are listed in 1307 but they may have purchased and smelted the ore as well as selling pig lead.¹³ By the late fifteenth century, the York

merchants were moving to regulate the Yorkshire lead trade and they decreed that lead from Swaledale, Wensleydale and Craven was to be weighed in that city.¹⁴

John Leland visited Swaledale c1540 and noted that “*The Men of Sualdale be much usid in digging leade Ower (from the) great Hills on each side of Suadale*”.¹⁵ It is not clear by what system the mines were worked then, but there are hints that it was under a limited form of the Customary Law which was used in the King’s Fields of the High and Low Peak, in Derbyshire. This gave miners the privilege of searching for ore in unenclosed ground and, when a mine was found, an entitlement to a grant of meers along the length of the vein. The meer in Swaledale was 30 yards long by the eighteenth century. Grants were measured in meers by 1504, when Christopher Conyers of Marske left by will ‘half a moor meer at Whitnowsyeke in the working of James Atkynson and half another moor meer there in the working of Edmund Tod’.¹⁶ Moreover, in the Crown manor of Arkengarthdale it was claimed, in 1530, that William Conyers, of Marske, had deprived the tenants of their customary right to search for ore “*paying yearly unto your said highness the 9th part of the profits [output] growing and coming by reason of the said lead mines*”.¹⁷

Nevertheless, it must be stressed that there is no record of a Barmoot Court ever having been held in the Swaledale/Arkengarthdale mining field and it is possible that the agent of the Mineral Lord, or his Farmer (lessee of Mineral Rights), fulfilled the duties of a Barmaster. The payment of a dead rent, by Christopher Conyers’ son, in 1521, of 63s 4d a year, for a 40 years’ regrant of all his lead mines shows that there was a time limit on working.¹⁸ This was unlike the open-ended grants of Derbyshire, where even a pretence of working was sufficient to maintain title. The grant by Henry VIII, in 1533, to Sir James Metcalfe of all mines in the Lordships of Middleham and Richmond, except those which were leased to the Conyers, may have been the Farm only, but it confirms Conyers’ title.¹⁹

The century following the Dissolution, especially of Bridlington Priory, was a turning point in the affairs of Swaledale. Powerful men, intent on eroding the ancient rights of the miners, established themselves as Manorial Lords. As a result, the mainly autonomous workforce was proletarianised.

In 1544 Lord Wharton purchased the Manor of Muker from the Crown and, in 1556 he acquired half of the Manor of Healaugh.²⁰ This gave him the rights over minerals in much of Swaledale west of Reeth. It was not until February 1668, however, that Wharton leased his mines in Healaugh to Philip Swale and Robert Barker. One of the lease’s covenants stipulated that they were not to disturb those people, already at work, who had previously made a contract or bargain with the Lord.²¹ When another lease was issued, in 1679, there was no mention of these other people and it appears that they had been dispossessed.²² From that time, miners were employed on the bargain system and the overall development of the mines was in the hands of the lessees.

The Manor of Grinton reverted to the Crown and, around 1558, the mines of Grinton and Fremington were leased to Henry Lord Scrope and Arthur Phillips for an annual rent of 40s.²³

John Bathurst, of London, leased the Arkengarthdale mineral rights from the City of London in 1654 and began to displace miners. He purchased the manor two years later but the minerals were excluded. Bathurst's accounts for 1657-58, show that the miners were working on piece rate, at so much per load of ore. They paid all the working costs and Bathurst transported ore from the mines, which were in the Windegg/Tanner Rake and Moulds Side areas, and smelted it.

The Hurst mines were leased to a Mr. Swinburne in the 1660s who employed miners on bingtale, fathomtale and daywork. All wood, and some coal, for smelting was purchased by Swinburne, who also paid for all carriage. During the 1670s the mines reverted to the Marquess of Winchester, later the Duke of Bolton, the Mineral Lord, who also leased mining ground at Grassington from the Earl of Burlington. The Duke worked the Hurst or Redhurst mines and it is claimed that he made a profit of £300,000 in 12 years.²⁴ A schedule of the mine, made in 1718, in preparation for its being leased to Samuel Mellor & Co. gives a detailed account of his work.²⁵ The lowest, or water level, was already 500 fathoms long and did not come to surface because it was driven to an underground swallow hole. This indicates a precocious knowledge of the local geology and, if we take Rieuwert's estimated rate of advance in pre-gunpowder levels, which is between 1.5 and 2 inches per shift, it would have taken about 66 years to complete.²⁶ The level was, therefore, commenced in the mid seventeenth century, probably by Swinburne. His accounts record that wood was used for fire-setting (at Hurst and Sealgill) and, in one case, they brought "*3 quarters of coles to Hurst to firewith in the Levill*".

The disposition of smelting facilities in Swaledale also has much to tell us about the development of mining and some of its problems. Barker's study of boles, which was not exhaustive, revealed 35 locations in the area of Upper Swaledale and Arkengarthdale. One, on Calva Hill, was dated by the carbon 14 method to 1460+/- 10 AD. A programme aimed at recovering a larger sample of dates would considerably enhance our knowledge of the embryonic lead industry.

A map, dated c1592, shows four bales, near Copperthwaite, on Fremington Edge. Another, called the Prior's Bale, which belonged to Marrick Priory, stood close by. The same map shows the New Myln near the site of the Marrick smelt mills. The High Mill was built in 1661.

Except for the Farndale Mill, built c1628, the oldest smelt mills are further down the dale at Clints, Hartforth, Waitwith and Applegarth. All these places had mines, but none of any significance, so why were the mills used? The answer is almost certainly that there was a fuel crisis because the bolers had stripped the woodlands of the upper dale. As a result, when the change from boles to smelt mills came, there was a shortage of wood, for fuel, and the mills were built down the dale. Fortunately, they were all close to the routes which led from Swaledale to ports on the River Tees, from which most of the lead was shipped. There was, therefore, an absence of smelting capacity from the upper dale until 1669 when Lord Wharton built a mill near the present Surrender Mill. Another three were built in the same area during the next thirteen years. Around that time, mills were also built at Moulds, for the Arkengarthdale

Mines, and at Marrick. They all burnt chopwood and this may indicate a regeneration of woodland, possibly through coppicing. Peat was not widely used until the 1750s.

The Cupola smelt mill, which was built in 1701 at Reeles Head, near Marrick, was indicative of the level of contact which Swaledale had with developments outside Yorkshire.²⁷ This was the first reverberatory furnace to be used in Yorkshire and it predates their introduction into Derbyshire and the north Pennines by about 35 years. Flintshire, where they appear to have been introduced from the Bristol copper smelting industry, was the nearest place that they were used.

Wensleydale

The history of mining in Wensleydale is not clear but its antiquity is shown by Alan Count of Brittany's confirmation, in 1145, of a grant made by Acaris to Jervaulx Abbey of pasture rights within the Forest of Wensleydale. To that he added the liberty to dig ores of iron and lead.²⁸ The five lead merchants from Redmire and Preston under Scar, listed in 1307, suggest that the mines were probably in the area around Chaytor's Rake. It is not until the eighteenth century that we next have references to mining on the north side of the River Ure but it is most unlikely that the Marquess of Winchester, who lived at Castle Bolton, was inactive.

On the south side of Wensleydale, in 1684, the (West) Burton smelt mill was smelting lead for Philip Swale.²⁹ As in later years, this mill probably served small mines in Bishopdale and Waldendale.

Airedale & East Lancashire

This area, always a fringe producer, covers upper Airedale, from Keighley to Malham, the Bowland Fells and Rossendale, has been included for completeness.

That lead existed on Glusburn Moor was known in the sixteenth century, but the scale of any working is not known.³⁰ There was activity during the period 1666 to 1746, when the Main Vein outcrop was exploited and a smelt mill was built.³¹

East Lancashire has some old mines and the accounts of one, at Baxenden, near Burnley, record the driving of an adit and use of a bellows-blown bole in 1304.³² The late sixteenth and early seventeenth centuries saw much interest in the limestone anticlines of the Clitheroe area, where the lead was often said to be rich in silver, which is uncharacteristic of Yorkshire ores. Between 1629 and 1635, the King worked a lead mine at Thieveley, near Burnley, and the Surveyor, Roger Kenyon, attempted to get its regulation put on the Derbyshire principle, whereby miners were free to take meers in return for a duty on all ore raised. The King's advisers resisted, however, because they felt it would be more profitable, and made the miners work for wages.³³

Nidderdale

Two pigs of Roman lead found at Greenhow Hill, near Pateley Bridge, suggest that it had an embryonic lead industry in the Romano-British period.³⁴

Evidence of Roman mining sites is, however, non-existent, but it has long been speculated that the Sam Oon Level, at Greenhow, may be of that date. Some of the earliest recorded adits were those driven in the early 14th century, at Bere Alston, in Devon, and the Baxenden Mines, in Lancashire, and it is likely that Sam Oon will prove to be more recent.³⁵

On Greenhow, as in most of the dales, the 12th to mid 16th centuries were dominated by Monastic mining. Before 1175, Roger de Mowbray granted rights to the manors of Bewerley and Dacre to the Monastery of Fountains. At about the same time, he granted the areas of Stonebeck Up and Stonebeck Down, in Upper Nidderdale, to Byland Abbey.^{36,37}

The Greenhow mining field has traditionally be interpreted in terms of its modern divisions, which are the liberties of: Appletreewick, Bewerley, Forest Moor and Ramsgill. If a long perspective is taken of the evidence, however, it is possible to propose a radically different interpretation for the approximate period 1200 - 1600.

A series of boundary disputes during this time, has much to tell us about the perceived limits of the Duchy of Lancaster's Forest Moor liberty, which was, of course, Crown property. These disputes are dealt with chronologically and the various conclusions brought together to propose a new model by which to view the Greenhow mines during the Middle-Ages and Early English Periods. The first evidence comes from the apportionment of a dispute between Fountains and Byland Abbeys, in 1225.³⁸

“Agreement in settlement of a dispute between Fountains and Byland respecting the mines of Nidredal The Abbot and Convent of Fountains grant to Byland two pits in Le Feldberg successively to be possessed forever, within the bounds of Fountains; and likewise for a term of seven years from the Day of the Purification B.M. 1225, two pits in Kaldstanes in common with them, so that the two houses shall divide all expenses and all mineral of those two pits except the King's share, during that term, and at the end thereof Byland shall withdraw from these two pits at Kaldstanes whether they shall have been thoroughly explored or not. Byland shall also have that pit at Kaldstanes jointly with Fountains in which they previously worked in common until the same pit shall have been explored according to the bounds of the mine, with suitable exit and entrance and right of carriage through the pastures and wood of Fountains by the proper ways. In consideration of this Byland has renounced all right, possession and use within any bounds belonging to Fountains by reason of certain charters, so that at the end of the term of seven years Byland shall claim nothing within the bounds belonging to Fountains beyond the two pits in Le Feldberg nor Fountains within the bounds of Byland”.

The current interpretation, proposed by Raistrick and Jennings, is based on place-name evidence and sees it as a boundary dispute.³⁹ Ashfold Side Beck formed the common boundary of their estates and Kaldstanes and Le Feldberg were translated as Low Coldstones and Heathfield respectively. The lack of mineralisation in this area is, however, a major flaw in their argument. It is clear that all the mines were in the area held by Fountains and that the King had some jurisdiction in those at Kaldstanes, for which he was paid a royalty. Moreover, if the place-names are re-examined and Kaldstanes is taken

to mean the summit of Coldstones and Le Feldberg, which means an unenclosed low hill, to be the summit of Greenhow it has the advantage of agreeing with the mineralisation.⁴⁰

The use of the phrase “*the bounds of the mine*” indicates that the monks were working within a defined area, the size of which remains to be shown. If so, one might also speculate that private adventurers were working next to the monastic mines and that their grants were measured in meers, as was the case three centuries later in the neighbouring liberty of Appletreewick, which was purchased by Bolton Priory in 1300.⁴¹

Another dispute, which probably led to the present boundary layout, was first recorded in 1480 when the tenants of the Forest complained that “*of a long time (Bolton Priory) ... occupied a parcel of ground ... within the Forest ... at a place called Monghawgill*” and had opened a lead mine there.⁴² The area called Mongo Gill is on the watershed between the Forest and Craven Moors and the direction of the run-off was probably difficult to determine. In 1501 Robert Esh, who was working under the Prior of Bolton, struck ore in Mungo Gill and several miners were employed there for some years.⁴³

The matter flared up again between 1527-29, with accusations that Fountains and Bolton had sunk shafts within the Forest boundary. The Abbot claimed title to the mines and the Crown undertook an investigation. A moratorium was placed on mining by the Abbot in the area concerned and the jury of the Honour of Knaresbrough Court was told to stop levying fines on him, until the matter was settled.⁴⁴ Then, in 1529, the King leased the lead mines “*in a waste ground called Middle Tongue (SE. 095587), Mongo Gill, Greenhow and Greenhow Sike, within the Forest of Knaresborough*” to Thomas Pulleyn of Blubberhouse and William Deconson of Bra me, near Fewston. Work began at Mongo Gill and 30 loads of ore were produced in the seven weeks before they were evicted by servants of Bolton Priory.⁴⁵

At some date, between 1540 and 1597, the Forest’s present northern boundary was defined, this excludes both Greenhow Hill and Coldstones.⁴⁶ The boundary with Appletreewick was fixed along a wall which ran to Craven Keld. The Crown patronage, which northern miners had enjoyed under Henry II and Richard II, was confirmed by a Royal Mandate, issued in 1219. This was reiterated in 1223, when miners in Yorkshire, Northumberland and Cumberland were specified, but Raistrick felt that, in the first case, it was restricted to Swaledale.⁴⁷ The above evidence spans 300 years and clearly demonstrates that the mines on Greenhow and Coldstones Hills were considered to be in the Forest Moor liberty and, therefore, formed part of a, hitherto unrecognised, King’s Field.

The 13th and 15th centuries were dominated by Monastic activity but this may be an illusion, caused by their meticulous record keeping. Throughout the period, there are records of small amounts of lead being sold.

For example:

1303 6 ways of lead bought at Ripon market, for Knaresborough Castle, at 28s 1.5d each; each way to be 15 stons of 12 lbs/stone.⁴⁸

1363 168 pigs of lead, weighing 20 fothers, were sent from Nidderdale to Hull en route for Windsor.⁴⁹

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1365 Thomas de Musgrave, sheriff of York, gave account of lead ordered by the King for work at Windsor. There were 40 fothers, of which 24 were received at Coldstones, and 16 in York. The expenses of carriage were:

Two waggons, each with 10 oxen, carrying 24 fothers of the said lead from Coldstones, in Nidderdale, in the county of York, by high and rocky mountains and by muddy roads to Boroughbridge, about 20 leagues, namely for 24 days each wagon with the men for taking it, 3s per day, £7 4s 0d. And in portage and carriage of the said 24 fothers of lead from Boroughbridge both by land and water to the city of York, about 16 leagues, namely for each fother 2s 4d, 54s. And payment to Adam Candler of York for portage, boat hire, and carriage for the said 40 fothers of lead from the said city of York to London . . . £26 13s 4d.⁵⁰

By the late fifteenth century the York merchants formed a guild, eventually called the Merchant Adventurers, which was intent on engrossing the Yorkshire lead trade from Boroughbridge and Hull. By 1498 it had set a scale of charges for weighing lead and in 1499 imposed a virtual monopoly on the trade by forbidding any lead coming from Swaledale, Wensleydale or Craven to be weighed at Boroughbridge or any other place outside York.^{51,52} The Guild next attempted to corner the market and, in 1502, complained to the Abbot of Fountains about his activities in the buying and selling of lead, which it claimed was “*contrary to Gods Laws and Mans*”.⁵³ This protectionist edict was maintained and, in 1519, Henry Young, of Appletreewick, Leadman, was in trouble with the citizens of York over the illicit sale of lead.⁵⁴

The surviving accounts suggest that, before the monastic estates were destroyed and their lands dispersed, there was a thriving export trade with the Low Countries and Poland, through the ports of York and Hull. For example, 10 of the ships which left Hull in 1536, carried 401 fothers of lead but this trade may have suffered after the Dissolution because only 204 fothers were shipped from York in 1562.^{55,56} Mining did not cease, however, and in 1537 Byland Abbey leased all its mines of coal and lead, in Nidderdale, to John Uvedale for forty years. John Yorke, of Richmond, in Swaledale, purchased the manor and mines by 1554 and tried to remove Uvedale, who complained that 36 loads of his ore had been taken.⁵⁷

Fountains’ mines were working when Sir Richard Gresham bought the Abbey and its Nidderdale Estates in 1540. His steward accounted for lead which, between 1542 and 1543, was carried overland to Boroughbridge and then shipped down the River Ouse to York, where it was weighed, and on to Hull. Also included were payments for mining and washing ore at Greenhow Moor and for smelting 22 pigs at a bole hill. One fother of lead was bought from Thomas Proctor who was the sub-lessee of the Crown’s disputed interest in the Mongo Gill mine.⁵⁸

The records give some insight of monastic smelting technology and, between 1446 and 1542, show the parallel use of boles and smelt mills. In the period 1446-58 Fountains Abbey accounts refer to a smeltmlyn, which was probably at Smelt Houses near Pateley Bridge, but in 1455, William Hudson, smith of Adfield, was paid for making a “*sufflatorium pro le bales*” (an iron tuyere?).^{59,60}

The mill appears to have been closed by 1527 when Fountains let its smelting to Marmaduke Bayne, of Bridgehouse in Nidderdale, gentleman, John

Parkinson and William Lupton of Bishop side. They agreed to carry all the lead delivered to them at “*Greenhow Moor to the bale hills in the Bishopside, where they would burn it (smelt) at their own charge, not using Abbey wood unless paid for; to make one fother of lead from each 8 loads of ore*”. The term of the contract was to be at the will of the Abbot.⁶¹ This technological regression persisted until at least 1542, when Robert Elles was paid for the carriage of 22 pieces of lead from his bale hill to Boroughbridge.⁶²

The locations of the smelting works for the Byland and Bolton Abbeys are not known. The former’s may have been in the Heathfield area and there is a stream called Smelting Sike, near Bolton Bridge, which is the likely location of the latter’s works.

By the seventeenth century most mines were being worked by the Mineral Lords. In the Yorke’s Appletreewick liberty there is mention of a Barmaster on Craven Moor, in 1617, and a Barmote Court was held in 1670.⁶³ This is interesting because, except for the disputed area around Mongo Gill (which is on Craven Moor), the liberty was never King’s Field. Whether or not this was seen by the Yorke’s as an easy way of regulating their mines or a hang-over from earlier times remains to be shown. They built a smelt mill at Heathfield by 1617 and this location remained in use until smelting ceased early in the twentieth century. Ores from the liberties of Appletreewick and Stonebeck Up and Down were smelted there.

In Beverley, the mineral rights eventually passed to Sir Thomas Proctor who had built a smelt mill, at an unknown location of Beverley Riggs by 1606. Some authors have favoured a site on Brandstone Beck but it was more likely to have stood on the banks of the Sish Wash, near Eagle Hall gatehouse, which was the site of the later White’s mill.⁶⁴ Mining was centred on the Greenhow, Coldstones and Stoney Grooves areas at the end of the century and output fluctuated between 103 and 526 (averaging 331) fothers of lead and from 1705 to 1712 it averaged 267 fothers per year.

Wharfedale

Kettlewell probably has some of the oldest mines in Wharfedale. By 1663, they were leased to Francis Smithson, of Richmond, and there was a smelt mill, with one ore-hearth, which burnt chopwood.⁶⁵ Like Conistone and Hebden, the minerals at Kettlewell belonged to the Freeholders and the lease protected their right to mine for lead “as they have of late times done”.

Miners in the liberty of Buck den with Starbotton were working the northern and southern outcrops of the Buckden Gravel veins, at the close of the seventeenth century, when a smelt mill was built on the Out Moor.⁶⁶ This liberty had its own Barmaster until the nineteenth century and was linked to Grassington.

Since the Norman Conquest, at least, Grassington has been a privately owned liberty, has not been Crown property, and probably saw very little development before the modern period. During the four centuries for which information on mining is available, only three families (the Earls of Cumberland, Earls of Burlington and Dukes of Devonshire) have owned the mineral rights.

The 3rd Earl of Cumberland's profligacy meant that the estates were mortgaged when the 4th Earl took over. From 1604, the latter undertook a programme of retrenchment, which involved exploiting lead mines at Grassington, coal mines in Airedale and iron mines in the Forest of Knaresborough. There are no mining revenues in the Clifford's accounts before 1603 but Grassington was not a virgin field because there are two place-names with the element "Bale", which indicates a former smelting site. The first (Bayle Hill) is near the New Rake Vein, at Yarnbury, and the other (Tag Bale Hill) is located in Gate Up Gill, near the boundary of the Hebden Liberty. Until the end of the 18th century, however, the latter place was claimed as part of Grassington.

The orthodox model for the development of mining at Grassington is that of the antiquarian, T.D. Whitaker, who "*could find no evidence of mining prior to the Reign of James 1st when, from circumstances (one in particular which I do not hold myself at liberty to disclose), I believe them to have been first under-taken, and principally, by miners from Derbyshire*". This statement agrees with the start of mining in 1604, and, in the following year, a small number of the miners came from Derbyshire but most of them were locals.⁶⁷ Later writers have suggested that these Derbyshire miners introduced the Customary Laws.

The Cumberlands worked some mines directly until 1618 but it is not known if other areas were available to independent miners. Their first smelt mill was built near to the River Wharfe, at Brow Well, in 1604 and when Roger Kenyon, the Surveyor of the King's lead mine at Thieveley, near Burnley, visited Grassington in 1630 he saw that its bellows were driven by a waterwheel. He also met "*William Badger, a smelter of Darbshire, but of late tyme employed in the Barle of Cumberland his workes in Yorkshire*". Kenyon was told that the Earl "*findeth all wood to timber the groves, and for turns, corves etc; and prepares and keeps in repair the smelting houses, bellows and dams, and finds chop wood or wood for smelting and kilns and fire to dry the same with*" and, in return, took a duty of one-third in smelted lead. Kenyon was advised by the Earl's agents that, despite the mine being rich, he made little profit after accounting for the cost of timber etc.⁶⁸

The mines made a loss in 1615 and the account carried an explanatory note that the high cost of working was caused by the "*extraordinary works in making search for it (lead)*". Judging from the even higher costs for the following two years, the trial must have continued and, whilst unprofitable, it did increase production. From 1619, details of lead sales and costs are no longer accounted for by the Receiver-General, which may indicate that it was about then that the Earl put his mines on lease. In the next decade the Earl received an annual profit of between £54 and £75.07 from the mines.

In 1637, a smelt mill was built on the Out Moor but it only had a short life because output fell during the Civil War and remained low in the Interregnum. The first recorded Barmoot at Grassington met in May 1642 and established twenty covenants for the regulation of the mines. It was not the first, however, because the record mentions the imposition of fines by an earlier court.⁶⁹ The miners were not autonomous and accepted the Mineral Lord's power. The similarity of the laws to those of Mendip or Derbyshire has led to their being dismissed as inferior versions, but some significant differences have been ignored.⁷⁰

It is hard to assess the impact of the laws on the growth of mining during the rest of the 17th century owing to the lack of archival material. They were evolving, however, and much of this process has gone unrecognised. It is possible to deduce that, around 1680, the common system for allocating ground was adopted; whereby the first finder of a vein got two meers, the next meer reserved to the Mineral Lord.⁷¹ The meer was increased from 21 to 30 yards, which was used in Swaledale, and there was a decrease of duty from one-third to one-fifth, with no apparent diminution of the Earl's obligations. The laws were updated in 1737 and persisted until 1774, when they were replaced by leases.

In 1683 the Marquis of Winchester, later Duke of Bolton, had some mines on lease. The production records for this period are incomplete but, in 1692, his mine produced 30 foddors of lead. By 1703 the Duke was dead and miners complained that his lease, the rights to which had passed to Lady Bridgewater, precluded them from working the veins in accordance with ancient custom. This was contrary to the 1642 (and c1680) laws, yet no Barmoot appears to have been called and, as was to happen later, the power vested in it was pre-empted by the executive action of the Earl's Steward and Barmaster. Nevertheless, at a meeting with Bridgewater's agents, their answer was to restate the supremacy of the Laws and Customs and encourage adventure upon the moor.⁷²

This paper has demonstrated that there were sources of skilled miners in Yorkshire. Also, there was movement between the county's mining communities. Moreover, George 3rd Earl of Cumberland, and Philip Wharton, who owned the mineral rights to large tracts of lead mining ground in Swaledale were great friends. They spent their childhoods together in wardship and were described as constant companions.⁷³ Furthermore, Wharton married the 3rd Earl's sister, Frances Clifford. It is clear, therefore, that the Earl could have sought miners within Yorkshire, from either the Greenhow mines or his close friend Wharton, in Swaledale.

Conclusion

Yorkshire's lead mining industry grew steadily from the mid-twelfth century and, though it did not rival those of the Mendip or Derbyshire, it was of more than local importance. Until the early seventeenth century, when it was discontinued, a form of Customary law, with its associated privileges, extended throughout much of the Dales. It was only at Grassington, however, where the laws persisted, that they are known to have been written down. Like Derbyshire, the origin of those customs is not known but the northern miners received Royal protection from the time of King Henry II (1133-89). That those miners were independent and not working for wages is likely because the latter would not attract such lofty protection. The question of proletarianisation of miners is of great interest but there is little data on it. We may infer, however, that in many places it happened between the late sixteenth and early seventeenth centuries. Why it was allowed to happen is unclear but the answer must include the usurpation of ancient right by autocrats and the need for capital as mines

became more extensive. Moreover, the customary laws did not prevent partnerships which included capitalists from taking up ground.

The seventeenth century has mistakenly been called the “Age of the Prospector” but, by then, nearly all of the major veins were discovered. If anything, it was an age of consolidation, when Mineral Lords exploited their own mines. Grinton and Grassington were exceptions, with the Crown leasing its mines in the former, whilst at Grassington, after following the pattern briefly, the field became open and the Mineral Lord had no mines until the 1820s.

The threat of a mine being declared a Mine Royal is said to have been a problem of this period. It was done under a Royal Prerogative which held that mines containing even small amounts of gold and silver were Crown property.⁷⁴ The evidence from Yorkshire, however, does not support the notion that this threat of pre-emption was so oppressive as to discourage lead mining.⁷⁵ On the contrary, investment was clearly growing by the mid seventeenth century, which indicates a buoyant industry.

The influence of other counties, especially Derbyshire, has also been overstressed. There are instances of individuals and capital from that county but there were others from North Wales and the north Pennines. When compared to local interests, however, they were not important. On this basis, a model is emerging which sees Yorkshire’s early lead miners as much more independent than has hitherto been imagined.

ABBREVIATIONS

Bolton MSS	Yorkshire Mining Archives of the Duchy of Devonshire, kept at Bolton Abbey Estate Office, not normally accessible.
Chatsworth MSS	Yorkshire Mining Archives of the Duchy of Devonshire, kept at Chatsworth House.
E.101	Public Record Office, Exchequer, Kings’ Remembrancer.
Mems. Fount.	Memorials of Fountains Abbey, Surtees Society, 42 (1863).
Merch. V. York	The York Mercers and Merchant Adventurers 1356 - 1917, Surtees Society, 128, 1928.
NYCRO	North Yorkshire County Record Office, Northallerton.
Y.A.S.	Yorkshire Archaeological Society.

REFERENCES

1. For example, a rapid search of the *Bibliography of the History of British Metal Mining* (Burt, R & Waite, P, University of Exeter, 1988) revealed fourteen such papers on Derbyshire alone.

2. Collingwood, R.G. *Elizabethan Keswick*. Michael Moon, Whitehaven, 1987.
3. Agricola, G. *De Re Metallica*, Basle, 1556. (Translated by H.C. & L.H. Hoover) (New York, 1950).
4. Buckley, J.A. *Tudor Tin Bounds - West Penwith*. Dyllansow Truran, Redruth, 1978, p.66.
5. Fuller, G.J. "Early Lead Smelting in the Peak: Another look at the Evidence". *East Midland Geographer*; Vol.5 No.3 (1970), pp.1-8. This paper re-examines the Domesday evidence and a case is made for classing the seven plumbari as lead smelting works (probably boles).
6. Pipe Roll 1163, 47.
7. Blanchard, I.S.W. "Seigneurial Entrepreneurship: The Bishops of Durham and the Weardale Lead Industry 1406 - 1529". *Business History*, Vol.XV (1973), pp.93-111.
8. Raistrick, R. & Jennings, B. *A History of Lead Mining in the Pennines*. Longmans, 1966, pp.46-55.
9. I am indebted to Les Tyson and Malcolm Street for allowing me access to their notes on Swaledale and Arkengarthdale, and Greenhow respectively.
10. There are signs that archaeologists are becoming interested in mining, for example: Timberlake, S. "Evidence of Prehistoric Mining on Copa Hill, Cwmystwyth, Dyfed". *Bulletin of the Peak District Mines Historical Society*, Vol.10 No.3 (Summer 1988), pp.160-164.
11. Speight, H. *Romantic Richmondshire*, London, 1897, p.207. Hurst - a pig found which had the name HADRIAN - on it. Another is said to have been found near Crackpot.
12. Yorkshire Inquisitions, Y.A.S. Record Series 23 (1987) 2, p.38.
13. *Victoria County History of Yorkshire: North Riding*, Vol. 2, pp. 351f. Assize Roll. 1060.m.31d.
14. York Civic Records 2, 138f.
15. Smith, L.T. (Ed). *Itinerary of John Leland*, Vol. 4, 1908, p.26.
16. Yorkshire Archaeological Journal, Y.A.S., 6 (1881) pp.225ff.
17. Y.A.S. Record Series, Vol. 41 (1909), pp.178-180.
18. *Will*, January 2nd. 1531-32 "My farmhold in Arkengarthdale called Punchard ... a more meer of ground in Punchard".
19. SC6/Henry VIII/4166. 35 Henry VIII. The original grant was by an Indenture dated 6th July 24 Henry VIII.

20. Cooper, E. *Story of a Yorkshire Parish Muker*. Clapham, 1948, p.17.
21. NYCRO ZQH 7/1/21.
22. NYCRO ZQH 7/1/22.
Fieldhouse, R & Jennings, B. *A History of Swaledale*. Phillimore, London, 1978, p.200. "In 1676, Lord Wharton dispossessed the meer-holding miners in the Lownathwaite and Old Gang area and leased it to a partnership".
23. *Victoria County History N.R.*, Vol. 1, p.237.
24. Thomas Heton, *Some Account of Mines*, 1707, p.171.
25. NYCRO - NFY 40 [211611718].
26. Rieuwerts, J.H. *History and Gazetteer of the Lead Mine Soughs of Derbyshire*, The Author, Sheffield, 1987, p.xi.
27. Marrick Priory papers - I am indebted to Les Tyson for drawing my attention to this reference.
28. Early Yorkshire Charters, Y.A.S. Record Series, 4 (1935) 26, No. 24.
29. Ashcroft, M.Y. Ed. *Documents Relating to the Swaledale Estates of Lord Wharton in the sixteenth and seventeenth centuries*, N. V.C.RO. Publication No.36, 1984, p.232. R/Q/R 9/426: Receipt for two lots of lead smelted at Burton by Benjamin Purchas, who was Bathurst's agent in Arkengarthdale.
30. The Dissolution Rentals of Bolton Priory 1538/9 - noted that no lead had been found. In 1589, the Countess of Cumberland also leased mining ground in Glusburn (Collectanea, 1840, pp.331f).
31. Dickinson, J.M., Gill M.C. & Martell, H.M. Lumb Clough Lead Smelting Mill, NMRS, *British Mining No. 1*, 1975, pp.1-10.
32. Lyons, P.A. *Two Compti of the Lancashire and Cheshire Manors of Henry De Lacy, Earl of Lincoln*, XXIV and XXXIII Edward I, Chetham Society, Old Series CXII, 1884.
33. France, R. S. *The Thieveley Lead Mines 1629 - 1635*. Lancashire & Cheshire Record Society, No. 109, 1951.
34. Raistrick, R. A Pig of Lead with Roman Inscription. *Yorkshire Archaeological Journal*, Y.A.S., 30, 1930, pp.181-183. Kirkshaw, S. A letter from the Rev. S. Kirkshaw to Wm. Sloane Esq. F.R.S. concerning two pigs of lead, found near Ripley, with this inscription on them - IMP CAES DOMITIANO AVG COS VII. Phil. Trans. 41 (1735) p.560.

The inscription was in raised letters, in addition to which, each pig has cast into its side the word BRIG. The length of the pigs, on the largest face, was 591 mm, the width 146 mm, and the weight of one of them 1561 lbs and the other 1551 lbs.

Lucas, Grassington Lead Mines, in *Old Yorkshire*, Ed. W. Wheater. Ser.2, London, 1885, 1, pp.49-53.

A pig was found at Knussey Knott which included in its inscription the name TRAJAN - it was said to be about half of the weight of those now smelted (about 84 lbs). It has since been lost.

35. PRO Ancient Correspondence. Bk 48, No. 81 for Bere Alston.
36. Chartulary of Fountains Abbey. 204, 208, in part Nos. 5, 11, 12 and 17.
37. Byland Abbey Charters in Yorke MSS: Egerton MSS.2823.f.51,70,75,80.
38. Chart. Fount. 216, No. 35. Egerton MSS. 2823.f.76.
39. Raistrick & Jennings *Lead Mining*, p32f.
Jennings, B. (Ed). *A History of Nidderdale*, The Nidderdale History Group, Pateley Bridge, 1983, pp.59f.
40. Smith, A.H. *The Place-names of the West-Riding of Yorkshire*. English Place Name Society, Vol. XXXVI, part VII, 1958-59, pp.158 & 185.
41. Lead mining was recorded there in 1301 - Whitaker, T.D. *History and Antiquities of the Deanery of Craven*, London, 1812, pp.336, 338, 392.
- 1535: Borthwick Institute MSS, Wills, Vol.II, F.142.
Will of Henry Young, of Appletreewick, who left to his children:
All his lead mines and groves in Appletreewick Moors.
Also half of the sixth part of a grove called Boynebridge Grove.
Also the sixth part of a grove next my lady Cumberland's Grove.
Also the third part of half a more meer next adjoining the said meer.
A more meer at Richard Middleham Rake.
42. K.C.R.; Duchy of Lancaster 42/19 ff.31, 39v, 72v.
43. Duchy of Lancaster I, Vol. 30, p12. D.L. 30/490/9 (c1501).
44. Duchy of Lancaster I, Vol.22, Appendices 10 & 11; DL 39/3/29; DL 41/7/10; DL 30/49111.
45. An extended account of this dispute is given in: Jennings - *Nidderdale*, pp.67-72.
Duchy of Lancaster 1.v.7.D3. DL 42/30f. 74v; DL I, Vol.22 Appendix. 6; DL I, Vol.21 K3.
46. Jennings - *Nidderdale*, p150f. In 1540, Fountains and its Nidderdale estates were sold to Sir Richard Gresham, who sold the Greenhow area to Stephen Proctor in 1597. The latter was involved in disputes about the ownership of Bewerley Manor, but appears to have proved his title.
47. Record Commission. Rotuli Litterarum Clausarum, 1, 409. 1223 - *Minatores domini regis de comitatu Eboraci et Northumberlande pertinentes ad bailliam minerie de comitatu Cumberland habent literas de protectione usque ad etatem domini regis.*

YORKSHIRE LEAD MINING - BEFORE 1700

48. E.101/465/29.

49. *Victoria County History N.R.*, Vol.II, p.353.
Each pig must have weighed nearly 300 lbs.

50. *E.101/598/9*.

51. Merch. V. York, 73. 4 Henry VII, 6th November 1498 - all manner of men as well denycen and foreign that from this day forward shall bring any manner lead from Boroughbridge or any other place to this city by land or water to be wound and weighed at the common crane of this city shall from henceforth pay to the common well of this city for winding and weighing every fodder of lead 7d, of which 7d a penny shall be given unto the labourers for bringing of a fodder lead from the garret in to the scale there to be weighed; and from the scale into the crane garth and from the crane garth into the garret again, there to be struck.

52. York Civic Records, Y.A.S. 2, 138f. 15 Henry VII, 30th September 1499 - it was enacted that from this day forth no franchised man of this city in his own person nor non other for him or to his use or byhove by no manner lead coming from Swaledale, Wensleydale or Craven and weigh it at Boroughbridge nor at any other place outside this city ... on pain of forfeiture for every fodder lead so to be bought and weighed at Boroughbridge or at any other place out of this city contrary to this ordinance - 20s.

53. Merch. V. York, 110f. (1502) To the Reverend Father in God, the Abbot of Fountains ... we understand that you occupy buying and selling lead and other merchandise as a free merchant, contrary to God's laws and man's, you being a spiritual man and of religion, and so your occupying is great damage and hurt to us merchants in these parts. Wherefore we will desire you to cease and leave such buying and selling of merchandise, so that we have no further causes to complain to my lord the Archbishop and other of the King's counsel in these parts for remedy than to be had, or else we purpose to complain to the King's grace, which to do we would be right sorry, that you should give us such cause of complaint.

54. Star Chamber Proceedings, 1519, Y.R.S. 51(1919)175ff.
Henry Young, of Appletreewick, Leadman, sold 6 fothers and 101 Qtrs of lead, contrary to regulations, to a London draper at a point between Ripon and Fountains. The lead was seized by the Chamberlain of York.

55. Merch. V. York pp. 46 & 135f.
Ships lading with lead at Hull, from merchants of York and Hull.

For Flanders	Marrie Gallande	of Newcastle	
	The John	of Newcastle	
	The Peter	of Hull	
	Marie James	of Hull	
	John Baptyst	of Hull	
	The John	of Hull	Together carrying 307 fother

For Bordeaux	The George	of Newcastle	
	The Swallow	of Newcastle	
	The Mawdalen	of Hull	Together carrying 65 fother.
For Dansike	The Angel	of Emden, East Freezeland.	
			Carrying $\frac{12}{401}$ fother.

There is also a list of the merchants and details of their lead going to each of the three ports - see Raistrick and Jennings, page 40f.

56. Merch. V. York pp. 135f. Between January 21st and December 8th, 1562, a total of 204 fothers were shipped from York.
57. Select cases in the Court of Requests. Selden Soc 12 (1898) pp.201-204. John died and the lease passed to Aveye Uvedale, who was granted all the timber he required during the remaining part of the 40 years. Paying yearly 3 load for every 20 loads gained.
58. Mems. Fount. I, p.402f.
59. Mems. Fount. 3.
60. Mems. Fount. Accounts of Adam Swynton. 3, 205-6.
61. Y.A.S. MSS. Fountains Lease Book.
62. Mems. Fount. 1, p.402f.
63. Yorke MSS. 832, 840.
64. This mill served the mines until the early nineteenth century, when the Cockhill Mill took its place. It is shown on Thomas Jeffrey's map of Yorkshire, dated 1772, and an undated estate map (NMRS Ref. A/M 696) from early in the nineteenth century.
65. NYCRO R/Q/R 9/49 Lease of the farm of minerals etc. at Kettlewell for 21 years, made to Smithson and Swale.
66. Dickinson, J.M. Buckden Out Moor Lead Smelting Mill. *British Mining* No.8, 1978, pp.38-39. This was the Buckden High Mill and it was excavated by the NMRS in 1975.
67. Dr. Richard T. Spence pers com.
68. France, R.S. *Thieveley*, p.95.
69. They are discussed in Raistrick & Jennings. *Lead Mining*, p.111.
70. Gill, M.C. The History of Customary Mining Law at Grassington in Yorkshire, *Bulletin Peak District Mines Historical Society*, Vol.10 No.4, Winter, 1988.

YORKSHIRE LEAD MINING - BEFORE 1700

71. Chatsworth MSS - undated paper (c1732) and various correspondence from this period. In Derbyshire, the first finder got 2 meers and the lord took a half meer at each end. See Chatsworth MSS 19/10/1731.
72. Bolton MSS. Grassington Lead Book: 1698-1710. 27th September 1703, a meeting between George Myers (Steward) and Stephen Peart (Barmaster), for the Earl of Burlington, Mr Robinson and Mr Rawsthorne, agent to the Lady Bridgewater.
73. Spence, R.T. *The Cliffords, Earls of Cumberland, 1579-1646: A study of their fortunes based on their household and estate accounts*. University of London PhD Thesis, 1959.
74. The Case of Mines (1567) 1 plowd. 310.
75. Burt, R. *The British Lead Mining Industry*. Dyllansow Truran, Truro, 1984, p.27.

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