BRITISH MINING No.70

LEAD MINING IN THE DERWENT VALLEY

by

W.K. PIRT & J.M. DODDS

Covering the Mining Districts of Blanchland, Ramshaw, Townfield, Edmondbyers and Healeyfield

✡ ✡ ✡ ✡ ✡

Researched by

W.K. Pirt & J.M. Dodds

With contributions from C. Gilfellan

A MONOGRAPH OF THE NORTHERN MINE RESEARCH SOCIETY DECEMBER 2002

ISSN 0308 2199

ISBN 0 901450 55 3

Typeset in 10 point Times New Roman

by

N.M.R.S. Publications.

PRINTED

by

FRETWELL
PRINT AND DESIGN

Healey Works,
Goulbourne Street, Keighley,
Yorkshire, BD21 1PZ

for the publishers

THE NORTHERN MINE RESEARCH SOCIETY
KEIGHLEY, U.K.

Cover illustration: Presser mine 1906 pump house with Ramshaw Rake in distance (W.K. Pit, 1980)

CONTENTS

FIGURES

PLATES

(Note: all photographs taken by W.K. Pirt unless stated otherwise)

INTRODUCTION

My first experience of the Derwent Mines was in a conversation with a fellow pupil in my class at school in 1960. He described a section of the Bolts Burn valley at Ramshaw, not far from his home at Blanchland, telling of a narrow valley with numerous tunnels leading into the bank side. All were stone arched and could be followed underground for hundreds of yards uphill until one eventually emerged at the other end. It was not until the late summer of 1963, on a local Field Club outing, that I had a chance to visit the area and examine these features. I was informed with great conviction by the outing leader that the tunnels were flues that had carried poisonous fumes away from a lead smelting mill in the burn bottom. This kindled my interest in lead mining and frequent visits to the site – Jeffrey's Smelt Mill at Ramshaw – were later made.

Whilst at the local Technical College, in 1966, I became involved in an extra mural study group project to list as many of the industrial archaeology sites of the district as were known at the time. One of the group members was John Gall. As part of the group project we visited Ramshaw, where we examined and photographed the then recently bulldozed remains of a balance-bob pit immediately adjacent to the Ramshaw pumping and drawing shafts.

As my interest in the district became more widely known, I was contacted by the late Trevor Morris. Together we examined the area and combined the data that each had previously unearthed. Trevor eventually passed the information over to me so that he could concentrate on Welsh mining. He continued to feed me snippets of information on the district as and when they turned up. I am greatly indebted to his early efforts, and for the aerial photographs he took of the Ramshaw and the Reeding Mines.

A few years later I was contacted by John Dodds, who was on the Friends of Beamish "SOS" squad. As a result of the hundreds of hours that John spent in the Northumberland Records Office and at the Mining Institute archives in Newcastle, a vast array of information was unearthed. From this and from information I obtained at Newcastle Central Library, Durham County Records Office, Durham City Library Archives and other sources, a clearer picture of the history of the district gradually emerged. Shortly before the sad loss of Trevor Morris, I was introduced to Clive Gilfellan, whose simultaneous, but previously unconnected, research had uncovered information from the Lord Crewe Trust Estate papers lodged in the Durham Estates Office at Durham Cathedral. This made available historical details pertaining to the mines of the eastern portion of the district.

Because each of the contributors had unwittingly concentrated on the separate areas of the district, their respective information had amazingly few overlaps and very little effort was wasted through duplication. The collation is

certainly not considered complete, however. It has now simply reached a stage where new discoveries have become proportionately more difficult as the sources are exhausted. The search has, therefore, now given way to an appraisal. Whilst there is confidence that the historical facts have been accurately recorded, it must also be declared that misinterpretation of these facts within the text is a possibility. On this issue, the defence is simple. It is that we were not part of the historical scene at the time of its occurrence.

The true motivation now for collating the information is the simple selfish prospect of being able to return to a normal sort of existence afterwards.

ACKNOWLEDGEMENTS

My thanks are due to the following: Colin G. Armstrong (Consett Technical College) and John Gall (Beamish) for sparking off my interest; C. Gilfellan (Healeyfield & Muggleswick); Mr & Mrs Devine (for permission to visit Ramshaw); Beamish Museum (photographs); the late T. Morris (early research and aerial photographs); H.M. Parker (permission to use copyright photographs of Whiteheaps & Ramshaw Mines); The late J. Raine. (for permission to use the photographs taken of the postcards on public exhibition at Castleside); Durham City Library; Durham Records Office; Lord Crewe Trust Estates Office; Northumberland Records Office; Public Record Office; Miriam (ONNA drafter) and Jonathan (YFML critic).

Thanks are also due to A. Blackburn, H. Cannam, N.A. Chapman, S. Chapman, R.A. Fairbairn, I. Forbes, M.C. Gill, P. Jackson, the late Ned Jamieson, D. MacCallum, B. Short, C.C. Short, R.C. Thompson, L.O. Tyson and D. Wilcox. Other acknowledgements are included within the relevant texts. Gratitude is also expressed to the many others who have contributed.

It must be said that the information amassed over the past years would still be in the form of longhand text, photocopied documents and scribbled notes if it had not been for my wife Miriam. She painstakingly typed and retyped the developing drafts as required, prior to the eventual purchase of a simple word processor. This task was laboriously repeated again during transfer of the data onto a more modern PC.

W Kennon Pirt (writer), April 2000

GEOLOGICAL OUTLINE OF THE DISTRICT

The slightly domed, Middle Carboniferous strata of the region dip gently eastwards at about five degrees and are mineralized from the Great Limestone up to and including the Healeyfield Firestone. A few easterly locations are mineralized in the Lower Coal Measures.

During deposition of strata around Ramshaw and Hunstanworth, huge washouts, or drainage channels, were cut through the delta mud. After a slight change in sea level, as a result of earth movements, considerable

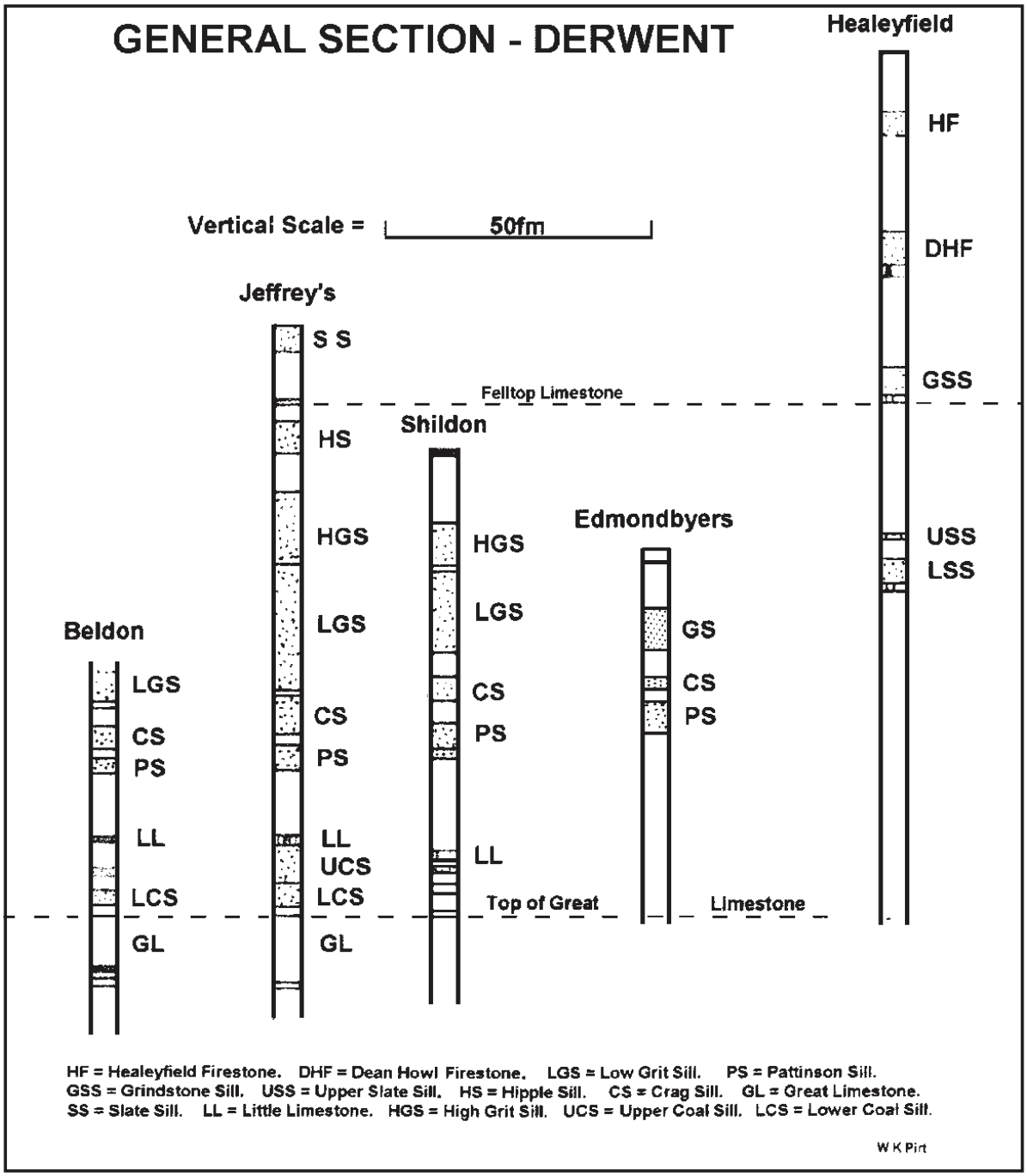

Figure 1. General geological section of the Derwent Mining District

quantities of silt were re-deposited in and around these channels, resulting in a local accumulation of exceptionally thick strata.

Earth movements in the Tertiary period cracked the strata and let hot, mineral-charged waters percolate and deposit vein-forming minerals. Some veins were up to 40 feet wide and 300 feet high and were mineralized for long distances. On working them, the miners found that veins were nearer vertical and better defined and mineralized in the hardest rock, while in the softer beds they tended to 'hade', or slope, from the vertical, and often pinched out, or became closed up through filling with fractured country rock.

The Ramshaw-Hunstanworth area, with its extensive washouts, was ideal for mineralizion because only three feet of shale separated the High Grit Sill from the Low Grit Sill (Fig. 1). Together, these beds gave 228 feet of almost continuous sandstone, which far surpassed the thickest of the Weardale 'Lead Measures' limestones. The Great Limestone, which in Weardale was from 80 feet to 90 feet thick, was only 75 feet thick at Jeffrey's Shaft, Ramshaw.

The main vein filling, or gangue, is fluorspar (CaF_2), but there were strings or pockets of lead ore (galena, PbS) near their foot and hanging walls. Other minerals were chalcedony ($SiO_2.nH_2O$), quartz (SiO_2), siderite ($FeCO_3$) and limonite ($Fe\{OH\}_2$), along with limited quantities of barytes ($BaSO_4$). Calcite ($CaCO_3$) and sphalerite (ZnS). Traces of copper minerals have been found in the deeper, modern fluorspar workings around Hunstanworth.

Most of the lead ore raised around Hunstanworth was got from the Firestone and the Slate Sills, but at Healeyfield it came from the Millstone Grit Series. Because lead miners only took the galena, which at Hunstanworth was usually in ribs of three to four inches wide, they left behind the bulk of the fluorspar, which filled the vein. This was worked in the 20th century.

K.C. Dunham gives the following distribution of ore-shoots throughout the hard beds of the Derwent Valley Mines:-[1]

DISTRIBUTION OF THE ORESHOOTS

Series	**Strata**	**Oreshoots**
Millstone Grit	3rd Grit	1
	2nd Grit	1
	1st Grit	1
Upper Limestone Series	Grindstone Sill	3
	Slate or Grit Sill	15
	Firestone Sill	11
	Little Limestone	4
	Coal Sills	2
	Great Limestone	2
		Total 40

CHIEF LOCATIONS

The area consists of fell country lying between 600 feet and 1600 feet AOD, with a fertile strip along the River Derwent. Fluorspar and a little barytes have been worked there until recently.

A mining agent commented in 1735 that the Derwent Mining District was "*in a part of the world where they* [the miners] *are seldom without rain*". He added that it is "*so mountainous and rotten here that it would be difficult for a man to walk upon the mosses in many places*". It was also stated that "*the district of North West Durham containing the mines of the Derwent Valley was a mainly upland location, remote from any beaten track. The elevation is wide ranging, between 450 ft OD in the recesses of the fertile valley floor, to 1600 ft in more exposed locations. The higher locations can suffer inclement conditions during winter months, with regular snowfalls that might remain for periods upwards of four months*".

In 1799, Arthur Mowbray told John Ord, that in the last 15 to 20 years sheep were the mainstay, whilst in the last 10 years cultivation was possible "*except on the tops that will not meet the plough*". Cattle and sheep were kept and corn was grown, but proper farming was not possible. The people were said to be "*a strong race working about the lead mines, plantations and buildings enclosures, but the roads have very little attention*".[2]

Blanchland - Hunstanworth - Townfield

This principal mining area is centred around Blanchland village and includes the hamlets of Hunstanworth, Townfield and Ramshaw. These all lie at the western end of the River Derwent, close to where it is joined by the headwater tributaries of Acton, Beldon, Nookton and Bolts Burn. The most intensive operations were between Blanchland village and Bolts Law, at the Whiteheaps (NY947466), Sikehead (NY955464), Ramshaw (NY951473) and Presser or Jeffrey's (NY959478) lead mines. Referred to collectively as 'The Derwent Mines', these four mines between them worked a number of wide, although not always rich, intersecting veins.

The principal veins at Whiteheaps and Sikehead Mines, at the head of Bolts Burn, were Red Vein, White Vein, Shield or Company's (also Bolts Shaw) Vein, and Fernygill Vein. Further downstream, Ramshaw Mine worked Ramshaw North, Middle and South Veins. These converge as they go east and intersect at Ramshaw Shaft before crossing Bolts Burn into Jeffrey's Mine, which is in a different royalty, where they become known respectively as Jeffrey's South, Middle and North Veins.

Some of the Hunstanworth mines have only recently stopped extracting pillars of fluorspar left by the lead miners. Whiteheaps Mine in 1979 was run by BSC Scunthorpe Ore Mines Division, then it passed to Weardale Mining and Processing Ltd in 1986. In 1989, however, the site was finally abandoned,

THE LONDON LEAD COMPANY PERIOD (1700 TO 1750)

In 1702, two London Lead Company agents toured the north, looking for mines of worth. They arrived at Corbridge, then went on to Hexham from where a guide took them to Acton Mill, Shildon Mine and to Feldon Mill. They were probably acquainted with the Blanchland mines from earlier visits as a company policy at the time was to send agents touring the lead markets to buy up parcels of ore to keep their mills supplied. This was especially true after 1703/4 when the company's Gadlis Smelt Mill opened in Flintshire.

Ryton Smelt Mill

By 1704 the Ryton Company had merged with the London Lead Company. The ore smelted at Ryton Mill, on the site of what is now Blaydon railway station, included parcels purchased from both the Alston and the Blanchland mines. Refining, to extract silver from the unrefined metals of other mills, was later done here under the direction of John Pattinson, inventor of the desilverisation process which bears his name. Cookson Plc, which still has a lead refinery on the north bank of the River Tyne, was also established in 1704 and is possibly a descendant of the Ryton Company. The original works at Elswick was called Meadowfoot Smelter and in 1778 it was owned by Messrs Walker, Fishwick & Ward.[38, 39, 40]

Bolts Burn and Shildon

The mines of Bolt's Burn and Shildon are too intertwined to be treated separately and so, for continuity, some information may be repeated. Much of the history also still remains unclear.

Edward Wright, Edward Leeds and Thomas Forster met on January 4th 1708 to discuss the dues for Shildon and the purchase of ore from Jeffreys Grove, and also to bargain for the best tenure, but later that year Forster had to sell the mines to pay off a debt. On June 1st 1708 John Doubleday offered to assign the Shildon Mine lease from the Bishop of Durham to the London Lead Company for about 20 years, for a sum of £200, and on January 11th 1709 dues were agreed at £1 10s 0d per bing for Shildon and £1 13s 0d per bing for Jeffrey's. It was also agreed to govern the price of cutting ore (small sized) and give the London Lead Company preference in ore purchase.

Ore from the London Lead Company's Blanchland mines was smelted at its new Acton Mill during 1708.[41] A further lease is recorded, dated February 4th 1709, for Bolt's Well Foot and Whiteheaps, running for 1000 yards west of Bolt's Burn.[42] This agreement was between Elizabeth, Robert and George Rogers (for John Rogers and John Ord), and John Mowbray of Dukesfield, George Mowbray of Allenheads, John Johnson and William Mowbray of London. Also involved were Joseph Longhorn of Stanhope, John Hepple of Styforth, Northumberland, Rowland Harrison of Muggleswick, Cuthbert Ward of Newbiggin and John Ellison of Northumberland.[42]

After the London Lead Company developed Jeffrey's, Ramshaw and Whiteheaps, it built a new mill (Derwent Mill) further down Bolt's Burn valley in 1713.[43] It smelted ore from the above mines, along with purchased parcels of duty ore. The old (Ramshaw) mill on Bolt's Burn was on Ord's leasehold, but the new mill was on Dean & Chapter land (Skottowe leasehold).

The works forfeited by the Forster/Crewe alliance after the Jacobite rebellion, were some quarries and mines at Shildon Grove, Shildon Smelt Mill and Jeffrey's Grove Mine. Also included were mines at Allens Hill (Allenshields) and at Buckshott, in Durham and Northumberland respectively. The leases for these gave the holders permission to work the mines, sink pits, and make trenches, levels and grooves for getting ore. They also covered supplying water and air, along with the removal of foul air and other obstacles. Other rights included permission to build houses, works, gins and engines, and to quarry stone and slate for these. The leases also gave the usual permission of leave for heaproom and wayleave for entrance by foot or with horse and carriage. A later lease for Shildon included the condition that no new level could be driven "*within the enclosed ground that contained the level* [Shildon Low Level] *in use at Shildon Grove*". Nor could any new level be driven "*in any other enclosed ground except on the said moors, without the consent of Lord Crewe or his heirs*". Other conditions were that "*if any mine is worked in enclosed ground, recompense will be expected by the tenants".* One example of the duty levied on ore raised from Forster's land, is on May 17th 1715 when the London Lead Company paid him an advance of £100 for duty ore from Jeffrey's and Shildon Mines.

After the Earl of Derwentwater's execution for his part in the Jacobite rebellion, the Commissioner for Forfeited Lands administered his estates and for a time, the collection of duty ore was sporadic. Nevertheless, on December 7th 1717, 70 bings of (duty?) ore from Jeffrey's Grove were paid to the Commissioner.[42] These problems of collection form part of a series of letters from Jonathan Maughan to Chambers Slaughter, Crown Administrator for the Forfeited Estates, between 1719 and 1720.[44] In them, the Commissioners are informed that Mr Gray (agent for the Bishop of Durham) had been reprimanded for removing washed ore before payment of duty.

Maughan, who had been either the Earl of Derwentwater's mining or mineral agent, described himself as "*a Protestant and follower of the King to such an extent ... that he had suffered financially as a result of his devotion*". Having lost this position on Derwentwater's demise, he offered to manage the alienated estates of Dilston and Langley along with the mines in Alston Moor and at Jeffrey's Grove, offering a valuation of the latter mines as they stood. Included in the letters to Slaughter are accounts for Jeffrey's Grove from February 27th 1717 to November 18th 1719.

Maughan's petition was successful and he was made manager of the lead mines in Alston Moor and Jeffrey's, together with those of the Manors of

DERWENT LEAD MINING AND SMELTING COMPANY LTD

By 1876 the Derwent Mines Company Ltd had transferred its lease of the mining rights in Hunstanworth, Edmondbyers and Blanchland to John Murchison. He and some of the old shareholders floated a new company, called the Derwent Lead Mining and Smelting Company Ltd, which took over all plant, machinery and effects belonging to the business from September 29th 1876.[36] The lease, from the Lord Crewe Charity, was dated February 13th 1860 and gave mining and other rights in Hunstanworth, Blanchland and Edmondbyers. The new company included Robert Palmer Harding (liquidator), John Randall MacDonnell, and John Taylor Jnr, of John Taylor and Sons, Mining Engineers.

On December 30th 1873 the solicitors J.H. Murchison and Samuel York arranged a new lease for the Derwent Lead Mining and Smelting Company, to become effective from September 30th 1876. They were also granted licence to assign their interest in the lease to E.M. Bainbridge on February 10th 1875. York, of Shifnal in Shropshire, held 1400 shares in the Rookhope Valley Lead Mining Company, which was also in difficulty at this time. Murchison held 2825 shares in the same company and was one of its directors.[72] Both were on the board of Tankerville Roman Gravels Mine, in Shropshire, and this allowed them to call upon the experience of Captain Waters. Mr Blenkiron, of Arkengarthdale, managed the Rookhope Valley Lead Mining Company's works at Brandon Walls in May 1874 during a similar financial crisis, which ended in the reconstruction of that company in 1876 into a new company called the Rookhope Lead Mining Company.

Based on the wage book for the week ending June 21st 1874, the average wage at that time was £55 8s 0d per year. In that year, however, a clause was introduced into the bargain system to compel the men to work regular hours, an action which was at first resented.

John Morpeth wrote to the directors of the Derwent Lead Mining and Smelting Co. Ltd in London on September 20th 1879, describing the state of the mines up to the end of June that year. He stated that good ventilation was a high priority, as it was healthier and enabled ground to be let at a lower rate.

Expenditure was £2961 12s 7d, compared with £1650 14s 7d for the previous year, and the area stoped (by fathomtale, i.e., 36ft^2 of working face advanced by 6ft) was 433 fathoms 1 foot 2 inches. Working was restricted to six areas and the total reserves of ground opened up had increased to 1206 fathoms from 1080 fathoms the year before. Some 46 fathoms of unproductive ground had been worked at a cost to the company of around £9 per fathom, and 302 tons 5½ cwts ore had been dressed at £1 11s 6d per ton. This was 5s 9d per ton more than for the previous year, mainly because of bad weather.

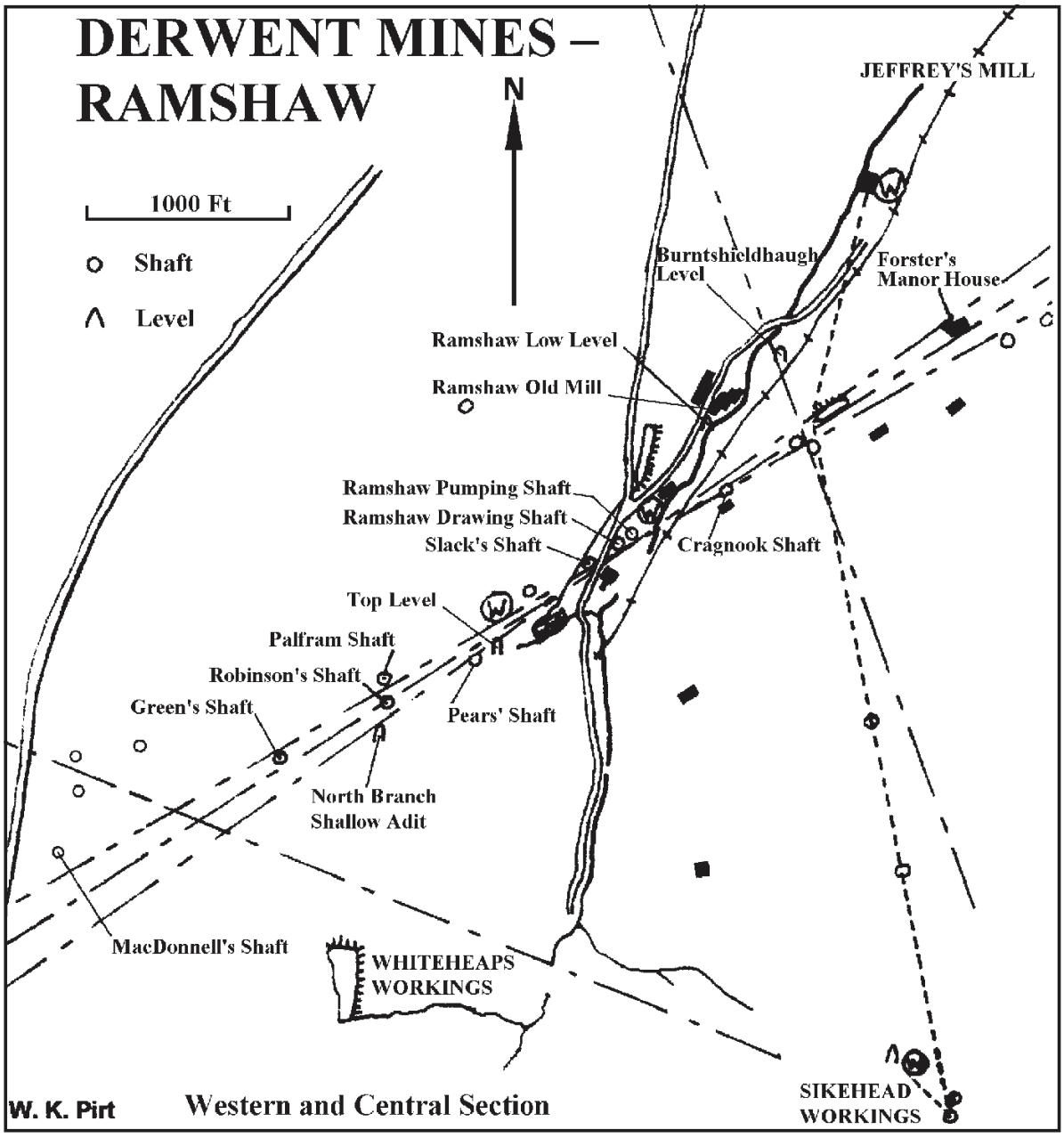

Fig 21. Principal shafts at the Ramshaw mines.

The ore had yielded:-

	Tons	cwt	qr	lb	
	190	4	0	16	rich lead,
	8	4	0	1	(liberated) fume and
	25	0	0	2	slag,
Total	223	8	0	19	

When refined, this had given:-

oz	dwt	gr	
2912	19	7	of silver, from which deduct -
1248	13	6	allowing for desilvering, and
1664	6	1	remain, which, with the lead, realise £3562 14s 0d nett.

The average cost of smelting was £1 3s 11d per ton.

In 1878 the average lead content was 70.21%
In 1879 the lead content was 73.91% (3.70% increase)

The current return of lead ore was around 12 tons per week, ie. nearly 50% up on the returns for the previous 2 years.

On September 24th 1879, the Secretary, Mr J.H.A. Smith, asked the shareholders at an Ordinary General Meeting at the Company's offices at 8 Austinfriars, London, to meet again on October 8th to propose a resolution to permit the Directors to borrow £10,000 upon debentures, at 6% interest per annum payable half yearly, to be secured by a deed assigning the leasehold, plant and machinery to the Trustees for the debenture holders. At the meeting it was announced that 223 tons 8 cwt 0 qrs 19 lbs of pig lead had been sold for £3,562 14s 0d. This gave an average price per ton of £14 14s 1d, against £18 10s 0d and £20 13s 0d in the previous 2 years. The returns for December and January had been spoilt as bad weather had disrupted dressing operations, while February had been ruined by a "*serious accident*" caused by heavy frost. This had laid off Jeffrey's Shaft for three months and caused a suspension of operations in the most productive parts of the mine. The shareholders were told that, as a result, the directors had to forfeit 3,125 shares on which £3,900 was unpaid. Included in these were 2,900 shares

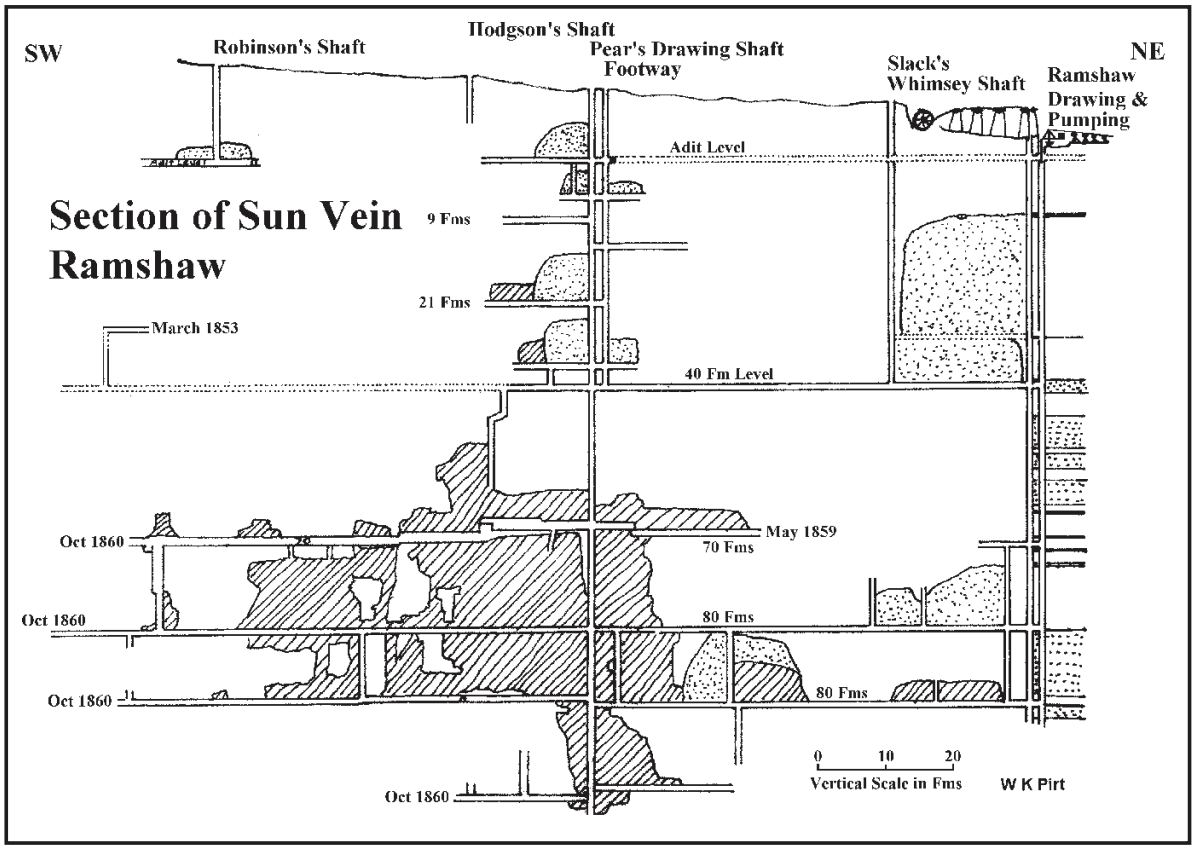

Fig 22. Longitudinal section of Ramshaw Sun Vein.

Mosswood
In 1828 Thomas Teasdale and Co attempted to open a mine at Mosswood Green on Sir Charles Monck's 12,000 acre estate of Bulbeck Common. It was about a mile south of Greenhead, near to Mr George Silvertop's Crooked Oak Farm, and the level is thought to be in the east bank of the river directly below the farm.

Healeyfield Smelt Mill
Thomas Featherstone and Company of Newcastle owned the smelting mill near Healeyfield. It smelted around 2,000 bings per year, a portion of which was refined for silver. The works manager was William Little of Healeyfield. In partnership with a man called Milner, Featherstone had also opened a mine on Plashetts Farm (NY969813) at Great Bavington in Northumberland around 1810, but the venture had failed. A vein was tried at Throcklington (NY958790), but, despite a long period of development, it also failed.[28]

PLATE 45. Hairpin flues, Healeyfield (1980).

The Healeyfield Mine Company ran the Healeyfield Mill and had 1 roasting furnace, 2 ore hearths, 1 refining furnace and 1 reducing furnace.[4] By contrast, Blaydon Mill owned and occupied by Colonel and Mrs Beaumont contained 4 refining furnaces, 2 reducing furnaces and 1 slag hearth.

Other Prospects
In the seven miles between Silver Tongue and Blanchland, several veins cross the river in a north–south direction, upheaving the strata to the west. One in particular crosses the Derwent about 3 miles below Blanchland, running north by Wall House Colliery and throwing the beds up 15 fathoms to cut off the Brockwell Coal Seam. Other veins run east-west. Trials have been made in Muggleswick Park and at Eddy's Bridge, but no mines were worked nearer than at Blanchland. The level at Eddy's Bridge eventually became part of the Keilder - Tees water tunnel construction project.

SMELTING ON BOLT'S BURN

Ramshaw Smelt Mill

Several smelters around Ramshaw served the Bolts Burn area. Ramshaw Smelt Mill (NY952474) was so called in 1852, but is also called Jamieson's Mill and was earlier known as Boltshope Mill. Considered the first mill at Ramshaw, it was on Capper/Ord property and probably mostly smelted that royalty's ores. Many early leases stipulated that partnerships working Capper/Ord lands had to give Boltshope Mill first refusal of their ore.

On August 1st 1748 the London Lead Company renewed the lease for Ramshaw Vein and Whiteheaps (Boltswell Foot) Mine from Ord at £21 per year and £12 10s 0d consideration money. The duty was 1/14th for seven years, increasing to 1/12th for the rest of the term. Ramshaw Mill (Boltshope) was also leased in that year, along with the mining rights, until 1769.

On January 2nd 1801 John Ord leased Boltshope Mill at Ramshaw to Anthony Hood, Alderman, of Newcastle, and Ralph Ramsey, agent, of Derwenthaugh, at £6 per year rent. They had been tenants for a long time and had rebuilt the mill and added to it. As well as the mill, the lease covered watercourses from Bolts Burn and other places, and allowed access through the Park to Cocklake Fell, along the new road from the mill to Townfield and High House, along The Deep and down to the river Derwent. From there ore was taken alongside Beldon Burn to the Alston road. The lease also granted the right to dig peat and permitted the removal of equipment, with John Ord to have first option of purchase, at the end of its 21-year term.

In 1827 Hall and Puller leased Boltshope Mill for £70 a year, and Capper permitted them to enlarge the mill (then called Ramshaw) and build dams, watercourses and workmen's houses.[36] The Derwent Mining Company's lease of the Lord Crewe Trustees' property was also renewed at this time.

On September 15th 1848 Routh and MacDonnell leasd Boltshope Mill, together with all the mines in Newbiggin other than those worked for coal.

In 1834 Jeffrey's washing floor was said to be to the south of Jamieson's Mill, but on the opposite side of the stream. Fine silt, a dam and the remains of a round buddle can presently be seen at this site.

Derwent (Jeffrey's) Smelt Mill

There were apparently two mills at this site. The earlier one was working from at least June 17th 1770, when one of the few records relating to it recommends that the £42 salary paid to Joseph Watson, agent at Jeffrey's Mill (and also at Acton Mill), "s*hould be raised a further £7*".[41]

The first Derwent (otherwise named Jeffrey's) Smelting Mill (NY955480)