BRITISH MINING No.47

THE MINES OF ALSTON MOOR

by

R.A. FAIRBAIRN

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1/5th duty. The rest had been reduced to 1/6th duty, with the veins west of the Tyne being at 1/7th duty. Further reductions in duty were made in the 1840s and only 10 veins were retained at 1/6th duty. The rest became 1/7th duty. By 1863, 1/9th was the normal duty. Then, with the collapse of the trade in the 1870s, rates as low as 1/12th duty were applied.[4,5]

References

1. Greenwell deeds 452 [F6]. June 29th 1710
2. Liddle, 1737, p.5
3. E.H. Locker Report to the Directors of the Greenwich Hospital, 21st August, 1823. p.3
4. Moor Masters' Reports. 1819-1843
5. Smith, 1923, pp.11f

THE GEOLOGY OF THE REGION

THE STRATA

Westgarth Forster published the first detailed description of the strata present on Alston Moor, referring to the upper strata, starting 145 feet above the Felltop Limestone, as the Millstone Grit Series. Below this datum he called the Lead Measures.[1] Since that time, the strata have been subdivided in various ways. The present practice is to divide the strata into the Namurian, (formerly the Upper Limestone Group and the Millstone Grit) and the Dinantian, (formerly the Middle and Lower Limestone Groups).[2] The junction between the Dinantian and the Namurian is taken as the Base of the Great Limestone.[3]

The succession is divided into a number of units known as cyclothems, each being named after the limestone at its base. A cyclothem starts with a limestone at its base, followed by shale and mudstones, then sandstone and finally a coal seam, the general trend being for the grain of the sediments to become coarser from bottom to top. In practice, parts of the sequence may be repeated, or be absent. Quite often the coal seam is missing. There is a general trend for the quantity of limestone in the cyclothem to decrease as the succession is followed upwards. The exception to this is the Great Limestone Cyclothem, where the limestone is thicker than would be expected for its position in the sequence, and the shale, sandstone, coal sequence is repeated. Above the Great Limestone, the limestones become minor items and the sandstones become more dominant. Fig.3 is based on mine sections and gives the names of the main units of strata.

The Whin Sill, a quartz-dolerite igneous intrusion, has been injected into the strata at the Jew to the Tynebottom cyclothems, transgressing down the sequence from east to west. The thickness of the sill is variable but is usually from 100 to 200 feet thick. The sill outcrops in the Black Burn valley and in the South Tyne near Tynehead smelt mill site.

Nowhere within Alston Moor have the basement rocks that lie beneath the Carboniferous been penetrated. A borehole put down at Rookhope, in the Wear valley, penetrated the Weardale Granite, which had been predicted owing to the gravitational anomalies associated with it. The same method indicates the presence of a major cupola beneath Tynehead. The granite has been dated as earlier than the sediments and, therefore, was not the primary source of the minerals, but the evidence indicates that it did provide the heat flow to drive the mineralising solutions.[4]

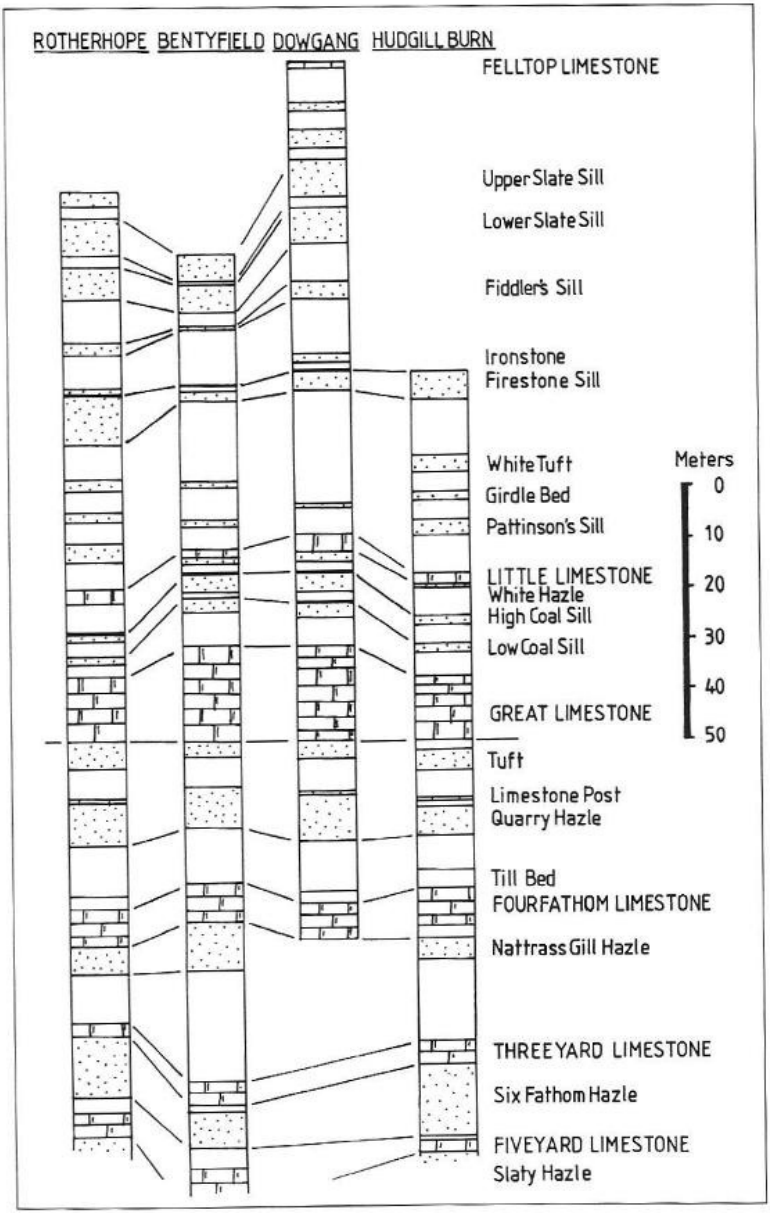

Fig.3 The Strata above the Five Yard Limestone

In 1821 Jonathan and Robert Walton and Partners drove a level under the Great Limestone in Foreshield Pasture on the west side of Whinnie Cross Vein looking for veins.[1]

Reference 1. Dickinson, 1821, p.75

BLAGILL CROSS VEIN

Apart from the trials already mentioned, there is one other worthy of note. This is a shaft which has been sunk on the line of the vein, above West Cocklake (NY75414710), at its intersection with Cocklake Vein. The trial is said to have been a failure.

NORTH GRAINS CROSS VEIN

Direction N. 130 E.

The vein was discovered in about 1785 in coal workings. It was a weak vein, yet 1300 bings of ore were raised in the Great Limestone. Some of this was raised from two small E-W running strings that were found on the east side of the vein.[1] Thomas Archer and Joseph Pearson worked the vein early in the 19th century, but gave up in 1821. Robert Turner and Christopha Dixon tried the vein again in the 1830s, but production was small, eg. 39 bings in 1839/40, and they gave up soon after.[2]

References

1. Dickinson, 1821, p.12
2. Moor Masters' Reports, 1818-45

CARR'S CROSS VEIN

Direction N. 150 E. Throws down the north side 252 feet.

Loveladyshield Level NY75914614

North Grains and Blagill Cross Veins are combined in the eastern headwaters of Loveladyshield Burn. Following disappointment in its attempts to exploit a number of veins encountered in the region of Loveladyshield in the Nent Force Level, the London Lead Company drove a level from the west side of Loveladyshield Burn, near High Loveladyshield, in a NNE direction for 2000 feet to where it encountered Wellgill Cross Vein. It had cut Blagill Cross Vein at 1000 feet and Carr's Vein at 1500 feet. Blagill Cross Vein throws the north side down 352 feet. No ore was produced from these parts of the veins.

John Brumwell and Company got a considerable quantity of ore in about 1820 from a cross vein 60 feet east of Carr's Vein, but, as mine plans do not show extensive workings, it must be assumed that the success was short lived.[1] East of Carr's Vein, a level has been driven to the SSE, parallel with the vein, to test the ground north of West Cocklake for veins, but apparently with no success.

Reference 1. Dickinson, 1821, p.89

WELLGILL CROSS VEIN
Direction N.150 E. Throws the south side down 42 feet.

Slate Sill Level NY75414782
A level has been driven at about the horizon of the Slate Sills in the headwaters of the Foreshield Burn in a NNW direction to intersect the line of the vein. Nothing is known of its history.

In Loveladyshield Level, Wellgill Cross Vein was tested by driving one level to the NW for 550 feet, and another to the SE for 2,300 feet.[1]

Reference 1. Dickinson, 1821, p.89

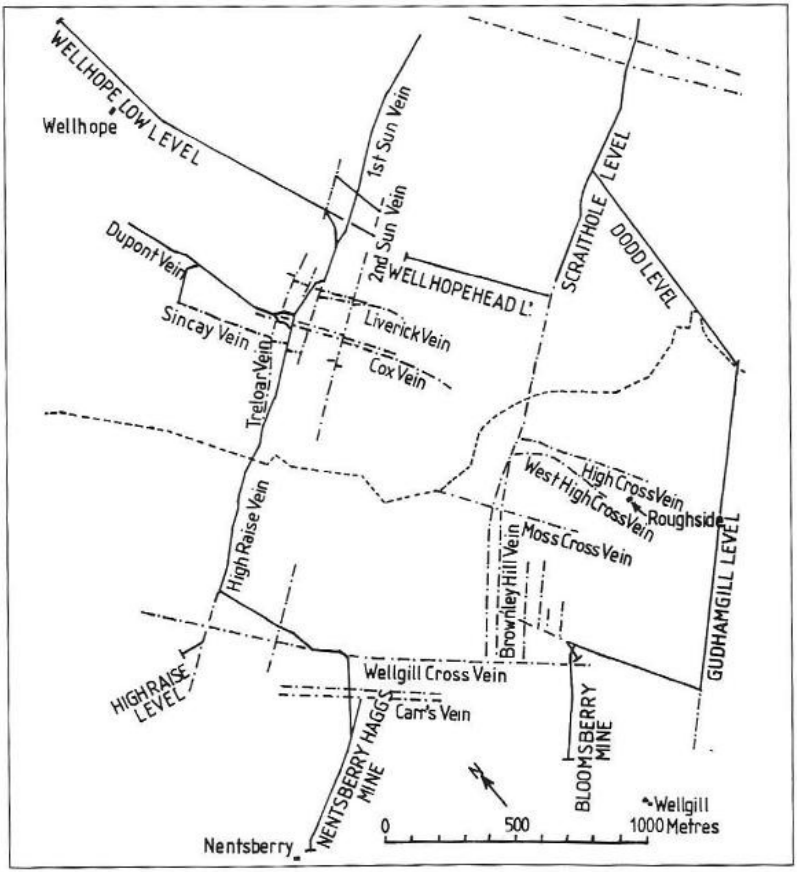

Fig.8 Nentsberry with the Northumberland Workings

COCKLAKE VEIN = BAYLE HILL VEIN

Direction N 40 E.

Very little is known of this supposed continuation of Bayle Hill Vein. A shaft near West Cocklake, at the intersection with Blagill Cross Vein, failed to find anything of value.

AREA NORTH OF THE NENT 5. NENTSBERRY

HIGH RAISE VEIN

Direction N 50 E. Throws down the NW side about 8 feet.

The Firestone Level NY76874591
High Raise Level NY76504583

This vein differs from the other Nentsberry veins in that it starts on the NE side of Nentsberry Green Cross Vein and continues through Wellgill Cross Vein to the county boundary, whereas the other veins terminate at the cross vein from the SW.

The vein was discovered in 1789 by the Brownleyhill Company. It obtained ore from the Firestone Sill, but, as it mined to the NE, the ore transferred to the Low Slate Sill, then failed altogether. The company tried the High Slate Sill, but got nothing. These workings were accessed from the Firestone Level. The company drove the High Raise Level, starting below the Great Limestone, but passed through Carr's Vein at 300 feet. It tried the limestone, but found little ore as the vein was filled with black plate and could not be fully got at because of water.[1]

By 1852, Nentsberry Haggs Level had reached the vein and a rise was made to the High Raise Level. In the Great Limestone the vein was two to six feet wide and not very rich, with the best ore being at the top of the limestone. The vein was worked up to the county boundary. Witherite and barytes were present in commercial quantities between 1250 and 2450 feet NE of Wellgill Vein, and these were worked by the Nentsberry Mining Company between 1895 and 1908, and then by the Lugdale Chemical Company, until the lease was taken over by the Vieille Montagne Zinc Company in 1913. After 1923 all the workings were in Northumberland.[2] For workings made across the county boundary, see 'Nentsberry Haggs Mine'.

References

1. Dickinson, 1821, p.95
2. Dunham, 1948, p.170

John Irwin's Crosscut is driven out of Rampgill Mine to the SE and runs parallel with the Great Vein until it cut Hangingshaw's Vein. It then follows Hangingshaw's Vein for 200 feet in the ground between the two parts of the Great Vein. A rise in the western part of the Great Vein connects Rampgill Mine with Smallcleugh Mine. The mine plan of this level shows that there are five small faults on the north side, within 300 feet of Hangingshaw's Vein, with throws of up to five feet. A second level out of Rampgill Mine, known as Hangingshaw's Level, first cuts Wallace's Vein, then passes under Handsome Mea Reservoir to Hangingshaw's Vein. Both these levels are the work of the London Lead Company, but at present no production information can be attributed to this vein.

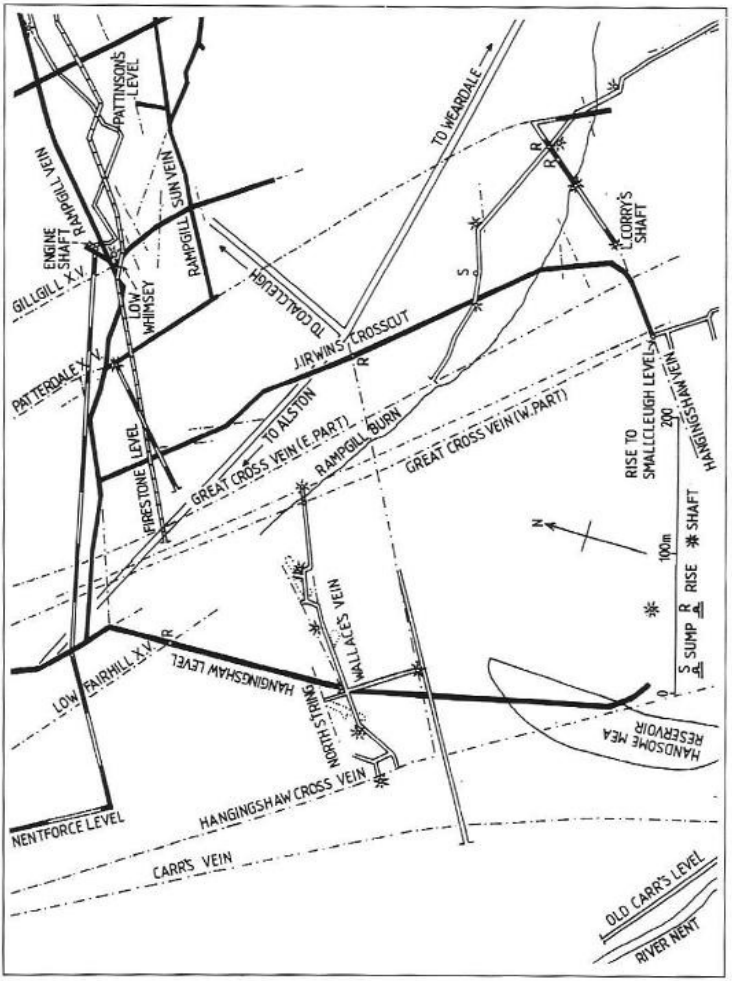

Fig.11 Rampgill Vein to Hangingshaws Vein

TODAY
The old level's entrance has fallen, but a stream of iron stained water still flows out of it. All the shafts associated with the level are blocked. Two shafts 350 feet east of Handsome Mea Reservoir are on the line of the vein, but are both closed.

OLD CARR'S VEIN
Direction, follows a sinuous course to the SW. Throws down the north side about 80 feet.

Old Carr's Level NY78544316
The vein outcrops in the Great Limestone on the north side of the Nent. It is, therefore, not surprising that it was known from early times. Being a cross vein, it would attract less attention than may be expected, for, until the latter part of the 18th century, cross veins were considered to be of little worth.

Prior to 1737, Carr's was leased by Sir John Myers who also held the lease of several other veins in the area.[1] Proposals for the vein were received from Hodgson, Hall, Whitfield and Haley in 1737, and the lease was granted to Mr Haley.[2] Mr Ponthoon, agent for Mr Haley, set on four men to work in the Carr's east of Nent.[3] George Pantoune, of High School, was the owner of Blackhall smelt mill, and was probably in partnership with Thomas Haley.[4] Carr's Vein, Cowslitts Vein and Fletcheras Vein were leased to Mr Haley. These were the only veins,other than Rampgill and Blagill, that were not leased to George Liddle. Mr Haley's ore was to be smelted at Nenthead smelt mill.

Wallace records that the vein was successfully worked at Old Carr's in the period 1764-1767.[5] Other evidence suggests that this may be an error. A document, dated 14th October 1765 and referring to plans for the development of Capelcleugh veins, states that Old Carr's Low Level under the Great Limestone had been driven 363 fathoms and that the shafts were run together. Also there were shaft workings for a further 246 fathoms along the vein, reaching down to the limestone, but these shafts were also run in.[6] The workings were obviously old at that time. This is confirmed by a report written in 1774 by Mr Hewetson, agent for Mrs Loraine, stating that the vein "*is much wrought by the old man but is now let to 4 men at 25s per bing and is at all Expenses to get ore where they can, but does not know what may be discovered*".[7] In 1768/9, 496 bings of ore were raised from Carr's Vein. The location of these workings is not known, but it is known that Carr's was in two leases, ie. east and west of Nent.[8]

A partnership of three local miners agreed to work in Old Carr's on the 25th June 1771 at 27s per bing, for five years, "*from a little stapple shaft at the mill pasturehead*" and to drive towards the Nent. This suggests that they were exploring the ground to the east of the smelt mill. In April 1772 they gave up, having made sufficient trial.[9] In 1780 Mrs Loraine's trustees sold Old Carr's West of Nent to a company of eight miners, including John and Utrick Walton of Nest and John Dowson for £205, as theirs was the highest bid.[10] Their success at the mine allowed them to be classed as great mine adventurers by Dickinson, for, though the mine was old and considered to be exhausted, upwards of 10,000 bings of ore were raised between 1780 and 1820.

NENTHEAD FIELDS NORTH VEIN

Direction, N 60 E. Throw small?

Nenthead Fields North Level NY77704388
Holmsfoot Level NY77644402

The vein was worked in the second half of the 18th century. Twenty five bings of ore were produced in 1769, but by whom is not recorded. It was not until about 1790 that significant quantities of ore were raised. John and Roger Walton mined about 1200 bings of lead ore from the vein in the Great Limestone near the outcrop. Like Nenthead Fields Vein, it broke up to the west and it changed direction following the NW strings that caused its break-up. The vein was said to contain considerable quantities of calamine.[1] Half of the lease was sold to Robert Jobling and Alexander Whaley in 1794 to let them try Greengill Cross Vein. The latter partners drove a level, starting under the Great Limestone, but soon entering it because of the dip. They continued the level up to the cross veins.[2]

Whaley and Shaw leased the vein in 1830, waiting for the Nent Force Level to cut it, but gave up the lease in 1832.

Two levels are known to be driven to the vein, but nothing is known of their history. Nenthead Fields North Level is assumed to be the original level. It was driven on the line of the vein at the base of the Great Limestone. Holmsfoot Level was driven in a SSW direction from the south side of a small stream which runs by the side of the track to Donks Hall. The horizon is slightly below the Great Limestone. The purpose of this level is not obvious. It may have been to gain some depth to drain the vein and it is not certain that it reached the vein.

References

1. Dickinson, 1821, p.217
2. Ibid., p.221

DOWGANG BURN WEST CROSS VEIN = NENTHEAD FIELDS WEST CROSS VEIN = GREENGILL EAST CROSS VEIN = BLACK ASHGILL CROSS VEIN

DOWGANG BURN CROSS VEIN = BRIGAL BURN CROSS VEIN = GREENGILL CROSS VEIN = (BLACK ASHGILL HEAD CROSS VEIN?)

GREENGILL WEST CROSS VEIN

NUNNERY CROSS VEIN

Direction N 150 E. Greengill Cross Vein throws down the south side. The amount of throw is not recorded, but must be about 50 feet. Nenthead Fields West Cross Vein throws down the north side. The amount is not recorded, but is thought to be about 25 feet. Greengill West Cross Vein must have little throw. No information is available for Nunnery Cross Vein.

There is some confusion regarding the naming of these veins. For convenience, the most easterly vein will be referred to as Nenthead Fields West Vein, the centre one as Greengill Cross Vein, and the westerly one as Greengill West Cross Vein.

Towards the end of the 18th century, cross veins were established as viable propositions. Old Carr's Vein had been known for many years and had been worked at a profit in the middle of the century. James Johns had found good ore in Black Ashgillhead Cross Vein, and Brigal Burn Cross Vein had yielded large quantities of ore for John Hill and Partners. Such success encouraged others to take the cross veins seriously. In 1779, Robert Jobling and Alexander Whaley bought half of the lease of Nenthead Fields North Vein and obtained the lease for part of the cross vein under the name of Greengill Cross Vein. They drove a level under the Great Limestone, which soon entered that stratum, and drove up towards the cross vein. They encountered a cross vein that they had not expected. This was named Greengill East Cross Vein. The vein was leased in three parts. Greengill East Cross Vein was leased, as already mentioned. Nenthead Fields West Cross Vein section was leased to William Greenwell and Company, who worked Nenthead Fields Vein, and the south end was leased to the Dowgang Company as Dowgang West Cross Vein. The three companies raised a great quantity of ore, though the vein became poor against Greengill and Dowgang Veins.[1] The vein was very rich in the Great Limestone, but had not been tried at higher levels by 1805.[2]

Jobling and Whaley's level was driven along Nenthead Fields North Vein and, when it cut Greengill Cross Vein, which was their original objective, the vein was poor. They drove along it to the south for 1200 feet and found nothing, and would have given up the trial except that, at that time, i.e. circa 1800, the Dowgang Company obtained good ore in its section of vein up to their boundary. Work was resumed and they found good ore which continued to Dowgang boundary.

The Dowgang Company discovered Greengill West Cross Vein in about 1815 by crosscutting from Greengill Cross Vein, but they were unable to make it pay, as the ground was hard and the vein weak.

It is probable that Robert Jobling, of the Jobling and Whaley partnership, was related to William Jobling of Messrs Jobling and Company who built Blagill smelt mill at Langley. Alexander Whaley was involved in a partnership with Thomas Shaw. The latter was instrumental in the establishment of a zinc smelter at Langley in 1817. The Langley Zinc Company worked Dowgang Burn Cross Vein (= Greengill Cross Vein) and Greengill West Cross Vein for calamine and lead in about 1820.

To the SW, the Brigal Burn and Dowgang Veins terminate at a cross vein called Nunnery Cross Vein. No ore has been got from this vein and almost no information is available as to its direction or throw. Surface mapping suggests that the throw must be negligible, however, and the lateral continuity of the vein is in doubt, owing to lack of evidence.

References

1. Dickinson, 1821, p.221

2. Sheffield, 1805, p.253

RYTON MILL NZ188636

The mill was built in 1690 by the Ryton Company to smelt lead ore from its mines on Alston Moor. The Company was established by Dr Edward Wright with others, most of whom were Quakers. Dr Wright, who was a physician and metallurgist, had experimented with the use of a reverberatory furnace to smelt lead ore and with the extraction of silver using coal as the fuel. Ryton mill was built near the site of the present railway station at Blaydon. It was described in a report of July 1706, written by S. Davies, Urban Hall, Edward Wright and John Haddon, thus:-

"*Ryton Cupola - Well contrived and built, but rather too small for the furnaces in it - 3 ore furnaces, a reducing furnace, 2 refining furnaces and a slag-hearth. Thomas Pattinson head smelter. Good stocks of bricks, clay, etc. Had several meetings with the inhabitants of Ryton about the way to the Cupola and the smoke of it being a nuisance. Stated the case to Councillor Barnes who gave opinion in our favour. Left it to Jeremy Hunter's management. Gave parson of Ryton 10s. for the poor*".[1]

By the time the London Lead Company was formed in 1705, the silver from the Ryton Mill had gained a very good reputation.

After the London Lead Company started to use Whitfield Mill in 1706, Ryton Mill was sold to the Blackett family, who worked it until the middle of the 19th century. After the Blacketts took over the mill, it was usually referred to as Blaydon Refinery. Smelting was probably done at their mills situated closer to the mines.

The London Lead Company retained its interests in the original wharf on the River Tyne at Stella, near Blaydon, using it as their shipping wharf until 1836.[2]

References

1. Raistrick, 1933-34, pp. 2. Raistrick, 1977, p.132

STANHOPE MILL NY98604150

It is not clear whether Alston Moor ore was smelted at Stanhope smelt mill or not. A letter of the 23rd June 1782 from Thomas Ramshay, concerning the organisation of Lord Carlisle and Company, shows that there was a proposal to smelt the Company's Alston Moor ore at Stanhope. The situation was that Lord Carlisle owned royalties at Stanhope, including a smelt mill. He also had a quarter share in the Company. Mr Gilbert, who with friends held half the shares in the Company, felt that confusion may arise if both the Company's ore and Lord Carlisle's ore were smelted at Stanhope Mill. He suggested that it would be better if the whole of the mines, with the exception of '*Mr Cleaver's share in Old Aldston mine*', were worked as joint property, Lord Carlisle being paid an annual rent for the smelt mill.[1] The Duke of Bridgewater and Lord Gower, however, who held a quarter of the shares, had no objection to taking shares in the Alston Moor Mines but declined having anything to do with Stanhope.[2] It is not known how these differences were resolved, neither is it known what arrangements Lord Carlisle and Company made to have their ore smelted.

References

1. N.R.O. A68a. Howard Family Documents. 2. Ibid. Ref. 88 item 10. h.

TEAM REFINERY Location unknown

It was built by G. Liddle in 1737/8, costing £373 12s 7½d up to that date. It started to operate in the third quarter of 1738.[1]

A series of assays were made at "the Refinery" by Ra. Dalton and Mr Salter in February and March 1739. On 14th March, Mr Salter made trials, using ore and litharge, and extracting silver from five different mines. When considering his refining needs, Liddle believed that the Refining House should hold four extracting furnaces, capable of processing 900 fothers of lead per year, and one reducing furnace, which would process 760 fothers per year.

The following advertisement, which was repeated on April 7th, appeared in the Newcastle Journal of Saturday February 17th, 1750, and probably refers to Liddle's refinery:-[2]

To be lett
against May Day next

A WATER MILL, *at Low-Team Bridge, in the Parish of Whickham, (very commodiously situated ear the River Tyne) lately used in refining of Lead, but may be appropriated to many other Purposes. Enquire at Ravensworth Castle.*

References

1. Liddle, 1737, p.38-40
2. The Newcastle Journal No.567, 17/02/1750

TYNEHEAD MILL NY75903710

Tynehead shares the distinction with Cashwell Mill of being the most remote in the region. It was built about the end of the 18th century to smelt ores raised in the Hill Liberty. In 1796 it was owned by Utrick Walton and Company and was said to be producing 8000 pieces of lead at that time.[1]

In 1821, when the mill was occupied by John Lowry, it had two ore-hearths, one slag-hearth, one refining furnace and a reducing furnace.[2] By 1888, the mill also had one calcining furnace.[3]

References

1. Nall, 1888, p.45.
2. Forster, 1821, p.419
3. Parson & White, 1892, p.456

WHITFIELD MILL NY79905880

The early history of the mill is not known. It was already being worked before the visit by Davies, Hall, Wright and Haddon in 1706, which led to its acquisition by the London Lead Company. All that is known of it is that, at the time of the visit, it was smelting lead ore using hearths powered by water. Thomas Pattinson, chief smelter at Ryton, suggested that it could be used for smelting slags. Costings revealed that a saving of seven shillings per bing could be made by smelting Alston Moor ore at Whitfield rather than at Ryton. It was also found that the landlord, Esq. Whitfield, would encourage the development of the mill, there being sufficient water and room available for extensions.[1] Whitfield Mill became the main smelt mill for the Company. It was converted to reverberatory furnaces, a fact