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OLD MINES AND MINERS OF RENFREWSHIRE : GLIMPSES OF THE PAST.

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SYNOPSIS

Renfrewshire's mining history originated in the 13th century with the working of scraps of coal about the Renfrew Muirs. Mining grew to come of age in the 19th century, crumbling to the present.

Minerals exploitation was well established by the 17th century and there is probably little wonder in this as the deep stream beds of Renfrew shire must have made local building stones and coal seams easily traceable. The coal seams lay in close proximity to the local limestones and sandstones which provided building materials, all being easily quarried at outcrop. The developing exploitation of coal is suggested by the early mention of the Hurlet Colliery, established by 1634, though it employed only 5 miners and can have served little more than the immediate district. The rent for the colliery under lease from James Lord Ross was 1,400 merks, about £77 15s. 6d. per annum.[1]

The main constraint on the minerals and stone production in these early mines and quarries was cost and difficulty of working, a problem seen clearly in the 18th century exploitation of the freestone along the banks of the River Levern, near Neilston. The outcrop of stone was at the bottom of the river banks, which were precipitous and it was only with the greatest difficulty that stone could be brought to the top of the banks and thence to Neilston. This in turn led to a shortage of local building stone for this Renfrewshire village, where as a result building proved expensive.[2]

The simple problem of moving materials economically also affected the limestone workings of the area. Hand barrows which were portered by two men, were the common method of removing limestone from quarry faces and mines in Renfrewshire to c1770. It was only then that wheel barrows were introduced, a labour saving device that seems to have come from canal building. Crawford identifies this as the source of introduction and the connection appears to have been through links between the Renfrewshire and Dunbartonshire limestone industries, for the driving of the Forth & Clyde Canal through the latter county would have been directly noted by visiting Renfrewshire limestone burners, keen to pinch ideas that might ease limestone mining. Wheel barrows were used in William McDowall's drainage scheme for the Lochwinnoch area, c1773, and their use must have made the surface exploitation of mineral or other excavation that much easier.[3]

Collieries varied from river bank scrapings on coal outcrops to deep mining. Mining became spread across the county, varying from the deep and technically advanced mines about the Estates of Maxwell of Poll ok and the Earl of Glasgow, to the river bank burrows of rural Renfrewshire and the tiny coal and limestone

workings of Kilbarchan. Johnstone and Quarrelton were important mining centres, so too the pockets of workings about Renfrew, Neilston and Uplawmoor.

The 18th century saw a great opening up of the rabbit hole mines into burgeoning collieries, the money pots of umpteen small industrialists. The more general availability of newspapers encouraged active advertising of mineral plots and therefore eases the identification of the many early minerals masters.

William Pagan of the Wester Sugar House, Glasgow, was typical of the many small industrialists who enjoyed a country seat on the profits of their industry and then chose to add to it with the mining of their property. Pagan leased his Bogton estate, in Cathcart, to an experienced coal master named David Dick at least to 1763 when an offer of lease was made. This identifies that coal was put out for calcining local limestone also worked about Cathcart and which must have fetched a pretty penny with its demand as an agricultural manure.[4] It is also likely that Bogton coal found its way to the Wester Sugar House.

Limestone was also the link for the exploitation of Neilston. Sir Robert Pollok's workings close to the Glasgow to Irvine road were offered on a 19 year lease from 1 January 1764. Day levels were used to work the limestone and coal of an ell thick was worked at 42 ft. with two pits down. This 3 ft. coal was used to calcine local limestone, but some likely went for sale in the local villages.[5]

Similarly Lyoncross was worked for both coal and limestone and the proprietor Robert Gibb was trying to attract attention to its potential with a lease handled by John Wilson, writer, Paisley, in 1780.[6] This appears to set minerals exploitation at a county level but any potential Lyoncross may have had was destroyed by the difficulty of market access. Cuthbertson, the owner of the Lyoncross Colliery at the end of the 18th century, worked the coal for his own use, for he could not cart it out except at a considerable loss.[7] Such tiny back-wood workings found it difficult to compete with big limestone works established close to habitation. Thus Hawkhead Limestone Works was a successful mining venture close to Paisley. At that works the limestone was mined underground and apparently was free of water. Once more there was the benefit of local coal for the burning of the limestone. William Wilson the estate factor of Hawk head handled the leasing.[8] Market potential for limestone was further recognised in the building of a limestone works at Bogton, on the west bank of the Linn of Cart,[9] coal for calcination coming from Robert Couper's colliery close by.[10]

Cathcart was a hive of activity and minerals leases are traced throughout the late 18th. century, with the setting of coal and limestone at Hagtonhill in 1767,[11] which had within a decade developed into an enterprise exploiting the Main, Smithy and Splint coal seams under the entrepreneurial talent of William McDowall of Castle Semple,[12] who was actively involved in other mineral workings in Renfrewshire. The limestone works in Cathcart was in the hands of John Montgomerie by 1785,[13] and enjoyed a thriving trade shared with other local lime enterprises. The lime from Holmhead Limestone Works was being sold at 9/- per chalder by 1785, providing some profit for its lessee

Archibald Marquis.[14] These activities naturally created a demand for coal for lime burning; thus when Hagtonhill coal was offered for lease in 1790 it paid a rent of £38 per annum, appreciable for the period.[15]

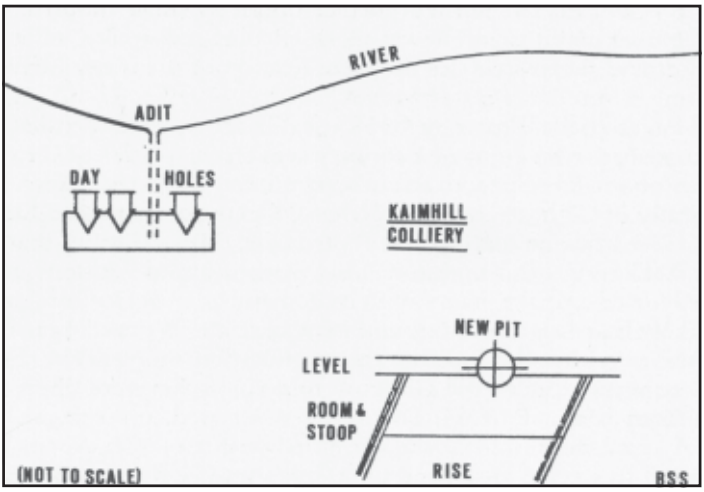

Figure 1. *Old mine workings about Kaimhill, Renfrewshire, derived from a sketch plan on the back of papers accompanying Patrick Johnston's survey of Kaimhill* 12 *April 1828. These papers are within the Cunningham of Craigends Papers, and are deposited in Strathclyde Regional Archives.*

Limestone was therefore an important local industry and it comes as some surprise to find how long it took for some works' leases to be taken up. Blackhall Limestone Works was a case in point for it took some months for it to be taken under a new lease, considering that Matthew Burn had been working it successfully up to 1780.[16] But the reason was probably the increasing number of limestone workings generating a great deal of competition. The combo workings of coal and limestone by then common throughout Renfrewshire, not only reflected the quirks of geology that provide accessible limestone and coal reserves, but also the demand for limestone as an agricultural manure. Mineral masters were guaranteed sales and the extensive exploitation of the Caldwell Policies was typical of the vigour with which mining was being pursued.[17]

Renfrewshire's mining consolidated itself in the 18th century and in the last decades there emerged a powerful firm, the Bellahouston & Dumbreck Coal Company, that epitomised the widening horizons of local mining.

The Bellahouston and Dumbreck Collieries lay right on the periphery of Renfrewshire, the Coal Company working the pits was a partnery of William Wardrop of Dumbreck, Maxwell of Pollok and Andrew Walker and William Wilson. Walker was an experienced coal master and Wilson the Company's cashier; the monies for the enterprise came from the pockets of Maxwell and

Wardrop.[18] In 1793 the coal was being sold at the colliery at 9d. per hutch. The proximity of Paisley and the fact there was but one toll gate, offered it as an attractive market opportunity.[19] To widen their markets further the Company created the Bellahouston and Dumbreck coal road, that was later extended to Pollokshaws, and was financed both by subscription and colliery profits.[20] Now known as the Dumbreck Road and an integral part of Glasgow's road and motorway network, this coal road was a pointer to how local industries were creating a long term infrastructure. Andrew Walker withdrew from his partnership in the Bellahouston & Dumbreck Coal Company on the 31 January 1797, he choosing to invest more heavily in workings he had leased to the north of Glasgow about Possil; that shows how mining influences were spreading geographically.[21] The partners of the Bellahouston & Dumbreck Coal Company were from that date Sir John Maxwell of Pollok and William Wardrop. William Wilson continued to act as cashier, and fulfilled factorial and legal duties for the partnership.[22]

Andrew Walker was not alone in spreading his nets, and James Nimmo another Renfrewshire coal master was attracted to the market potential of Glasgow. Nimmo graduated from the "country" colliery of Williamwood to work the important Barrowfield Colliery of William Hozier, this lay immediately east of the old town, effectively right on Glasgow's doorstep. Williamwood was not a tiny rural pit by any standard for there was a hefty steam pumping engine and two horse gins on the mine that lay between the River Cart and the main road to Newtonmearns. But like all "country" collieries it enjoyed just so much of a market and Nimmo wished to do more than just supply coal "to boil the pot."[23]

Local opportunity was varied, the numerous contractors employed about Haw'khead and Househill show clearly how intensively some areas were wrought, in this case supplying to the industrial centre of Hurlet.[24] The coal and limestone workings were equally busy and that the contract for Hagtonhill envisaged 12 - 15 hundred tons of Limestone per annum suggests no poverty of existence. Indeed the contract appears to have been a form of sublease given by John Yuille, working Hagtonhill and to have allowed this markets must have been strong.[25] Coal for calcination came from William Cook's Bogton Colliery,[26] which later passed to the expanding empire of John Brown of Williamwood. Brown who had partnered Williamwood with Nimmo then worked it for his own ends and then presumably channelled the profits into minerals exploration about Bogton in 1825.[27] Minerals activity was then so intense that leases were advertised as far abroad as Edinburgh, with William Patrick w.s. sharing legal office with the Glasgow firm of Hill, Graham & Davidson, in mineral leasing in 1825.[28] But within two decades the mining had ceased about the Linn of Cart, no doubt it had been the promise of ironstone reserves that had first encouraged interest. but the constant difficulty of working the area economically precluded success.[29] The old mining districts were getting left behind, especially with the promise of greater and easily accessible reserves elsewhere. Both Neilston and Barrhead increased in importance, in the former area 3 pits were operating in the 1840s with a weekly output of 1,200 tons of Gas and Smithy coals allowing local industries such as the Cofthead

Bleaching Works easy access to fuel.[30] The industrialisation of both of these towns demanded fuel and encouraged many local pits, such as that of North Brae Farm, owned by Maxwell of Pollok.[31] However they were eclipsed in terms of industry by the remarkable concentration of activity about Hurlet.

At Hurlet, coal, ironstone, limestone and alum shales were all taken from below ground. All enjoyed separate leasing and there were many clashes of interest, resulting in litigation of the Earl of Glasgow as proprietor. Back-biting was further encouraged in that surface holdings were often under a separate tenure and land use and mineral values were often at odds.

The Alum Company rented all the alum found, or at least claimed a right, they had however no right to the ironstone, coal, nor limestone, found in the same pits. It was therefore the case that different sets of miners were active at the same time in anyone pit, working different seams and often at odds with one another and their masters. Considering these points it is possible to gain a better appreciation of underground life about Hurlet in the mid 19th century. It was of considerable intensity, so much so as to necessitate the use of 3 horse gin winders, that could lift 20 tons in an hour. Not the cheapest machines to run if only with the price of horse fodder, they point to a very busy mine and certainly it must have been with an expected daily output of 16 baskets of coal for each miner in 1842. It was the highest setting in Scotland for which they were paid only 3/3d. per day.[32]

The working area was considerable, there being miles of passages, and numerous shafts. These were of varying depths such as Waterloo at 282 ft; Leggin shaft at 138 ft; Hardfauld shaft at 135 ft; Crossmill shaft at 129 ft; and Maggie's Hill shaft at 84 ft.[33] The drawing shafts for alum were concentrated close to the actual works, but like the coal miners the alum workers had to use a stair pit about a ½ mile distant of the site.

This stair pit was just a big black hole in the middle of a field, measuring 6 ft. by 6 ft. and surrounded by a low picket fence, from it a ladderway of tiny steps descended into the void. At shaft bottom low passageways went off into the workings, their walls damp and gloomy and their floors a soppy muddy mess, it would have been difficult to stay upright in the semi-crouching procession of miners into the works. The low roof would have opened up slightly as glimmering lights in the darkness revealed the workplace of some coal miners. There men would be picking at coal by the lights of candle stubs stuck in their caps. Occasionally they would all retire rather hurriedly at the sharp warning call of a master miner, then a gunpowder blast would bring down more coal from the work face.

These coal miners were cut off from others in the mine by a maze of passages; some wet and others dry; some having rails along the floor for drawing; some high enough to walk upright and others so low as to necessitate crouching almost on all fours; some several feet wide and others just wide enough to allow one person to pass at a time. There was perhaps 4 - 5 miles of this labyrinth, for the most part old coal workings, cut up in room and stoop pattern, rising or falling according to the direction of rise or dip of the workings.

Limestone miners would have been found busy on the hard stone and near naked (or their constant labour. The white stone would have reflected the lights

of their candles stuck on their caps, the whole a ghostly shimmering radiance. In the intervals of rest they would sit hunched on low heaps of stone or rubbish, smoking their short pipes:

> "Another group of miners, warming some oatmeal "Parritch" over a small fire, and enveloped in the smoke, formed a curious patch in the dusky landscape ..."

It may be assumed that this area was relatively gas free, for the free abandon with which pipes were smoked and porridge cooked is surprising considering the fiery nature of the Hurlet seams. But within a decade the contempt with which gas was treated would have a rude shattering at Nitshill.

Walking on through the workings the considerable wastes already present by the 1840s must have been quite surprising, revealing how intensively Hurlet had been worked during the 18th century.

A crumbling powdery substance would have dropped round the face and shoulders whilst passing through the low passages, this salt would have increased further into the wastes, it being alum in its most basic form. It could also be found as slaty rocks with layers of a greenish white crystalline structure laced through it; also it could be got as a brackish material where coal had been dug out and the alum salts formed. It was, though, never found in this form below where the coal had been.

By 1849 the southern part of these workings was being drowned out, even visitors to the pits in the early 1840s commented on the bitter saline waters in the southern workings which were heavily impregnated with alum and copperas salt.[34]

Squabbling over what was worked and the redundant technology of the area left all mineral exploitation uneconomic. The Renfrewshire alum shales were abandoned for those of Campsie and elsewhere, perhaps just in time for the Hurlet mines system was falling about the ears of the miners, crumbling into oblivion like the House of Usher. It was helped to this end by the over happy use of gunpowder which blew great holes in the roof of the workings and caused runs to the surface. The result was untold claims for damages and the area about Maggie's Hill was left like a great basket of eggs. Then the Crossmill section chose to close up due to the great roof pressure forcing down the roof pillars into the fireclay pavement. This in turn forced up the fireclay floor by back pressure and the working space steadily filled up, thus old Hurlet was physically shut down over much of its area by the middle of the 19th century.[35]

Attention then turned to the nearby Househill Estate which had also enjoyed a long period of exploitation, principally for ironstone which had been worked with vigour from the early 19th century when Clyde Iron Works had been attracted to the site as a source of raw material.[36] The ironstone with all the locally wrought ores found use in the works at Nitshill, where at least 2 furnaces can be identified by 1841 with a powerful 70h.p. blowing engine, the engine also delivered to the roasting ovens via heater pipes and twyers.[37] The Nitshill site also had workers' cottages and smithy and wright's shops serving the pits and adjacent works.

Estate leasing of Househill in 1841 gives a picture of the value of the local minerals by their lordships, which were for:

Riddled coal,	6d. per ton.
Dross coal,	1½d. per ton.
Unriddled coal,	4d. - 4½d. per ton.
Alum,	l0d. per ton.
Copperas,	l0d. per ton.
Calcined ironstone,	9d. per ton (22½ cwt).
Lime,	1/- per chalder.
Fireclay,	4d. per ton.

Unriddled coal came from the Victoria Pit at Nitshill, its working expenses had been 2/8d. per ton, including lordship. In 1840 the average price at pit head had been 6/1¾d. per ton, a good earner, but the lordship of lime hints that it remained the most marketable of products, both as a flux for iron working and as a garden manure.[38]

Minerals marketing from Renfrewshire reveals the solid basis of local export on which the mines consolidated their growth. Lime was always the premier partner of the growth cycle and, surveying markets, Renfrewshire lime is traceable from the early 18th century in use in the "Old College" gardens of Glasgow University; for example 3 chalders of Blackhalllime were used for manure there in November 1716.[39] Hurlet limestone rose from 9/4d. per chalder in 1792,[40] to 16/- per chalder in 1815,[41] but showed no fall-off in demand. Lime from this works was distributed along the Glasgow, Paisley & Ardrossan Canal, which, though it never did get to Ardrossan, and was cut-off at Johnstone acted as a minerals route to Glasgow for the many Renfrewshire pits. Limestone was sold wholesale at 14/4d. per chalder, a reduction of 1/8d. on the normal selling price, when paid for within 3 months. Retail price under 10 chalders was a 1/- per boll. The proprietors were John Wilson & Son at Hurlet and with such wide selling practices they must have been assured of their markets.[42] Building about Glasgow certainly helped them with a consequent need for lime as a basis for cement.[43]

Yet the Arden & Darnley limestones which were of such poor quality that they did not allow the mixing in of sand for lime cement, sold just as well. It was generally used for the rough casting of buildings about the area but also enjoyed some trade about Glasgow, Greenock and Paisley,[44] presumably for manuring. Lime was much exported from Renfrewshire and the Canal was a prime vehicle, the making of the Househill Stone basin in Paisley as a primary point of minerals distribution, reveals the canal's great importance to the industry.[45]

Coal has seen much more localised uses, from its use in the fire place of the Cathcart Snuff Mill to dry tobacco in 1751,[46] to smithy, bleaching field and domestic use about Neilston and Uplawmoor.[47] Proto-industrialists organised for their coal supply, for example Robert Hay, a bleacher of Nether place in the Mearns, financed with others trials for coal in Pollok and they advertised for coal masters to work the coals found on advantageous leases. Hay and his friends offered to help the miners build a local road system so that coals might more easily get to market, so not only did coals go for custom but the very

customers were coming to look for coal themselves.[48] This was particularly seen with the Coats Factory in Paisley for they swept up Nitshill to supply their fuel needs. Parish demands provided good markets too and the Cowglen coal was selling from 4/6d. to 5/6d. per 12 cwt. cart in the mid 19th century.[49] This all created an empire of many small coal merchants about the district, often additional to their other interests as with Robert Anderson, spirit dealer and coal merchant at Crofthead, Neilston, cross financing his businesses.[50]

The coal industry was primarily localised as distinct from the ironstone and limestone workings. But at times of severe coal shortages in other districts it sprung to the limelight. The Glasgow coal blight of the late 1830s saw 6 sloops from Greenock and another from Gourock up the navigable River Cart at Paisley, clamouring for export coals that could not as normally be supplied from Glasgow. Steel's colliery at Barrhead was one of the primary sources for the coal, it being carted over the steep Brownside Braes, a difficult route which hints at some desperation for the coal. It may also be noted that Snodgrass had 30 carts employed to get his coal from Johnstone into Paisley.[51]

Coals were also regularly gifted to the poor and Alexander Graham's Cathcart coal working was a 19th century gift horse to the poor of Eaglesham.[52] Coal distribution to the poor of the village of East Kilbride in the winter of 1817 was undertaken by Alexander Graham of Limekilns, who had direct involvement in the Williamwood Colliery, at that time.[53] Even the capitalists Coats were prepared to give coal to the poor, at least at the expense of William Hill of Lintmill Bleachworks, who financed 30 tons of coal distributed to the poor of Neilston in 1876.[54]

The quantity of coal binged about Renfrewshire would never have been possible but for the development of local mining technology, which can be surveyed briefly here.

Horse gins were common by the late 18th century, Pagan had one at his Bogton Colliery by 1770, working on the 72 ft. deep shaft.[55] Pits of any depth required mechanical drainage and though many like Bogton had been drained by day level, once they went below the level then steam power for pumping was a must. Bogton had a steam engine pumping sometime in the 1770s but it was offered for sale sometime in the 1780s, perhaps having proved too expensive.[56]

Technology was expensive and in an effort to encourage the working of their minerals, many estate owners financed the building of winding gins, as for example Sir John Maxwell of Pollok, who financed the gins placed for the Arden Coal & Limestone Works, near Eastwood in 1792. The gins wound on a 42 ft. deep shaft, working a 4 ft. thick coal seam.[57] The output levels probably dictated the introduction of horse gins, as would the shaft depths encountered in following seams. Depths varied from the 42 ft. as cited above and similarly at Neilston,[58] to over 200 ft. by the mid 18th century.[59]

Large pumping engines are identifiable by the early 19th century, the Dumbreck Colliery engine had a 28 in. diameter cylinder and pumped 174 ft. of 9 in. pipes. Sold in 1806 the sale also identified the use of horse gins for winding and the combination of animal and mechanical labour was typical of collieries throughout the Scottish lowlands.[60] Cowglen had a similar large

engine pumping its pit, the engine with a cylinder diameter of 24 ins lifted water 93 ft. through 8 in. wide pumps. Steam was provided from a boiler of 9½ ft. diameter, quite possibly a "hay stack" boiler.[61]

The first steam winder was identifiable at Williamwood by the 1820s and may well have contributed to the folding up of the colliery as an over costly extra, for the workings ceased in 1822.[62] Both engines and horse gins shared a common problem and that was their excessive running costs, whether from the price of fodder or just plain up-keep. Combined pumping and winding engines were an answer and Cowglen had a condensing engine of that type.[63] Interestingly it was a compact semi-portable type and may have been moved about the colliery site as necessary, where pits ranged from sub-surface to 60 ft. and even to 240 ft.

Both wind and water power were also tried on account of their economy. The use of a windmill at the Blackhall Limestone Quarry, near Hurlet, was a particularly good example of avoiding fuel costs to maximise profits.[64] Local coal had probably been burnt out by the presence of a dolerite sill close to the quarries.[65] The lack of an immediate supply of fuel would have cost the lessee the price and carriage of coal from Hurlet, it was therefore economic sense to install a simple windmill pump.[66]

Economic considerations were also the reason for the tiny water powered mine up stream from the Crofthead Mills, Neilston. The freedom of adequate water supply meant there was little need for a costly engine. Also getting it to the spot would have been a major strain on this tiny colliery's finances.[67]

Getting coals to market was an equally serious technical point, and the development of an early railway to link the industrial centre of Hurl et with the Glasgow, Paisley & Ardrossan Canal, was an imaginative approach to this problem. Formed of 9 ft. long bar iron rails it proved successful and it also saved on the cost of making a cut from the main line of the canal to the chemical and colliery site. Canals gave greater mineral haulage per horse but the building of canals was expensive and barges required two men and a boy in attendance, whereas one man could lead a horse hauled train along the waggonway. Therefore basic economics dictated the waggonway's conception, the reduction in number of horses and employees to the transport of minerals was a consideration in the labour intensive alum and mining industries.[68]

Who were the people who strained and toiled to put all these minerals on to the market? There are surprising clues to their personal identities an example being the subscription list to Joseph Galbraith's 1765 printing of the Holy Bible. The names of some Cathcart miners who contributed to the cost of this early Glasgow printing appear there, namely John and James Park, Robert Watson and William Montgomerie.[69] Cathcart was quite a centre of activity at that time and advertising for miners was not uncommon, though it was not:

> "meant to encourage workmen to leave their master by whom they are employed."[70]

Miners however did migrate in considerable numbers into the Renfrewshire mining district. The need to organise the growing work force is shown in the advertising of posts for colliery overseers.[71]

Figure 2. *Below ground at Hurlet Colliery, c1843.*

Labour force structuring invariably stood on plenty of toes and squabbling is traceable from an early period s the miners became more and more politicised.

The political power of the minerals masters was never as complete in the West of Scotland as it was in the east, where miners were a bullied and disaffected lot from years of pariahship; the west of Scotland miners often fought back or went their own way about things and this was often the case in Renfrewshire. The lack of legal control on the mining population can be demonstrated in the general difficulties experienced by many coalmasters in getting their men to work. Thomas Kennedy of Pennel, who worked coal and limestone at Boghouse, Kilbarchan, in 1713, suffered much from the vicious rivalry of local miners; local evidence suggests more time was spent busily intimidating rivals than working.[72]

The miners felt little of the bondage that restricted the freedom of so many Scottish miners. The defiance of men to their masters is also shown in contemporary correspondence. A letter from John Smith of Paisley's Gallowgreen Colliery to Houston of Johnstone, reflected his failure to retain an effective labour force. Smith could do little when his miners left him in the lurch, except beg for the loan of men from Houston's Colliery at Johnstone. Miners would appear to have enjoyed some freedom of dissent.[73]

The degree of servitude was related to the size of the mines, the necessity of constant labour supply, and whether women and children were employed. The levels and limits of some workings were so very restricted as to be one man

undertakings. Kilbarchan probably had this form of exploitation, where the demands for bringing in the harvest would also have restricted mining opportunity. The labour demands of large collieries were much more specific, necessitating the employment of women, where each miner had to provide his own bearers, as often as not his own wife and children. The Jordanhill Colliery on the periphery of Renfrewshire, employed women from an early date, for there is the story of three women being killed below ground in the 17th century. The discovery of old workings in the 19th century revealed the passage of bare foot women by their prints in the mud.[74] The shallow workings of Quarrel ton also employed women and children, with a labour force of about 60 persons.[75] Bondage was that bit more complete where the whole family as wage earners were dependent on the mines for a livelihood.

Newspapers provide clues to the work experience, accidents providing just as effective copy 200 years ago as they do today. Investigative journalism gave horrifying insights into every day working conditions, never revealed in the company business books and seldom before the Courts.

Accidents give clear clues to the nature of the working environment. Relative to the Renfrewshire area statistical returns for the period 1740 - 1860 delved from newspapers, identify the principal causes of accidents to mishaps within the shaft. 50% of identifiable accidents were locally due to this cause. This suggests that much mining was pursued just within the threshold of technical ability, it also suggests a large degree of carelessness. 24% of accidents for the same period were due to strata falls, the highest incidence being when mining was in the friable geological conditions about rock-head in the 18th century.

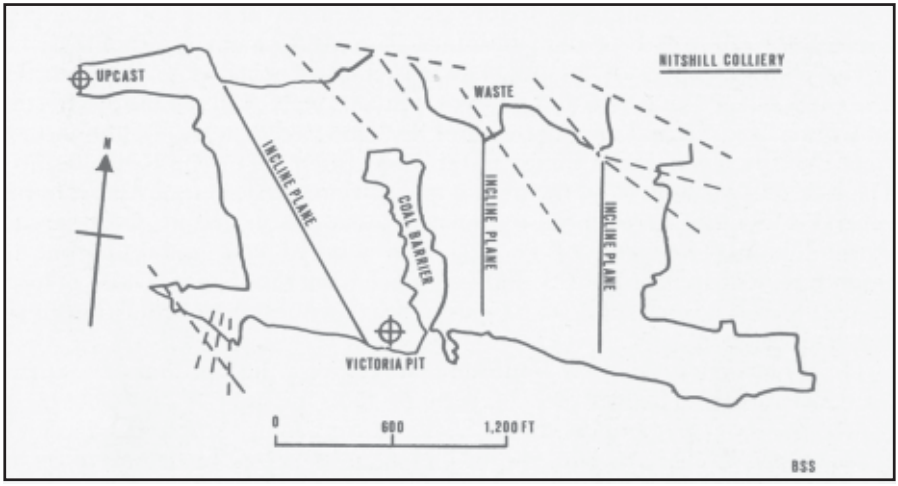

Figure 3. *Nitshill Colliery,* 1851. *Derived from a lithograph plan of Nitshill Colliery, produced by John Storey, lithographer, in the wake of the disaster. The plan shows underground inclined planes, the shafts, fault lines that are here shown with dotted lines. The scale bar demonstrates the substantial area of mine workings by the middle of the 19th. century.*

Carboniferous sandstone was doubtful in its load bearing ability, and limestones little better. 10% of accidents were due to flooding out of the workings from the breaching of old wastes, though there were exceptions, notably Lochlibo Colliery destroyed by the loch waters of that name. Floodings were most common to the later period of mining, where many areas enjoyed secondary working, without a thought to primary locations. Miners proceeded blindly and though like moles they could know all the turnings and windings of their own work, lack of mine plans meant disaster could come suddenly from unknown and ancient workings. Reliable colliery plans were a little known luxury until the late 19th century and there remain many unrecorded workings. 16% of accidents were due to explosions, directly attributable to the geological nature of the fiery Hurlet seams.

Dividing the period 1740 - 1860 in three equal parts, reveals that 34% of accidents occurred between 1740 - 1779; 22% of accidents between 1780 - 1819; 44% of accidents between 1820 - 1859. Statistics show a pattern of early primitive workings on the threshold of technical ability, a middle period of consolidation, then a later period of capitalization to meet rising demand, that in turn almost outstripped technical ability, and even competence:

> "... no matter about the lives of five or six men, if we can save £50 a year on a blockhead of a manager, and another £50 or £100 through his harshness, certainly not by his assiduity ..."[76]

The miners' working environment was therefore governed by local geological factors, workplace conditions, managerial competence and response to market forces.

Accidents also provide clues to the proximity of local industries, as at Cathcart, where sheets from a neighbouring bleachfield were tied together in

Figure 4. *The sad reality of many mines and especially those of the Renfrewshire area, where the fiery Hurlet coal seam often brought disaster.*

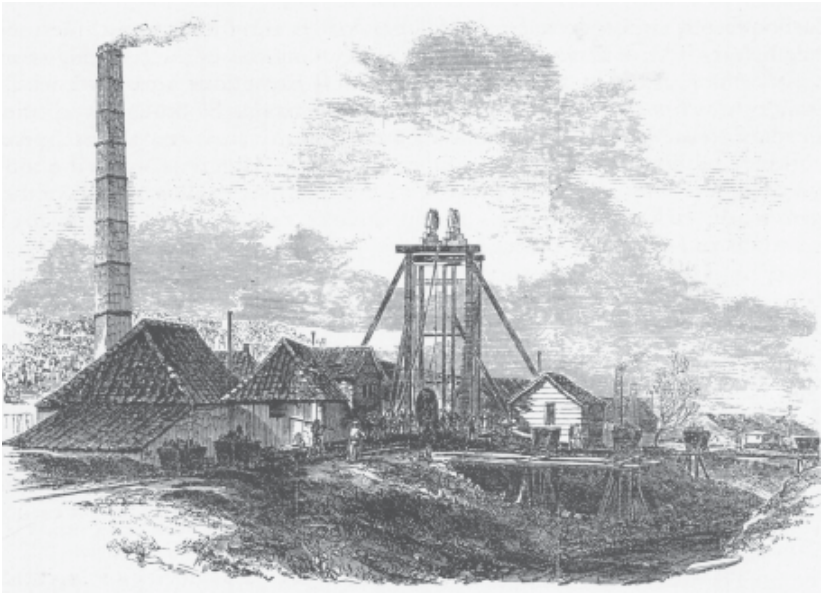

Figure 5. *Nitshill Colliery, 1851.*

a vain attempt to rescue a young woman fallen down an old shaft in May 1796.[77] Pits were common traps for the unwary and were a reason for the high incidence of shaft accidents in the coal mining areas.

Methane gas explosions began to feature from the middle of the 18th century. Renfrewshire's problems may be accounted for by less than adequate ventilation on firey seams which were seldom continuously wrought across a whole mining area. Simply there were always areas in the mines where ventilation was stagnating to danger levels. The Renfrew Colliery erupted in January 1804, a major explosion of methane gas killed 6 and burned out the pit, which remained alight for 2 days before the shaft could be covered to smother out the blaze or even think of getting bodies, which were still below days later. The colliery was out of use for the rest of the year, at least until an inspection party of the owner and 3 others went down to inspect the workings with the intention of re-opening. The men were all caught in a further vicious explosion but apart from flash burns they escaped.[78] Renfrew had never enjoyed full exploitation and this tiny and explosive working was effectively knocked out for a long period. Hurlet was the site of an equally vicious explosion on the 22 April 1805, when 17 were killed in a blast that wrecked the colliery and shut it down for many days. Indeed it was 2 days before all the bodies were got out and an initial rescue had ended fatally with the general failure of ventilation after the explosion. But mining eventually continued and the proprietor Wilson was soon advertising for new men and contractors for the colliery.[79]

Quarrelton and Johnstone both suffered regular and major fires below ground from spontaneous combustion of the inflammable seams. Generally without

fatality they did though cause problems. Low ground on the north side of the road to Beith was attributable to a fire which had burnt out the pillars and caused a sit or subsidence. Johnstone was well alight over areas of the waste workings by 1808, a fire which could not be controlled by the usual expedient of closing the shaft to block out the air. In an effort to control the burning area, it was sealed round by walls placed between the support pillars of the room and stoop system. The walls were made airtight by a thick coating of lime plaster and the fire was for that time successfully contained. Fires were an age old problem for Semple commented of:

> "... seeing smoke rising out of one of the old waste pits, the coal having taken fire below ..."[80]

Methane gas explosions and fires plagued the Johnstone mining area throughout its long existence. Yet the colliery had one of the earliest ventilation fans of which there is record. It was circular with vanes working horizontally inside a casing, which was fitted air tight over the pit mouth and hand worked. Its effect extended three quarters of a mile. Part of the workings when it was tried were on fire and the fan was strong enough to draw the flames and heated air towards it with such effect, that men were able to get behind the drawing air and erect a barrier wall to contain the fire. The colliery was also free of carbon monoxide.[81]

Nitshill featured as a killing ground from the 1830s, with a major explosion at Doves Colliery, on 19 August 1832, killing 4 and injuring 3. This accident was due to middle management pig headedness, for the overseer would not believe the men there was gas in the workings, believing they wished the day off as it was Reform Jubilee Day in Barrhead, and thus for most a local holiday. Rennie, the overseer, bullied and cajoaled the men into going back into the workings and full of bravado he carried a normal lamp. The resulting explosion brought local villagers running and the dead and survivors were got clear. Rennie and two others lay dead on the turf, Abraham Thomson one of the injured was carried home and put to bed, a lamp knocked over on him as he lay there burnt him again, this time to death.[82] Nitshill's horrors did not stop there, culminating in the 1851 disaster which did more to alert management and the populace generally to the state of the miners' workplace than any other accident to that time.

The first warning of the explosion of 15 March 1851, came with a sudden rush of air through the workings, there were 63 in the mine of whom all but 2 died in the next few minutes.

Messrs Coats' colliery was known to be fiery and precautions had been taken to brattice work areas and put up deal stoppings to channel the air to the faces. Messrs Coates were proud of their mine, confident in the ventilation and happy that a model be made for the Great Exhibition of 1851 that it might be seen how good they were. Confidence bred contempt and with cold weather, they put out their ventilation furnace to save on fuel. They had therefore chosen to rely on natural air current, which in theory was adequate to feed the working faces. But it did not cover 70 acres of waste; there methane gas very soon built up. This filtered into the impaired air feed of the pit and as the pit was not subdivided fully, it was only a matter of time before methane gas wafted to working areas and ignited on the miners' lamps.

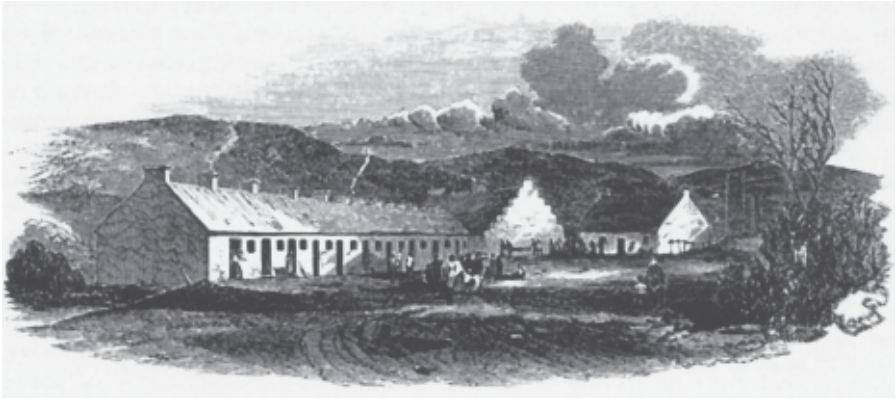

Figure 6. *Nitshill Village, 1851.*

The cause of the accident was well summarised in Cayley's evidence to The Select Committee on accidents in coal mines (30 June 1853):

> "They trusted it to the winds of Heaven; there was no artificial system. They had not had the furnace in for 3 months."

Quite simply over confidence brought complete disaster.[83]

In the wake of the disaster a performance was held at the old Theatre Royal in Glasgow. The highlight was "Guy Mannering" and the "Daughter of the Regiment" the part of Maria being played by the pin-up of the day Miss Isaacs. This performance was probably one of the earliest benefit shows for a disaster.[84]

The tides of disaster also came with floods flashing through the workings taking all before them. Quarrelton was flooded out on 2 May 1818 when water broke through from old workings, drowning 5 out of7 men and boys, the two who were rescued were got out after 12 days, indeed almost back from the dead, the last of whom could not be got till 4 June.[85] In October 1860 a similar scenario killed another 5 men. It is notable that one of the rescuers Alexander Aitken, was a son of a member of the 1818 rescue team, and like his father had shown exceptional bravery in bringing men out along levels where the water was within 3 ins. of the roof.[86] That both father and son were involved in separate rescues at 42 years apart points at the long associations that mining families might have with particular collieries.

Presuming that mining ceased till the wastes and workings were drained, this suggests that no operations were possible even to the rise of the workings, which must have been a financial strain for small workings.

Similarly, the disaster at the Lochlibo Colliery, in 1792, was due to water but from a different source, where mining through weak ground following a coal seam at a shallow depth below the loch, brought the water in on the workings. On 29 March 1792, a total of 7 people, including some sightseers, were in the colliery workings, when all were drowned as water flashed through

the workings, when the water of Lochlibo breached the weakened roof strata. It is difficult to believe there were no warnings, from for example increased water percolation, or did the roof always leak and it was accepted as a daily problem of life? Whatever was the case the pit was proceeding well beyond the threshold of caution, pointing clearly to how demand for profit outweighed judgement. Popular reaction to the disaster was of some note, for a total of £161s. 8½d. was collected in what was then a very poor parish, for the bereaved families.[87] The workings were a total failure and the weakened parish economy took a pounding. The mining about the side of Lochlibo could not be pursued due to the low level of pumping technology. Technical ability only allowed the water to be cleared from that area in a secondary working of the old site in the 19th century. These workings saw the introduction of powerful steam pumping engines and the opening up of several deep shafts on the side of the loch. Once more too much of a chance was taken and water movement once again breached weakened strata and flooded out the workings on 3 July 1833, this time without fatality but with the loss of 80 jobs and a further body blow to the local economy.[88]

The Lochlibo Coal Company then turned its attention to the hill above the loch and close to the village of Up law moor, where mining operations became so intense that a horse gin was replaced with a steam winder. It seems it then proved possible to finance further investigations along the seam dip and below the loch. A powerful pumping engine was used to drain the working flooded in 1792 and the breach was sealed in 1843. Once the water had been totally drained, miners went on to clear out the old workings. A skeleton was recovered from the pit on 9 September 1843 and interred later at Neilston, a blunt reminder of the original disaster.[89]

The real interest of this account is how the new found technology of the 19th century enabled miners to cross the thresholds of depth, technology and danger, which had been denied them before 1830. Mining science was nothing but the perception of the problems to be overcome. However, in December 1844 an old woman was killed whilst collecting a few coals about the pit top for her house fire, she was knocked to her death down on the shafts at Quarrelton by the “pit kettle”.[90] Both her husband and son had been killed at the colliery in previous years, the advancement of science really meant very little to the mining families tied to the pits by the capitalistic demands of the 19th century. What might be called “The Kettle Killing” was truly more typical of local disaster than the headline grabbing floodings at Lochlibo or explosions at Hurlet and Nitshill. Equally brutal were the geological accidents, generally sudden and unexpected as when the roof fell during tea break in the colliery at Househillwood and killed 7 men and 2 boys in August 1839.[91] Science could not win against the unexpected, nor could it cope with the senseless as when a group of boys dared each other to jump an open pit at Hurlet and one fell short.[92] Mining was seldom forgiving and the Renfrewshire mines were typical of all others in this respect. Newspaper sources more often provide a sorry catalogue of disaster than any other news, and if they did, it was often to denigrate the miners for political activity.

The Barrhead experience was typical of labour disputes with the management attempting to break the strikes with black leg labour and the miners responding to that threat.[93] As an example, miners at Orr's Barrhead Colliery struck over wages in 1837, after a threat to reduce their daily wages from 4/6d to 3/-. Orr used local textile workers as black leg or "nob" labour, for being generally poor they were more than glad to work for the 3/- offered.[94] The strike folded under such pressures but sowed the seeds of brutal retaliation as when drunken miners beat a man to death in the Main Street.[95] Labour troubles plagued the district and were often sorted out with clubs and sticks. Shortly after serious rioting in which 4 were badly hurt, a dead man was found down an old shaft on the edge of the old town of Barrhead, and close to where the rioting had taken place. The cries of murder and calls for lynch law justice against the miners eventually met with the admission that the dead man was an habitual drunkard, who had probably fallen to his death of a drunken foray.[96] The social experience of scapegoating the miners continues to the present day. Historically the district's pay patterns that saw all miners paid the same no matter their skill,[97] developed a lumpen proletariate, poorly paid and smouldering with resentment. This often resulted in violent attacks on pits, such as at Hagg's Castle Colliery on 18 February 1855. The engine house was set alight that early morning and the coal hutches sent crashing down the pit on to the cage to wreck the shaft head.[98] The blowing up of colliery offices at Pollok and Paisley were similar gestures of a brutalised work force.[99]

Having begun this story with quarrying about the river banks of the Levern near Neilston, some aspect of local quarrying may usefully be detailed. Stuart Rais, near Barrhead, appears to have been the principal source of early building stone for much of the area. James of Abercorn used it for building about Paisley,[100] and town extension generally dictated a greater value for freestone about the district. Thornley and Hurlet were other local sources and there were strong connections to the minerals entrepreneurs John Wilson & Son, Hurlet.[101] Factory building about Mile-end, Barrowfield, close to Glasgow, generally encouraged the working of Hurlet for building stone and as forementioned its extensive reserves of limestone.[102] Common ownership and exploitation of coal and freestone was accountable for by the best coal seams being about rock head, as at Stuart Rais,[103] and Nitshill. Coal seams were exposed in the old Nitshill Quarry and attracted many amateur coal miners for coal to boil the pot. In 1838 some local children playing at mining were killed in a fall in one of these "private" pickings.[104]

Boylestone Quarry also finds its creation about this time, when Barrhead's local bard, James Fisher, lamented the toil-some work of stone breaking there, for a pittance of 6d. per day relief money in a trade depression.[105]

The quarries about Eastwood became the main centres of activity from the middle of the 19th century. Opened up over a wide area the stone produced went for building stone and also for cutting as cisterns for bleaching field use. A sizeable work force was maintained with quarriers getting 2/6d per day and labourers 2/- per day.[106] Interestingly quarry leasing about Braidbar identifies the legal firm of Montgomerie & Fleming, probably as a source of stone for

their west of Galsgow estate schemes.[107] Montgomerie & Fleming actively leased many mineral workings and were in some cases the actual owners. They rode on the back of Glasgow's development, a band waggon which did much for the expansion of the Eastwood quarries. Railway development which eased market access also did much for the quarries once the Busby line, later extended to East Kilbride and beyond opened.[108] Dugald Dove's Nitshill Quarry benefitted much from the opening of the line first to Barrhead and later on to Kilmarnock.[109] Salterland, worked by William Bowes, was another locally important quarry.[110] But Giffnock had always the pride of place and was quite the tourist treat with its massive underground quarrying network lighted with naptha lamps, carried on metal cradles. The massive quarries of Messrs Stevenson became a showground attraction and the workings were toured regularly in their time,[111] also in Baird & Stevenson's time. The quarry masters' clerk at the turn of this century was one John Livingstone Algie who was then 70 years old and had served the Company 50 years; almost as fossilised as the trees that could be found in the workings, then at about 60 ft. Galleries were massive and in places 40 - 50 ft. high and some 16 ft. wide. Transverse openings at regular intervals joined up this elaborate tunnel system. In 1901 the quarry employed about 280 men, the number fluctuating with labour demand, the quarry polishing machines worked 100 - 150 ft. of stone per day.

The rabbit warren of quarry tunnels provided many hazards for the unwary visitor, with old quarried pits which acted as sumps, almost the drowning pool for one young workman who took his sweet heart for a kiss and cuddle in the half lighted tunnels. A ducking and a timely rescue did little to dampen their ardour.[112]

Once quarrying ceased then the tunnels were tried for mushroom growing but it did not prove successful.[113] Curiously old mines not so far distant proved a source for other comestibles, albeit stolen boxes of Prince's Marsh Mallows dumped in the old day level at Spier's Bridge.[114]

This general overview of Renfrewshire's mining past does not allow an easy conclusion. Important points were the links developing between all aspects of industry, for with coal for fuel, lime for manuring and alum shale for textiles work, the district was a pot of gold for minerals masters. Renfrewshire has much hidden past and its industrial remains lie hidden in stream bed or by hedge-row, even to step off the beaten track reveals something new or should it be old, for there are many ancient shafts and day holes remaining on the edge of modernity. Electric suburban trains hurtle passed at least one extant rabbit burrow of a working and cross the horizons of many more. Perhaps the real conclusion of Renfrewshire's experience is that its industries got left behind, whether mineral or textile, the hurtling trains are symbolic of a society with short memories for its past, hurrying on and forgetting the roots of its enterprise.

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