

ART. XVIII. – *The Slate Quarrying Industry in Westmorland: Part One: The valleys of Troutbeck, Kentmere and Longsleddale.*¹

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ROUGH hewn pieces of slate have been used in the construction of buildings and field walls in the Lake District since prehistoric times, but the development of a roofing slate industry is of fairly recent origin. This article therefore concentrates on the eighteenth and nineteenth centuries when the demand for roofing and ornamental slates increased significantly.

Lake District slate was used to roof part of the Roman fort at Watercrock² and some medieval ecclesiastical buildings such as Calder Abbey, but the vast majority of buildings in the area were roofed with thatch or turf until the sixteenth century. It was then that some parish churches and town houses were first roofed in slate. In the seventeenth century the first slaters were recorded³ and Lake District slate was being exported from Peel Harbour to London where it was used by Christopher Wren at Chelsea Hospital and Kensington Palace.

The rebuilding of the larger town and country houses by the increasingly prosperous yeomen and burgesses, coupled with the improvement of many churches during the seventeenth and eighteenth centuries, considerably increased the demand for Lake District slate.⁴ However, it was not until the nineteenth century that cottages, smaller town houses and workshops were roofed in slate.

The development of the great industrial cities during the nineteenth century, increased the market for slate. Cumbrian slate quarries took a share but as is shown in the table below the area could not compete with North Wales.

Slate production by areas as a percentage of total United Kingdom production in 1896.

Area	Percentage
Wales	78·42
Scotland	6·41
Cornwall	4·46
North West England	4·42
Other areas	6·29

The small scale of the Westmorland quarrying industry at this time is shown by the fact that the county only produced 0·53 per cent of the national output and this was from the quarries at Langdale, Elterwater, Rydal and Caudale Moor, as well as those in Troutbeck, Kentmere and Longsleddale.⁵

It is clear that the slate quarries of Troutbeck, Kentmere and Longsleddale were of marginal importance nationally, but as well as providing a raw material for the building trade, they fulfilled a local need by providing an alternative form of employment to agriculture, thus allowing farming families to supplement their income by part-time quarrying.

Unlike North Wales where whole communities became dominated by slate quarrying, and incomes were supplemented by small holdings often on marginal land, the quarrymen of the three valleys were easily absorbed into the community, and very often they were members of families who had lived in the valleys for generations. For example Robert Rawes of Wet Sleddale who was the tenant of Wrengill Quarry in 1788 and probably of Mosedale Quarry as well, succeeded his father, William, at the latter. His son William also became tenant at Mosedale and his grandson Robert was indentured as an apprentice slate river in 1815.⁶

Quarrying did however involve some migration in to the valleys, as quarrymen searched for work. Jackson Stables was born in 1832 at Kirkby Ireleth, near the Burlington Quarries. After he had married a girl from Staveley he moved to Windermere around 1864. By 1868 his family were living in Kentmere. They moved to Langdale in 1875 and finally to Troutbeck in 1880.

Other quarrymen came from further afield. For example William Harmwell who was lodging with Jackson Stables at High Fold, Troutbeck in 1881 had been born in Cornwall. J. J. Thomas and John Owen, Managers respectively at Kentmere Head and Troutbeck Park, came from North Wales, as did other quarrying families at the time of the troubles associated with the Penrhyn Quarry strikes.

It is difficult to plot migration in the valleys because of the problem of identifying the quarrymen. In Longsleddale successive census returns do not reveal any. This may be because unskilled quarrymen referred to themselves as labourers, or quarrymen who were also farmers called themselves only farmers. In 1839 Robert Sinkinson's house and land in Longsleddale was assessed at £20, £8 more than his quarry at Wrengill.⁷ It looks as though he ran the quarries as a sideline, and his main capital was invested in his land, presumably because he was primarily a farmer. If the quarry owner was a farmer it would not be surprising to find that his quarrymen also farmed and called themselves farmers in the census returns and in the parish registers. The combination of quarrying and farming is well illustrated in Troutbeck where a number of quarrymen had very small farms – too small to be economic on their own without the supplementary income from quarrying. For example, in 1881 Edward Bland of Townhead farmed eight acres, Thomas Leyland of Thickholme farmed 21 acres, and Thomas Scott of Latrigg, where there is a small quarry, farmed 20 acres, and they all referred to themselves as farmers and quarrymen.

This tendency to combine occupations appears in a different form in Kentmere where it is possible to trace the occupations of men in the valley over many years and there are examples of people calling themselves farmers in one year and quarrymen a few years later. Edward Cowperthwaite, for example, was tenant at Parkbrow Quarry from at least 1852 to 1879 and possibly later. The evidence of the censuses and Trade Directories suggests that he frequently changed his occupation. In 1854 he was a quarryman, 1856 a farmer, 1871 a farmer and slate dealer, 1879 a slate quarry owner and farmer, 1881 a farmer and in 1884 a slate quarry owner. The truth is that he combined quarrying with farming at The Nook and Scale Meadows.

These same sources provide information about the houses lived in by the quarrymen. Accommodation does not seem to have been purpose-built as in many mining and quarrying communities. The fact that many of the quarrymen were local people, also occupied in farming, meant that they lived in traditional housing within the valleys or

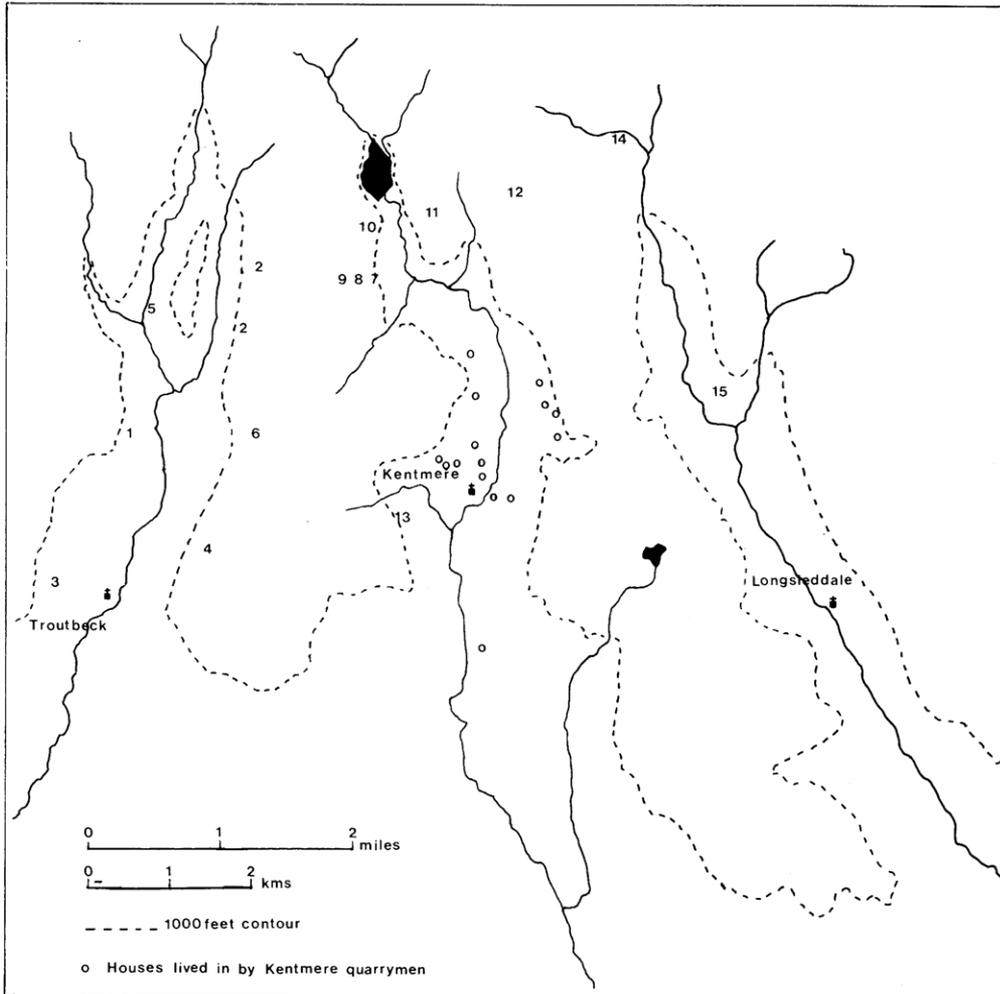


FIG. 1. – The valleys of Troutbeck, Kentmere and Longsleddale.

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|---------------------------|-----------------------------|-------------------------|
| 1 Kingate Quarries | 6 Yoke Quarry | 11 Jumb Quarry |
| 2 Troutbeck Park Quarries | 7 Cauldron Quarry | 12 Hart Crag Quarry |
| 3 Coat Syke Quarry | 8 Lamb Fold Quarry | 13 Parkbrow Quarry |
| 4 Appleshwaite Quarry | 9 Rainsborrow Crag Quarries | 14 Wrengill Quarries |
| 5 Tongue Quarry | 10 Steelrigg Quarry | 15 Stockdalebank Quarry |

nearby – this certainly applied in Kentmere and Troutbeck and the location of houses occupied by quarrymen not surprisingly shows a tendency towards the heads of the valleys near the quarries (Fig. 1). Incoming families were absorbed into the existing housing stock. In 1881, three single men who were working at the quarries were lodging with a gamekeeper and an agricultural labourer in Kentmere valley. In the early part of this century barracks were built at Kentmere Head and Wrengill to house the quarrymen during the working week. As some of the quarrymen at Kentmere Head lived at Staveley, accommodation at the quarry saved a long walk to and from work.

Lack of capital, coupled with the local nature of the work-force, meant that the companies did not build quarrymen's cottages. G. N. Pattinson's 1896 lease of Troutbeck Park quarry did make provision for setting up "cottages not exceeding six in number for the residence of the foreman and workmen". The site was specified, but no cottages were built, the people in question presumably having found accommodation elsewhere in the valley.⁸

Quarrymen were not the only workers to derive their income from the slate industry. Some men acted as carriers, carting the slate from the quarries to the markets. Most of these people seem to have combined their carrying business with another occupation. In 1757 the tenant at Troutbeck Park Farm was a carrier for the Troutbeck Park quarries, and in 1759 was concerned at his loss of income due to their closure.⁹ The quarries were too small to influence the development of communications, but new and improved methods of transport benefited the quarries. The toll sheet for the Kendal-Preston canal in 1819 included a rate for transporting slate, as the company hoped to attract some of the slate trade away from the coastal ships. The Canal Company, in an early prospectus in 1812 had estimated that 3,000 tons of slate could be carried annually down the canal from Kendal at an estimated saving of at least 14s. per ton on the cost of land carriage.¹⁰

Even though the Cockermouth to Kendal road had been turnpiked in 1761 and the main road north over Shap in 1753, the expense of road transport and the poor quality of the road surfaces which damaged the slates, meant that the markets for Lake District slate were either very local or in areas approachable by coastal ships. The Troutbeck Park slate in the eighteenth century was, as Blake Tyson has shown, sold locally or to customers whose business or houses could be approached by ship.¹¹

The two surviving ledgers from Parkbrow Quarry in Kentmere show how important rail transport became after the construction of the main railway line to Scotland and the branch line from Oxenholme to Windermere in the late 1840s.¹² Even though the majority of the customers of this quarry were fairly local (see Fig. 2), the railway was used extensively. For example Bromley's, a firm of monumental masons in Keswick, ordered 10 grave-stones in 1868.¹³ These were transported to Staveley station at a cost of one pound. Slate products were transported by railway to other customers in Penrith, Lancaster, Tebay, Warcop and Hackthorpe. In 1872, Sedgwick Gunpower Works bought 17 tons of slate, and carriage was paid at 5s. a ton to Staveley station. A small quantity of slate was sent to Scotland. James Field (later Field and Allan) of Edinburgh purchased 94 tons of peg slate at 25s. or 30s. per ton between 1868 and 1878, and this slate would almost certainly be sent by rail. A number of carriers were contracted to take the slates to Staveley station. Thomas Benson of Lowfold was active in the 1850s, and William Hutchinson, who was also keeper of the Temperance Hotel in Kentmere, in the 1870s.

One of the recurrent problems for Cumbrian industry in the eighteenth and nineteenth centuries was its lack of capital. With the well known exceptions of the Lowther development of the west coast coal mines and the Cavendish development of the Burlington slate quarries, industrial development was hampered by a lack of wealthy people living in the area with money to invest, and the unattractiveness of the north-west for investors from elsewhere due to its remoteness, poor communications and small local market. The slate quarries in the three valleys were largely local enterprises. Though the late eighteenth century owner of Troutbeck Park, Ralph Day, lived in London, he had married into the local family of Major Pigeon, and controlled the quarry

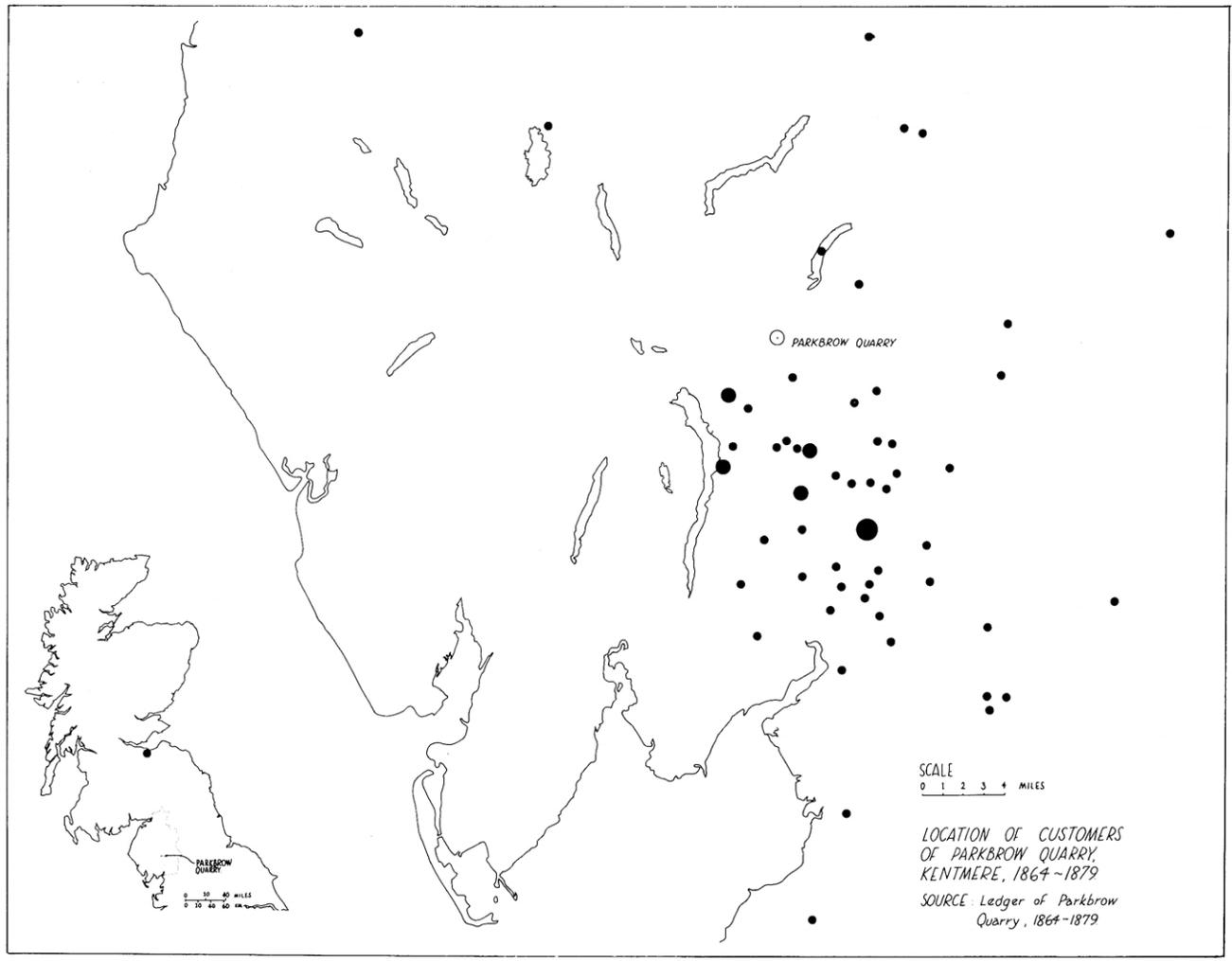


FIG. 2

through inheritance. Where the ownership of Wrengill is known, it seems to have been controlled by a consortium of local farmers. Applethwaite and Troutbeck Park were taken over by G. H. Pattinson, a Windermere builder; and in the twentieth century, Kentmere Head became part of the Tilberthwaite Green Slate Company, a larger grouping of Cumbrian quarries the directors of which included London businessmen, but for most of its life it had been owned locally. Lack of capital to invest in the quarries resulted in old fashioned work practices continuing long after they were uneconomic, and the quarries failed to develop in the same way as the larger Cumbrian ones such as Burlington and Honister, and the highly capitalized Welsh quarries. The benefit of local ownership though, was that when a profit was made, much of the money would have been ploughed back into the local community.

Labour relations in the valley quarries never reached the low level of distrust and animosity experienced in North Wales. By the late 1870s, about two-thirds of the total labour force in the Welsh quarries had joined the North Wales Quarrymen's Union, and strikes and lock-outs were a common feature of the period from 1874 to 1903. The same problems did not appear in the Lake District – in fact the Cumbrian quarries were able to increase production to compensate for reduced Welsh production. The reasons for the lack of unionization in the slate industry are not clear. It is not because of any lack of unionization in the north-west, because the last quarter of the nineteenth century saw coal miners, ironworkers and blast-furnace men all organizing themselves into unions. The answer may be found in the relative independence of the Cumbrian quarrymen and in the fact that each Company was able to make its own bargain with the owners. The small-scale nature of quarrying meant that it was very much a family or valley concern and the owners were not remote aristocrats or landowners, but local people. Another possibility was that quarrying and farming were interchangeable, and if quarrying was going badly it was easy to revert to farming.

The quarries in the three valleys obviously contributed to the economy of south-east Lakeland. The wages for skilled quarrymen compared favourably with other rural industries. In the 1930s a skilled riever or dresser could earn up to 15s. a day.¹⁴ Without quarrying, a number of farms may well have become uneconomic. Quarrying may well have delayed rural depopulation. The existence of the quarries obviously benefited local builders, who could buy their materials easily and without the additions of heavy transport costs. Cheaper building costs also helped all sections of the community, and builders such as the Pattinsons of Windermere found it advantageous to own their own quarries.

Even though quarrymen amounted to less than one per cent of the total work-force in Westmorland during the nineteenth century, the slate quarrying industry played an important role in the prosperity and stability of the valleys of the south-eastern corner of the Lake District.

Like most occupations, the slate industry has its own terminology, and this varies from region to region. The following section is included in order to explain the processes involved in quarrying slate and the terms used.

Slate is either quarried in an open quarry or a close head quarry. The open quarry is, as the name suggests, a quarry on the surface. A close head quarry is more like a mine, in that the quarrying is done underground. Close head quarries may become open quarries by the deliberate or accidental collapse of the roof.

The quarrying in close head quarries is carried out in chambers which are approached by levels. These levels, which are usually about 1.5 m high, are wide enough to take a rail track. The waggons were usually pushed by the quarrymen. The levels acted as drains so they have a slight downhill gradient towards the entrance which also makes it easier to push the loaded trucks outside. Many quarrymen preferred to work underground as work could continue throughout the year and it was considered to be safer.

The waste rock which often amounted to over 90% of the rock that was quarried, was either dumped outside on the quarry bank or piled up in disused parts of the underground workings, in which case it is known as deads. Old chambers were often filled with deads, an arched passageway being made to allow access to further workings.

Before the 1870s all drilling was done by hand by skilled workers called "rockhands". After about 1870 compressed air drills became available, though they were not used in the small Lakeland quarries until well into this century. Two "rockhands" were needed to drill, and fire the gunpowder. The large pieces of rock were then broken into manageable size by the "dockers up". Unskilled labourers or apprentices would then load the slate on to the waggons and push them out. The "river" who split the slate, worked in an open lean-to shed which was built on the quarry bank. The rails passed the front of his shed and slate could be tipped on to the ground there. The rails continued to the end of the quarry bank where waste slate could be tipped. The "rockhands", "docker up" and "river" formed a "Company" who negotiated with the quarry owner to work a particular part of the quarry for a certain length of time. The "dresser", who was the most skilled worker, used a "widdle" to shape the slate into individual slates.

The Company's profit depended upon the experience of the "dresser", because the number of slates which could be made from a piece of rock was dependent upon his skill. A single Company could not keep a "dresser" supplied with enough slate, so he usually serviced a number of Companies, possibly in several quarries. "Rockhands", "dockers up", "rivers" and "dressers" were known as Tradesmen

Many slates, of different sizes, can be made from each piece of rock. Slate roofs are built with the largest slates near the eaves, and the smallest at the apex. In the eighteenth century slates were sold in three qualities known as London, Country and Neam Toms – the latter being little more than rough flagstones. These names were later altered to Best, Seconds, Thirds. Slates less than 12 inches long were known as Pegs or Peggies. These small slates, which came in all three qualities, were especially popular in Scotland.

Until the middle of the nineteenth century the slate which we now refer to as green slate was known as blue slate. An expert quarryman will be able to identify up to 21 colours of so-called Westmorland Green slate. In Kentmere, Deep Olive was quarried at Cauldron quarry and Silver Grey at Jumb quarry – colours which the untrained eye would have difficulty distinguishing.

One further type of slate is sometimes met with in the Lake District. This is the wrestler slate. These are interlocking slates which were used to make the ridge of a roof before ridge tiles became common. They ceased to be used after the eighteenth century.

The Troutbeck Valley

Of the three valleys in south-east Cumbria, Troutbeck had the most extensive series of quarries.

The majority of the valley lying north of Troutbeck church lies in the area of the Borrowdale volcanic series of rocks, and various green slate quarries were worked here at Kingate, Troutbeck Park, in Troutbeck village itself and at Yoke quarry. There was also a blue slate quarry on Applethwaite Common. All these quarries are marked on the map (Fig. 1).

Kingate Quarries, Troutbeck (NY415053:NY417051:NY416058)

The present-day Kirkstone Pass road, as it climbs out of Troutbeck beyond “The Queen’s Head Inn”, is known as High Kingate, while below it a farm track used as a bridleway is known as Low Kingate. There is a small close head quarry above High Kingate and three quarries on Low Kingate.

One of these quarries was in use in June 1784 when an agreement was drawn up in which John Dixon of Townhead, the owner of “three Galoways (with acoultments for leading slate)” agreed “to lead slate from the Quarry at Kingate to the top of Kirkstone at the usual prices”. He had previously bought these horses from Mr John Harrison of Deepdale in Patterdale, and the £11 purchase price was to be paid over the following six months.¹⁵ This suggests that some markets lay to the north in Patterdale and the Eden valley.

It is not clear where this eighteenth century quarry was, as no quarries are marked on the 1859 O.S. map on High or Low Kingate.¹⁶ By 1899 the southernmost quarries on Low Kingate (NY417051) had become disused, giving them a maximum life of 40 years.¹⁷ The other two quarries may possibly have continued in intermittent use until the 1920s.¹⁸

Troutbeck Park Slate Quarries (NY430069:NY427063:NY427064)

These quarries, which are the most extensive in the valley, were worked from at least the 1720s.¹⁹ The history of these quarries in the 1750s has been described in a previous volume of these *Transactions*.²⁰

Ralph Day, the owner, closed the quarries in December 1755, and they remained closed with the advent of the Seven Years War which depressed prices. Day wrote in April 1757 that he would not “begin work again till the war ceases . . . every slater in London is poor”.²¹ Though Ralph Day’s interest in developing the London trade received a set back during the war, he appears to have misjudged the potential in the local market. In November 1757, Day had been notified that his tenant at Troutbeck Park hoped that the quarries would soon be reopened, because he was suffering a loss of income through the decline of his slate carrying trade, “and that they have a very great demand at Kentmere, Long Sleddale and other quarries for slate”.²² Neighbouring quarries seemed to be weathering the recession, and were no doubt taking advantage of Troutbeck Park’s closure.

Blake Tyson makes it clear that it took several years to clear the stack of slate that had accumulated by December 1755.²³ When and by whom the quarries were again started up is not clear. Some work had commenced by 1772 when George Harrison received £4 19s. 10d. for slate and John Harrison 17s. 6d. for leading it from Troutbeck Park to Low Wood.²⁴

The quarries may not have remained open for long, because in June 1779 slate was

bought from William Townson's quarry in Langdale for The Cragg in Troutbeck which suggests the Troutbeck quarries were not working.²⁵ However in July 1788 Joseph Braithwaite, John Brunskill and John Westgarth signed an agreement with Robert Rawes, slate merchant of Wet Sleddale, to deliver "all the London slate to be got at Troutbeck Park Quarry" to Greenodd.²⁶ In 1790 Brunskill and Westgarth made a further agreement with a local carpenter, George Hayton, to transport half of the London and Country slate that was to be shipped at Greenodd, to Barker Syke on the shores of Windermere.²⁷ These agreements ceased by mid 1791 and by 1792 the lease on the quarries had changed hands; Messrs. Townson and Benson paying a rent of two guineas for the "Slate and Flagg quarries in Troutbeck". This was considerably less than William Townson's rent for his slate quarries in Grasmere (£21), and Loughrigg and Langdale (five guineas).²⁸

It is not clear whether the quarries survived the slump in the building trade from 1793 to 1799 and the imposition of the Slate Tax in 1794. Whatever the situation during these years, the quarries were probably producing slate by 1828.²⁹ In 1836 Edmund Thompson was paid 7s. by the Troutbeck Chapel wardens for two loads of slate,³⁰ and no doubt he also supplied the slate that was used in the chapel in 1839 as in that year he was one of the two Chapel wardens.

The Enclosure Award map of 1842 shows that considerable quarrying had already taken place at the High Quarry, which was called Park Quarry³¹ (NY 430069). The sudden absence of records, the total lack of any quarrymen in the townships of Troutbeck and Applethwaite at the time of the 1851 census, and the closure of Wrengill Quarry in Longsleddale for economic reasons, suggests that quarrying ceased sometime during the 1840s. The 1859 O.S. map shows that there had, so far, been very little activity at the Low Quarry (NY 427063), but that the Low Quarry in the Gill (NY 427064) had been opened up.³²

The three quarrymen listed in the 1861 census could have been working at any of the quarries in the valley, or indeed the adjacent valleys. It is not until the 1870s that it can definitely be said that quarrying began again. This time it was on a completely new scale, and activity continued, without apparent interruption, until about 1920.

The 1881 census listed 11 slate quarrymen in Troutbeck and Applethwaite. Bulmer's Directory of 1885 named John Owen as slate quarry manager.

On 12 September 1896 the Troutbeck Park (Westmorland) Green Slate Company Limited, who had owned the Troutbeck Park quarries since January 1883, leased them to George Henry Pattinson, builder and slate merchant of Bowness-on-Windermere. The building firm was acquiring an interest in quarrying at this time as they also leased Applethwaite quarry in the same valley. The Troutbeck Park lease was to run for 21 years at an annual rent of £50.³³

The 2nd Edition Ordnance Survey map 1898 reveals that all the activity which had taken place during the previous 20 years or so had been at the Low Quarry which by then consisted of both open and close head workings on two levels. There were six riving sheds and as it was usual for each company of four men to have its own shed, there was a workforce of about 24 men. To this must be added the itinerant dressers, the manager and probably a blacksmith as well as a number of carters, making a workforce connected with the quarry of about 35 men. Applethwaite quarry and some of the smaller sites

were being worked at this time, making the number of people connected with the quarrying industry in the valley even greater.

George Pattinson was able to take advantage of a building boom in the Troutbeck and Windermere area in the last years of the nineteenth century; for example he supplied slate from Troutbeck Park, and lintels and drain covers from Applethwaite to Miss Dawson at the Cragg in 1898 and Colonel Dawson at Skelgill in 1898-9.³⁴

Pattinson's lease ran out in 1917. With the slump in the building industry during the 1914-18 War it is more than likely that any real quarrying activity had finished earlier. The 3rd Edition Ordnance Survey map 1920-1 shows all the quarries apparently closed, the railway lines taken up and the buildings roofless.

The majority of the activity in this last era of quarrying (1896-1920) took place at the High Quarry which was opened up on six levels. At the Low Quarry a new higher level had been opened, and there was continued activity at the main workings where a large open quarry had been formed by removing the slate that separated the top and bottom levels. The last working was done in the High Quarry.³⁵

Coat Syke Quarry, Troutbeck

The exact location of this stone quarry, which was being worked by at least 1852-3 is not clear. There are a number of small excavations in the area of The Cragg and Coat Syke in Troutbeck which fit the descriptions in the documentary evidence.

Sometime in 1868 or 1869 Robert Atkinson took the lease on this quarry, and in 1871 he became involved in a protracted dispute, the details of which are well documented.³⁶

On 4 December 1871, Mr Bintley of Kendal, who managed the quarries for the Earl of Lonsdale, who was lord of the manor, wrote to George Lumb, the estate's agent at Lowther, saying that Robert Atkinson, who was working this quarry, had spent £300 on opening it out, "which to a man in his circumstances is a most serious affair". This letter must have been in reply to a lost letter referring to Captain John Dawson's petition to have the Quarry closed. Captain Dawson lived at The Cragg in Troutbeck and had bought the land on which the quarry was already situated. On 25 January 1872, Atkinson wrote a letter to the Earl of Lonsdale in which he referred to Captain Dawson's petition and the assertion that the quarry was dangerous to the public because of its proximity to the road. Atkinson pointed out that the quarry had been worked for nearly 20 years with no accident to anyone, and that it was gradually receding from the road and was becoming deeper, so that the danger to the public "is now become nil". He said that it was a kind of rock which required very little blasting, and if blasting was required he put his men up and down the road to warn passers-by. He suggested that Dawson had acquired his signatures through misrepresentation of the facts and "through the most selfish motives". Apparently Atkinson had not been given a written 10 year lease, because of the bankruptcy of the previous owner. He admitted that his £3 rent was very low but pointed out that his was "the most convenient and accessible quarry in the neighbourhood" and with the current building boom would prove useful to the inhabitants as well as profitable to Lord Lonsdale.

Atkinson organized his own petition which was sent to Lord Lonsdale. In the preamble he pointed out that he provided employment for a number of people and suggested that if the quarry was to close, he should be permitted to open another quarry in the same vein further from the road which he was willing to do at his own expense. His petition

was signed by 75 people, some of whom were leading citizens of the area including H. W. Schneider, four Justices of the Peace and a large number of people associated with the building industry. However, Atkinson had the Troutbeck Churchwardens (Nicholas Wilson and George Brownrigg) and the Surveyors of the Highways (George Brown and Michael Benson) against him. In a letter to the Earl of Lonsdale on 22 February, 1872, they pointed out that Atkinson's petition was signed "by inhabitants of Bowness and Windermere, people who do not possess one foot of property in the Township, and who with a very few exceptions, are his workmen and do not even reside there and consequently can have no possible interest in its welfare". A separate letter from George Brown to Lumb pointed out that the people of Troutbeck would have to pay for repairing the road which had been churned up by horses and carts from the quarry. Their accusation about the signatories was not strictly true. Of the 67 identifiable people who signed the petition, 40 lived in Troutbeck and 27 lived elsewhere. Admittedly, most of the influential signatories came from Windermere.

It seems that though notice to quit was served sometime after 6 March 1872, Atkinson continued to work the quarry until March 1876. In October 1873 Bintley recommended that the quarry should be retained as "to shut it up altogether would be a public loss to the neighbourhood". Dawson threatened legal action and twice sent bills for damages to the Earl of Lonsdale, but it was not until March 1876 that Lonsdale agreed not to renew the tenancy in return for Dawson waiving all claims for damages.

Tongue Quarry, Troutbeck (NY423064)

To date there is no known documentary evidence for this small quarry which was opened up sometime between 1859 (1st Edition O.S. map) and 1899 when on the 2nd Edition O.S. map it is referred to as an "Old Quarry".

Yoke Quarry, Troutbeck (NY433056)

This quarry lies at a height of 500m on the Troutbeck side of Yoke, approached by a track which branches off from the Garburn pass. It would seem to be one of the older quarries as it is shown on the 1859 1st Edition O.S. map as it appears today, so it may have ceased working by that date, but there is no known documentary evidence as to when it started.

Applethwaite Quarry (NY423034)

Quarrying has taken place on Applethwaite Fell from at least the early eighteenth century. The slate in this area is of the blue variety, and it was extensively used for flag and building stone.

The earliest specific reference to slate from Applethwaite Fell is in 1707 when Troutbeck Chapel was flagged with slates from the quarries there.³⁷ Frequent references from 1650, to the re-slatting of Troutbeck Chapel, do not mention the source of the slate, but as Applethwaite Fell quarries were the nearest to the church, it is possible that some of the slate came from there.³⁸

The surviving remains of these early quarries indicate small scale activity and very limited investment. It would seem unlikely that anyone relied entirely on quarrying for an income – the quarrymen who took leases were probably farmers, seeking a means of

supplementing their earnings. That they were not always successful is illustrated by the problems of George Tyson in 1775. He had leased "the Quarry on Applethwaite Fell for getting Flaggs" from John Dixon on 19 July 1774. By 7 December 1775 he was £6 1s. 5½d. in arrears with his rent.³⁹ On the following day Dixon seized some of Tyson's property at the quarry. The inventory included seventeen pairs of six-holed railstoops and nine pairs of five-holed railstoops, as well as nine parcels of flags.⁴⁰

Nothing more is heard of George Tyson for in 1792 John Melwray was paying rent for the quarries. At that time the rent for the slate quarry (£3 5s. per annum) was considerably greater than the flag quarry (15s. per annum).⁴¹

Isolated references to flags suggest that some activity took place during the early part of the nineteenth century. In 1802 Thomas Storey was paid £1 10s. "for flagging Chancel and repairing Flaggs in the Church" – the flags themselves having cost £1 10s.⁴² In 1828 a rate of 6d. was levied on John Garnett at the Flag Quarry in order to repair Troutbeck Chapel and school. The difference in the value of flags and slates is shown by the 15s. rateable value of the flag quarry compared with £20 for Troutbeck Park slate quarry.⁴³

The 1st Edition O.S. map, 1859 refers to the two quarries on Applethwaite Fell as "Old Quarries", which suggests they were not being worked. The more northerly of the two has been worked subsequently, but the other one has not and reveals the limited nature of the early quarrying activity.

Quarrying on a new large scale began in the 1870s when Isaac Croasdell, Builder Monumental Mason and Letter Cutter, of Victoria Street, Windermere leased the flag quarry. An advertisement placed in the *Westmorland Gazette* for 21 May 1870 indicates that he had the right to market the slate even though he did not lease the quarry. From 11 June 1870, he leased the quarry and according to his advertisement he could supply slate cisterns, cattle troughs, urinals, malt-house and granary floors, dairy, larder and wine cellar shelves, window sills, door steps, curriers tables, verandah flags, garden edge stones, blue facing stones for walling and a variety of ornamental slate products such as flower vases, chimney pieces, gravestones and crosses.

In the later 1880s G. H. Pattinson acquired the quarry, and from 1896, when he leased Troutbeck Park quarries, he effectively controlled quarrying in the valley. From April 1890 to January 1909 the following advertisement appeared regularly in the *Westmorland Gazette*.

Applethwaite Slate Quarries produce roofing slates, flags, lintels, sills, gateposts, tabling, troughs, garden edgestones of the best qualities. Sawn edged flag floors (polished if required) to plan.

Write for prices to Geo. H. Pattinson,
Proprietor, Windermere

There has been no significant activity at this quarry since the First World War.

Kentmere

Kentmere Head Slate Quarries (NY444072 and NY450075)

There are several green slate quarries in the area around the reservoir in Kentmere.

These are known collectively as Kentmere Head. The two most important quarries lie on either side of the River Kent just to the south of the reservoir dam. That on the east side is known as Jumb Quarry, and that on the west as Steel Rigg. Both quarries have been worked in two levels and the last to close, in 1953, was Steel Rigg. A little to the south of Steel Rigg, at the top of the scree below Rainsborrow Crag is a large "cave" – this is Cauldron Quarry which has probably not been worked this century. Just to the north lies Lamb Fold Quarry which was opened between 1845 and 1848 to provide building stone for the dam. High up in Rainsborrow Cove are a number of small excavations. Over to the east of Jumb Quarry on the slopes of Kentmere Pike is Hart Crag Quarry, reputedly the oldest quarry in Kentmere. It is often difficult to distinguish between these quarries as the sources are too imprecise, usually referring to quarrying in Kentmere. The following account of the development of the quarry industry refers to Kentmere Head, and only where it has been possible to be more precise, to individual quarries.

Some quarrying was taking place at Kentmere Head prior to 1756 when the lease was held by Robert Wilson, who had also leased Stockdalebank and Wrengill quarries in Longsleddale. In 1756 Michael Mattinson and George Wallas, both of whom had previously been associated with the now closed Troutbeck Park quarries, undertook the management of the Kentmere quarries for the widow of Henry Fisher, the late lord of the manor of Kentmere, and in 1757 the enterprise was succeeding.⁴⁴

There is clear evidence that quarrying at Kentmere Head continued during the Napoleonic Wars. The Kentmere parish registers show that there were a number of quarrymen living in Kentmere village during the first three decades of the nineteenth century, though some, such as John Harrison, frequently moved house. Between 1812 and 1829 he lived at Fold How, Hallowbank, Scale and Rook Howe.

Hodgson's 1825 map of Westmorland clearly marks the quarries, and an engraving of Kentmere quarries, drawn about 1830, shows plenty of activity, probably at Steel Rigg.⁴⁵ In 1829 Hart Crag quarry was owned by Edward Thompson and Sons. In common with Troutbeck and Longsleddale, quarrying activity seems to have ceased during the middle of the century – there were very few quarrymen living in the valley at that time.

In 1875 Thomas Field of Leith, near Edinburgh, ran the quarries. His interest in these quarries may have been connected with the manufacture in Kentmere of peg slates, the small size of which was popular in Scotland. Between 1877 and 1882 Field owned the Kentmere Slate Company. In 1877 the quarries produced 182½ tons of dressed slate with a workforce of 10 persons employed above ground, and none below. In 1878, 229 tons were quarried with 10 men, but in 1879 a reduced workforce of six men only quarried 63½ tons.⁴⁶ Thomas Field died in 1881 and his executors attempted to let the quarries. Advertisements to this effect appeared in the *Westmorland Gazette* between 10 and 24 September 1881. There was obviously no response as on 1 October the advertisement was changed to read that the agent "will receive tenders in writing until a suitable offer is made". The executors still controlled the quarries in 1882 though they had employed a new manager, Mr Standing, who also managed Elterwater Quarry for John Robinson, and Cross Gates and Scott Copy quarries (in Langdale) for William Tyson.

Even though there were only ten men working at Kentmere Head in 1878, their productivity of 22.9 tons per quarryman per annum was higher than that achieved at

Westmorland's largest quarry at Elterwater where the productivity of the 81 men was 19·8 'tons'.⁴⁷

In the early 1900s the quarries came under the control of James Stephenson and Co. of Kendal. In 1905 the firm placed the following advertisement in the *Westmorland Gazette*:⁴⁸

Kentmere Slate Quarries
Produce Slates, Tabling, Throughs, Flags, Lintels
Garden Edge Stones, Quoins Etc.
Apply Jas. Stephenson & Co.
Quarry Owners,
Kendal.

By 1906 the quarries had become part of the Tilberthwaite Green Slate Company.⁴⁹ The Welsh manager John J. Thomas was not only a well known figure in quarrying circles, becoming Managing Director of the Company before his retirement in 1940, but also a distinguished local person who later became Mayor of Kendal three times.⁵⁰ At this time the quarry company was involved in several disputes with local residents. By 1908 it had become necessary to clear out a silt trap, situated on the River Kent just below the quarries. Though much of the infill was quarry debris, it was eventually agreed that the farmers downstream should pay for the cleaning out as they benefited from the trap because it reduced the danger of flooding further down the river.⁵¹ In 1913 the company was in dispute with William Little, the owner of Hartrigg farm, over responsibility for the maintenance of the quarry road, which passed over his land. An agreement drawn up in December 1913 mentions that the Company was improving and widening the road and could continue to use it for an annual rent of 10s.⁵² Also in 1913, Lloyd Rayner of Brockstones, representing the farmers of Kentmere, complained about a new pipe for compressed air which had been built on stone piers across the valley floor, and which was making the passage of carts difficult and was endangering livestock. John Thomas replied by pointing out that the work was still unfinished and several portions of the pipe would be covered up.⁵³ The introduction of this compressed air system for drilling and the building of an engine house indicates a new level of investment which tends to confirm Postlethwaite's observations in the same year that Kentmere was one of the principal slate quarries in the district.⁵⁴

The quarries remained open until 1939 by which time they were owned by the Westmorland Green Slate Company whose head office was in Keswick. Steel Rigg and Jumb were the last quarries to be worked and they produced two colours of slate – Silver Grey and Deep Olive.⁵⁵

Kentmere Head is one of the few quarries discussed in this article to continue regular working after the First World War. There is no surviving detailed information about the methods of working in the quarries in the 1930s. However, an article about Caudale Moor quarry on the eastern side of the Kirkstone Pass provides some relevant information as the slate quarry there was worked on a similar scale to that of Kentmere.⁵⁶

Caudale Moor quarry had been worked on three levels in the nineteenth century, but had closed down in 1914. It was re-opened in 1932 by the Hartsop Hall Mining Syndicate trading under the name of Caudale Slate Co. Ltd. (registered 1933). The Company had a capital of £3,000 and of its four Directors only one was local – E. T. Borlase of

Glenridding. Labour was drawn from Borrowdale, Langdale, Kentmere and Coniston, and because of the distances the quarrymen presumably moved to Patterdale. A five day week was worked which was normal in the industry in this area. New levels were being driven with dimensions of 6 ft by 5 ft, and two men could advance 3 ft per day using a 40 lb Jackhammer. Several Jackhammer drills were in use varying from 26 to 40 lbs. Compressed air, at about 90 lbs per square inch was delivered in 3 inch piping from a two stage Sentinel air-compressor three-quarters of a mile away by the main road. The drills consisted of hollow $\frac{3}{4}$ inch drill steel with sharpened crossbit. The deepest holes that were drilled were about 9 ft, and the heavier drills could bore at the rate of 10 to 12 inches per minute.

Saltpetre gunpowder was used when blasting for slate, but when driving levels Polar ammon gelignite was used. Gunpowder did less damage to the rock and was therefore used at the workface.

All the slates were produced on contract and the quarrymen usually formed a Company of four – two rockhands and two rivers. Dressers were also paid on contract, but they were not members of the company, as they usually served two or more companies. In 1933 the quarries employed thirty men.

Kentmere quarry reopened in 1947 as the Kentmere Green Slate Company with William Williams and two other members of his family as Directors. Quarrying continued at Steel Rigg, but a serious rock fall during the war made the bottom level difficult to work, and in 1951 a major fall in the top level meant that all subsequent activity had to be carried on outside. The quarries closed in 1953 partly because of the age of the staff, partly because of William Williams's reluctance to accept change – boring was again being done by hand, and partly because the scale of the enterprise was becoming uneconomic at a time when the building industry was increasingly turning to man-made substitutes. William Williams and an elderly colleague worked the quarry intermittently until 1956.⁵⁷

Park Brow Quarry, Kentmere (NY451037)

This blue slate quarry is situated to the south of Kentmere Hall, and was working from at least 1852 through to 1884 or later. It was leased by the Cowperthwaite family of The Nook from Edward Wilson of Rigmaden at an annual rent of £18 in 1864.⁵⁸ During the 1850s the majority of the output of this quarry was in the form of building stone – especially flag stones. A small quantity of roofing slate was produced, as well as a variety of other types of slate. These included chimney mantles, wall tabling, coping flags, border stones, cesspool slabs, settlestones, lintels and corners. By the late 1860s the products had diversified and included drain flags and covers, gravestones, gateposts, cellar table tops, urinal flags, dairy shelves, parapet stones and chimney coping.

The quantity of roofing slates that were sold was never large but it did increase during the 1860s and 1870s from 5 tons in 1852 to 53 tons in 1865 and 61½ tons in 1878.

It is possible to acquire some idea of prices from surviving ledgers. It is apparent that many products were available in different qualities. As the ledgers are not detailed enough to name these different qualities it is not possible to make comparisons of prices between different years. For example, in 1868 gravestones were being sold for 7s., 8s., 17s. and 20s. each. A gatepost in 1864 could cost 2s. 6d., 5s. or 6s. The three qualities of roofing slates were sold for 20s., 29s. and 49s. per ton in 1868 and 30s., 50s. and 55s.

per ton in 1878. As we have seen, the majority of customers were local and they included private individuals such as Edward Wilson of Rigmaden who was lord of the manor, builders and monumental masons. Local factories such as Croppers' paper mill at Burneside and various bobbin manufacturers at Staveley were occasional customers, as were local government bodies such as the Kendal and Bowness Boards of Health.

The account of Eli Cox, architect, Surveyor and slate merchant of Highgate, Kendal reveals the nature of the trade in the 1860s.

Roofing Slates		£	s.	d.
August 1868. 5 deliveries totalling 7¼ tons costing		11	4	9
September 1868. 13 deliveries totalling 20½ tons costing		32	19	0
October 1868. 10 deliveries totalling 13½ tons costing		24	1	6
November 1868. 4 deliveries totalling 9 tons costing		19	1	0
Jan-Jly 1869. 9 deliveries totalling 14½ tons costing		23	00	0
TOTAL 41 deliveries totalling 64¾ tons costing		£110	6	3
Carriage Total		£27	12	0
August 1868-April 1872				
268 yards of Border stone		2	0	6
36 yards of Flags		2	2	0
Carriage		1	4	0
37½ roods of Drain Flags		3	15	0
GRAND TOTAL		£146	19	9

The carriage of the roofing slate considerably increased the price: it amounted to 28% of the total cost for the cheapest slate, 16% for the most expensive. A round trip to Kendal cost 4s. per ½ ton.

The second ledger finishes in November 1879, but the number of customers and the quantity of sales of the most valuable product, roofing slates, indicate that the quarry was not in financial difficulty, and as Edward Cowperthwaite was still the quarry owner in 1884, it would seem that the quarry continued but that the ledgers have been lost.⁵⁹

Number of Customers

Year	Kendal	Staveley	Kentmere	Other Villages	Total
1852	1	9	4	15	27+11 people who cannot be located.
1865	20	14	3	28	65
1878	19	7	3	26	55

Longsleddale

The quarries in Longsleddale are of green slate in the Borrowdale Volcanic series. There are a group of minor quarries on Stockdalebank to the north of Stockdale, and there are the important series of quarries in and around Wrengill.

Wrengill Quarry, Longsleddale (NY475086)

The green slate found in Wrengill is generally considered to be the finest in the three valleys of south-east Lakeland. A detailed estate map of 1579⁶⁰ which depicts the valley from Sadgill to Gatescarth pass does not show any quarries, but sometime before 1728 the quarries were opened, as the following extract from the Churchwardens' Accounts of the parish of Burton in Kendal for 10 May 1728 shows⁶¹

	£	s.	d.
Expenses when bot slate and journey	00	12	00
paid for 5 rood of slate	10	00	00
paid for leading of six rood of slate from Kendal brought thither from Wrangdale gill	3	09	04

Robert Wilson of Hollin Root had the lease of the Wrangdalegill quarries for an indeterminate time prior to 1760.⁶² The great demand for Longsleddale slate in 1757⁶³ possibly caused the high annual rent of £26 which James Dowker had to pay in 1760 for the "farm" of slate at Wrangdalegill and Stockdalebank.⁶⁴ Dowker took the quarries for twenty years which would take his lease to 1780.

The quarry continued to build up a reputation and in 1777 Nicolson and Burn referred to Wrangdale head as "a place famous for fine blue slate got there".⁶⁵ Robert Rawes, slate merchant of Wet Sleddale leased Wrengill quarry from at least 1788.⁶⁶ He may well have been working Mosedale quarry as well. In 1792 the Honourable Richard Howard was being urged to use Longsleddale slate on his London house, because it was "by many deemed the best, allowed by all to be inferior to none" and it could be shipped to London from Milnthorpe or Lancaster easily and cheaply.⁶⁷

The fame of the quarry was such that it appeared in William Green's Tourist Guide to the Lake District in 1819 as a site worth seeing.

"Great quantities of the finest blue slate are got at this place, and conveyed on horseback to some distance, till the ground became level enough to admit of carts travelling upon it." He adds that the slate quarries "are extensive and may be commodiously seen, levels having been driven for the conveyance of the slate upon a horizontal rather than a hilly line".⁶⁸

Packhorses were obviously being used to bring the slate down from the quarry to the area opposite Buckbarrow Crag where the valley flattens out. This suggests that the markets were to the south rather than over Gatescarth to the north or Shap to the east. The reference to levels is interesting. These levels may be waggon ways on the surface as there is little evidence of close head working except in the most recent sections. An engraving by Thomas Allom who was working in the late 1820s and 1830s clearly shows the packhorses as well as a level on the surface, though there is no evidence of any railway track.⁶⁹

Hodgson's map of Westmorland (1825) marks the quarries and Parson and White's 1829 Directory states that "at Rangle-Gill, near the head of the dale, are extensive quarries of finest blue slate". Sinkinson, Wilson and Walker were the slate quarry proprietors and they were expending considerable capital on improvements to the workings.⁷⁰

The actual ownership seems to have altered from year to year as is shown by the following entries in the Highway Rate Book.⁷¹

Owner	Property	Annual value	Collected	Amount at which property is assessed
<i>February 23 1837</i> Robert Sinkinson and Co.	Slate quarries	£12.	3s.	3d. in £
<i>March 20th 1838</i> Sinkinson and Wilson and Co.	Slate quarries	£12.	3s.	3d. in £
<i>1839</i> Sinkinson, Wilson and Co.	Slate quarries	£12.	3s.	3d. in £

The entry for 1840 has been crossed out and this, coupled with the evidence of William Sayer who in 1847 wrote that the quarries “have fallen into disrepute not because there is any scarcity of slate, but on account of the difficulty of getting to the veins, and the consequent expense of carrying on the works”, dates their closure.⁷² This is confirmed by Mannex’s 1851 Directory which states that the quarries “have not been wrought for several years”.

There are no references to Wrengill in any of the Directories between 1849 and 1894. Kelly’s Directory for 1894 includes the entry, “near the head of the dale are quarries producing a fine blue slate”. This suggests that the quarries had re-opened, but they seem to have been closed again by 1914.⁷³ They re-opened for a short time in 1918. In 1921 they were owned by a Mr Thompson, and a Mr Leyland was the foreman. Only four people worked there, some of them living in the barracks on the quarry bank. At that time they were still drilling by hand and candles were the only source of light.⁷⁴

The final period of activity began in 1927, a development reflected in the 1929 Kelly’s entry: “Near the head of the dale are quarries producing a fine sea-green slate which are worked by the Wrangdale Head Green Slate Company.”

This period of activity, which included quite considerable investment in machinery, lasted until the mid 1930s. In 1938 Kelly’s Directory refers to the “upper portion of the dale” as “bleak and unproductive”.

Some work seems to have been done during the Second World War by prisoners of war, but in reality, any significant quarrying had already ceased.⁷⁵

Stockdalebank Slate Quarry, Longsleddale (NY487056)

This quarry in Stockdale, to the east of Longsleddale, was being worked in the eighteenth century. Thomas Hall, yeoman of Longsleddale, leased the quarry for two guineas from the Earl of Berkshire from at least 1735. Though Hall seems to have had some difficulty paying the rent, his lease was confirmed in 1737, at the increased rate of three guineas. This was paid up to 1740.

As we have already seen the lease of both Wrengill and Stockdalebank quarries had been taken by Robert Wilson sometime between 1740 and 1760. In 1760 James Dowker paid an annual rent of £26 for both quarries. As the Stockdalebank rent had been only three guineas in 1740, the value of the Wrengill quarries becomes evident, and it is

possible that Dowker took the twenty years lease in order to acquire the profitable Wrengill quarries, and may not even have worked the much less significant Stockdale-bank quarries.⁷⁶ It would appear that these quarries have not been worked to any significant extent since the eighteenth century.

Acknowledgements

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Notes and References

- ¹ It is hoped that a survey of the industrial archaeology of these quarries will follow in a subsequent volume of these *Transactions*.
- ² A slate is exhibited in Kendal Borough Museum.
- ³ See, for example Coniston parish registers for 1689 and 1693.
- ⁴ Thomas West, *Guide to the Lakes* (1779), wrote: "All Coniston houses were covered with blue slate". There are frequent references to mending the slates on Troutbeck Chapel roof in the Troutbeck Chapelwardens Account Books 1639-1825. C.R.O., Kendal, WPR/62/W2.
- ⁵ Parliamentary Papers 1897, XCIX 83.
- ⁶ C.R.O., Kendal, WPR/84. Overseers of the Poor records.
- ⁷ C.R.O., Kendal, WPR/85 Highway Rate Book, 1837-74.
- ⁸ Lease of Troutbeck Park Slate Quarries, 12 September 1896. Lowther Estate Office.
- ⁹ C.R.O., Kendal, WD/TE. Box "Slate Papers".
- ¹⁰ J. F. Curwen, "The Lancaster Canal", CW2, xvii, 26-47.
- ¹¹ B. Tyson, "The Troutbeck Park Slate Quarries, Their Management and Markets, 1753-1760", CW2, lxxxiv, 167.
- ¹² The two ledgers which cover the periods 1852-59 and 1864-79 are in the possession of Mrs C. Black of Kentmere.
- ¹³ On Bromley see J. Hughes, "Bromleys of Keswick – a family business", CW2, lxxxiv, 186-98.
- ¹⁴ Ambleside Oral History Project. Tape AS with AT.
- ¹⁵ C.R.O., Kendal, WD/TE, vol. xiii, 139.
- ¹⁶ O.S. 6 inch : 1 mile 1859 Westmorland sheet XXVI.
- ¹⁷ O.S. 6 inch : 1 mile 1899 Westmorland sheet XXVI N.E.
- ¹⁸ O.S. 6 inch : 1 mile 1920 Westmorland sheet XXVI N.E.
- ¹⁹ There is a draft agreement dated 1725 for Thomas Lancaster and Thomas and Robert Lickbarrow to get slate at Ash Busk in Troutbeck Park until May day 1729. It is not signed. C.R.O., Kendal, WD/TE, Box "Slate Papers".
- ²⁰ B. Tyson, *op. cit.*, CW2, lxxxiv.
- ²¹ C.R.O., Kendal, WD/TE, Box "Slate Papers".
- ²² *Ibid.*
- ²³ B. Tyson, *op. cit.*, CW2, lxxxiv.
- ²⁴ C.R.O., Kendal, WD/TE, vol. 8, 2a.

- ²⁵ B. Tyson, "The Cragg, Troutbeck and the Otley Family", CW2, lxxviii, 113.
- ²⁶ C.R.O., Kendal, WD/TE, Box "Slate Papers".
- ²⁷ C.R.O., Kendal, WD/TE, W319.
- ²⁸ Rental of the Barony of Kendal 1792. C.R.O., Carlisle, D/Lons/L5/2/II/178.
- ²⁹ C.R.O., Kendal, WPR/62/W3. Chapelwardens Accounts and Rate Book. David Huddleston was assessed at 13s. 4d. for the Quarry as his contribution to a special rate to repair Troutbeck Chapel and School.
- ³⁰ C.R.O., Kendal, WPR/62/W3.
- ³¹ C.R.O., Kendal, WQR/1/6.
- ³² O.S. 6 inch : 1 mile 1859 Westmorland sheet XXVI.
- ³³ Lease of Troutbeck Park Slate Quarries, 12 Sept. 1896. Lowther Estate Office.
- ³⁴ C.R.O., Kendal, WDX 397, Box 5/12.
- ³⁵ Mr J. Atkinson. Personal communication.
- ³⁶ C.R.O., Carlisle, D/Lons/L5/2/II/268, and C.R.O., Kendal, WDX 397, Box 3, no. 5.
- ³⁷ Quoted in a manuscript history of Troutbeck, n.d. C.R.O., Kendal.
- ³⁸ Chapelwardens Accounts Books 1639-1758. C.R.O., Kendal, WPR/62/W2.
- ³⁹ C.R.O., Kendal, WD/TE, vol. 2, 161.
- ⁴⁰ C.R.O., Kendal, WD/TE, vol. 4, 18.
- ⁴¹ C.R.O., Carlisle, D/Lons/L5/2/II/178. 1792 Rental of the Barony of Kendal.
- ⁴² Chapelwardens Accounts and Rate Book. C.R.O., Kendal, WPR/62/W2.
- ⁴³ *Ibid.*
- ⁴⁴ C.R.O., Kendal, WD/TE, Box "Slate Papers".
- ⁴⁵ A copy of this undated engraving is in Kendal Public Library.
- ⁴⁶ Parliamentary Papers: *Reports of H.M. Inspectors of Mines*, 1875 onwards.
- ⁴⁷ Parliamentary Papers: *Reports of H.M. Inspectors of Mines*, 1878-79.
- ⁴⁸ *Westmorland Gazette*, 7 Jan. 1905.
- ⁴⁹ See the advertisement in Bulmer's 1906 *Directory of Westmorland*, p. iv.
- ⁵⁰ J. J. Thomas, J.P., F.G.S., M.I.M.E., was born in Caernarvonshire in 1860, and lived at Broughton in Furness when he came to Cumbria. He came to Kendal in 1886 and attended the Kendal Science and Art Schools taking geology and chemistry. He later lived at Hawthorn Villa, Sedbergh Road. He was Mayor of Kendal in 1916, 17 and 18 and for 47 years was Alderman of Westmorland County Council. He died in 1942. *Quarry Managers' Journal*, vol. 23, no. 9 Dec. 1940 and vol. 26, no. 9 Dec. 1942 (obituary).
- ⁵¹ C.R.O., Kendal, WDX 216.
- ⁵² *Ibid.*
- ⁵³ *Ibid.*
- ⁵⁴ J. Postlethwaite, *Mines and Mining in the English Lake District* (3rd edn., 1913).
- ⁵⁵ *Concerning Westmorland Green Slate* (undated advertising pamphlet).
- ⁵⁶ W. F. Shaw, "Caudale Slate Quarries", *The Quarry Managers' Journal*, vol. 16, no. 6.
- ⁵⁷ Most of the information on the recent history of the quarry is from my interview with Mr J. Williams of Kentmere.
- ⁵⁸ Kentmere valuation 7 Nov. 1864. C.R.O., Kendal, WDB 35, Box 14.
- ⁵⁹ The two ledgers which cover the periods 1852-9 and 1864-79 are in the possession of Mrs C. Black of Kentmere.
- ⁶⁰ P.R.O. E178/2374. Photograph in C.R.O., Kendal, WDK.
- ⁶¹ C.R.O., Kendal, WPR/10 (Courtesy of Mr P. Gaskin).
- ⁶² Lease of 10 Jan. 1760, Levens MSS Box 6, no. 14.
- ⁶³ Letter from Ralph Day to William Birket, 15 Nov. 1757, C.R.O., Kendal, WD/TE.
- ⁶⁴ Lease of 10 Jan. 1760, Levens MSS Box 6, no. 14.
- ⁶⁵ N. & B. vol. I, 133 (Westmorland green slate was often referred to as blue slate at that time).
- ⁶⁶ C.R.O., Kendal, WD/TE, Box "Slate papers".
- ⁶⁷ Levens MSS Box 6, no. 14.
- ⁶⁸ Wm. Green, *The Tourists New Guide - a description of the Lakes, Mountains and Scenery in Cumberland, Westmorland and Lancashire* (Kendal, 1819), 373-4.
- ⁶⁹ A copy is in Kendal Public Library.
- ⁷⁰ W. Sayer, *History of Westmorland*, vol. I, 1847.
- ⁷¹ C.R.O., Kendal, WPR/85. Highway Rate Book 1837-74.

⁷² W. Sayer, *op. cit.*

⁷³ Kelly's Directory 1914 has no reference to the quarries.

⁷⁴ Personal Communication from Mr Thornborrow who began working in the quarries in 1921.

⁷⁵ Personal communication from Mrs J. Taylor and others.

⁷⁶ Levens MS Box 6, no. 14. Accounts and Leases.

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