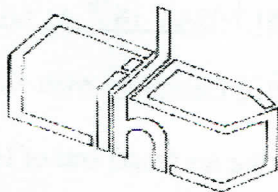


Cumbria Industrial History Society



No. 53

AUGUST 2002

BULLETIN

CONTENTS

Page 2	Forthcoming Events
Page 3	Books
Page 4	Warwick Bridge Corn Mill
Page 6	Swaledale Meeting
Page 7	Historic notes on Gunnerside
Page 9	Spring conference Report
Page 17	Report on Ulverston Visit
Page 20	Committee Members

EDITORIAL

The society's programme is running very well this summer with both the May and June meetings taking place on dry days. The committee is already well advanced with the plans for 2003 and these are outlined in this Bulletin. The committee hopes to see a good attendance of members at the remaining meetings of this year.

The society's library of journals and books is to be deposited with the C&WAAS library at the Carlisle Art College. It will be available for use by all members on application to the Librarian. The journals can only be viewed at the library as loaning is not allowed.

The Society at present is short of an auditor for the annual accounts. If any member feels they would like to do this simple job for the Society please contact Jan the treasurer. It is a simple job of ensuring all cheques are accounted for and Jan's arithmetic is correct.

Finally I would like to thank all the contributors to this Bulletin that has made it a bumper edition. Please keep the articles and news coming in.

If you have any comments please send them to the editor.

All the committee members' contacts are available on the final page of this Bulletin.

FORTHCOMING EVENTS

HARTSOP AND MYERS HEAD SUNDAY 18TH AUGUST 2002

Another repeat of last year's cancelled meeting.

Meet at 10.00am. at the car park at the far (east) end of Hartsop village. Grid Ref NY 410 131.

Morning easy walk to visit Hartsop corn mill and Myers Head Mine. Wellingtons more useful than boots.

Afternoon: Walk past Brothers Water and Hartsop Hall Farm to Hogget Gill Lead Smelter, followed by a steeper walk to examine Hartsop Hall Lead Mine. This last site is poorly understood and the visit provides an opportunity for members to offer their expertise in helping to understand the building remains which survive here.

OCTOBER CONFERENCE SUNDAY 20TH OCTOBER 2002

See enclosed booking form for details.

EVENING MEETING WEDNESDAY 13TH NOVEMBER 2002 7.30PM COCK AND DOLPHIN KENDAL

Ken Broadhurst talking on milestones

PROVISIONAL 2003 PROGRAMME

EVENING MEETING FEBRUARY

This is the members evening. We intend to run this in the same format as the last two years with a short slide quiz and then any contributions from members. So please bring some slides or artifacts along.

APRIL CONFERENCE SATURDAY APRIL 26TH

This year's topic is to have a maritime theme.

MAY DAY VISIT

We are hoping to visit a working factory so that it is possible to record the process being carried out. One of the aims of the Society is to record sites and processes in Cumbria and

the committee feel this has not been happening recently and therefore, this is an attempt to correct this.

EVENING MEETING JUNE

Hopefully this is to re-visit Backbarrow. This time to look at the iron works.

AUGUST DAY VISIT

We are hoping to return to Swaledale to look at Surrender and Old Gang smelt mills and other lead mining sites in the area.

OCTOBER CONFERENCE

This is hopefully to have a theme of iron working. Looking at the recent advances in the understanding of bloomery sites and the development of blast furnaces etc.

IF YOU HAVE TROUBLE REACHING A MEETING BECAUSE OF TRANSPORT PLEASE CONTACT A COMMITTEE MEMBER AND WE CAN ARRANGE LIFTS FROM MOST PARTS OF THE COUNTY.

NON SOCIETY EVENTS

Threlkeld mining museum is again running its series of summer walks

August 25 th	Elterwater quarries
September 22 nd	Goldscope mine

Further details are available from the museum.

NEW BOOKS

FRIENDS ON THE NORTHER LEAD DALES: AN ANTHOLOGY OF THE FRIENDS OF KILLHOPE. Edited by Bryan Chambers A4 pp134 ISBN 0 9518939 20 Price £12

The Friends of Killhope were formed in 1985 to support the new Killhope Lead Mining Centre and to encourage an interest in lead mining and associated industries. Over the next fifteen years members received over fifty newsletters which contained many important articles and photographs.

For those of us that have joined the Friends of Killhope only relatively recently there is a regret that we did not do so sooner, having missed (or at least missed easy access to) much valuable information about mining in the Northern Pennines. This gap is now partially filled with the publication of 'Friends on the Northern Lead Dales: An anthology of the Friends of Killhope'. There are over 40 contributions covering a wide range of

topics including: geology, mining, ore dressing and smelting, archaeology and exploration, important characters, social history and emigration.

Everyone will have their particular favourites; it is particularly nice to see Willie Watson's drawings and notes on Rotherhope Fell Mine and to have a written copy of Peter Wilkinson's research about William Wallace.

Sheila Barker

TRADITIONAL BUILDINGS OF CUMBRIA By R W Brunskill £30

It is 30 years since Brunskill published his classic book Vernacular buildings of the Lake Counties. This update looks at the vernacular buildings throughout the county and both country and town buildings are covered in this book, which with its detailed drawings and plans and numerous photographs provides an important survey of the buildings of Cumbria.

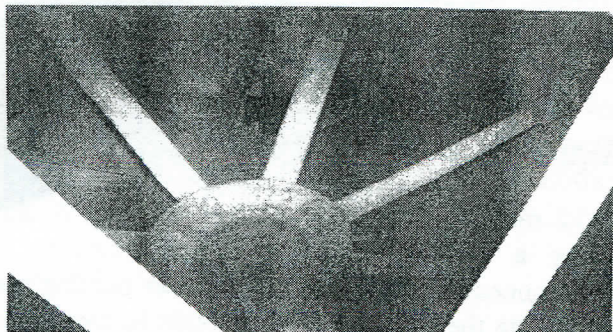
WARWICK BRIDGE CORN MILL

Those of you at the October 2001 conference in Carlisle will remember that Peter Messenger spoke briefly about the corn mill at Warwick Bridge and the various attempts to restore the property.

This mill is situated on the main A69 Carlisle to Newcastle road about six miles east of Carlisle. The mill generally goes by the name of Little Corby Mill. There has been a mill in Little Corby since at least the mid 12th century. Robert de Vallibus, lord of the barony of Gilsland gave Little Corby and Fenton to Alexander de Windsor including the mill and fishery. He then gave part of the profits of the mill at Little Corby to Lanercost Abbey. Part control of the mill passed to Hugh de Salkeld of Corby Castle. Full control of the mill was eventually achieved by the Howards of Corby Castle. The mill was rebuilt in 1802 for £750, the present structure dates to a rebuild of 1839. The mill was sold off in the 1880's to Mr. W. J. Thompson of Warwick Bridge. The mill finally closed in 1989 when the final miller retired.

The mill is powered from a weir at the junction of the Troutbeck and Cairnbeck and a long race leads to the mill. The main block of the corn mill has a square plan of three storeys with a slate pyramidal roof. On the downstream side a kiln is attached. This is two storeys with a high-hipped slate roof and a substantial long cowl on the ridge abutting the mill. The block to the south of the main mill houses the water wheel and at the south end a cart shed. An extension has been built against this to provide storage accommodation. Another extension has been added on the millstream side of the building to provide an extra room at all levels. All of the mill buildings are in the local red sandstone. All window openings have rotating wooden louver windows.

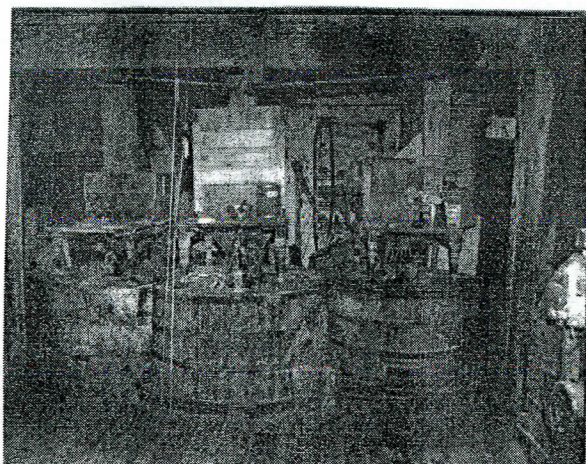
The millrace enters via a trash rack and flows to the hatches that control the water to be discharged onto the wheel. They discharge the water onto the wheel 4ft above the centre of the shaft (high breast shot wheel).



WATERWHEEL CONSTRUCTION

The water wheel shaft is 10-inch diameter cast iron with rectangular ribs running along it to increase its strength. Three circular hubs are fitted outside the rectangular ribs of the shaft. From each hub T-shaped sectioned spokes support the rims and buckets. Thirty-two sheet iron buckets surround the wheel, which is 10 feet wide, and 14 feet in diameter.

The main drive shaft enters the mill at floor level in the basement of the mill main block. The first gear wheel (pit wheel) is a one piece casting nine feet in diameter. The rim on eight T-section spokes carries 112 teeth. The drive turns from horizontal to vertical by

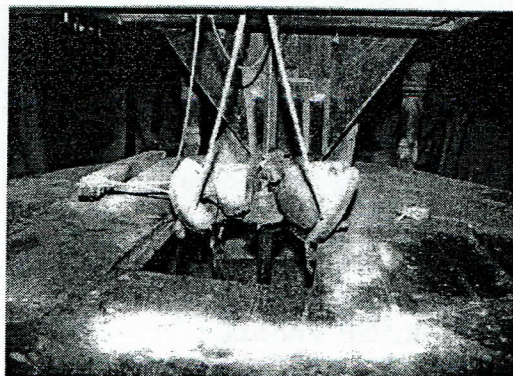


TUNS COVERING MILLSTONES

means of the wallower cast iron bevel wheel five feet diameter with 54 teeth. The lowest gear on the upright shaft is the great spur wheel; this is nine feet in diameter and has 136 wooden teeth on both the rim and the face. The great spur wheel drives five stone nuts, which are iron wheels 18 inches in diameter. These are carried on tentering bridges with keyways holding them in place on the iron stone spindles. The stone nuts are lifted out of engagement with claws carried on hinged arms.

The hurst frame is made of heavy timber reinforced with rolled steel posts on the main face. Between the stone nuts are five meal chutes, which are square tubes with shoes on the end to allow two sacks to be filled at once by swinging them over.

The main drive shaft ends in a bearing below the stone floor. There are five pairs of stones around a secondary upright shaft, which passes up to roof level and drives various auxiliary machinery. Two pairs of stones are Lazonby stones used for shelling barley and oats for animal feed. The



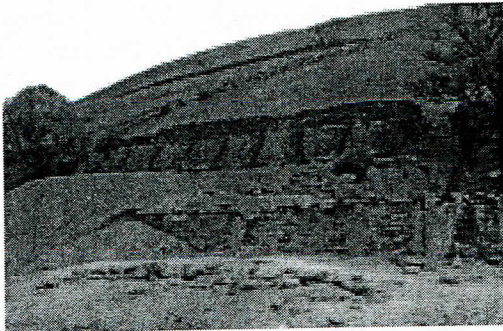
DETAILS OF BELL TO WARN WHEN CORN STOPS FLOWING.

other three pairs are French stones for flour. Each pair is contained in its own tun. They are fitted with bell alarms which sound when no corn is pressing on to leather straps.

This mill is slowly deteriorating since it last worked in 1989

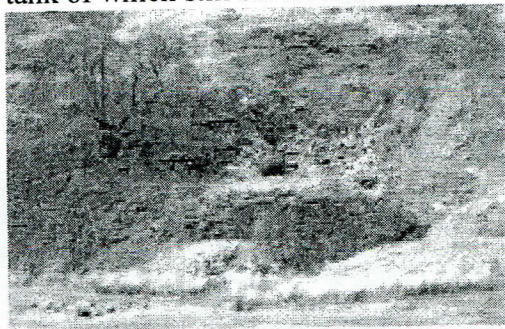
Graham Brooks

SWALEDALE MEETING



SIR FRANCIS EAST DRESSING
FLOOR

during the walk ranged from the multitude of field barns that are present in the Gill to the variety of flowers and beetles passed on the path. The first major site we arrived at was the east dressing floor of Sir Francis mine. This has a well preserved set of bousteads and a rare tally hut where a count of the ore wagons arriving from the mine was kept. After a detailed look at the site we forded the river to the west dressing floor where unfortunately the degree of preservation is not so good. We walked past the mine shop which was in the process of being consolidated to the entrance of Sir Francis mine. Above the mine entrance had been a large water wheel which powered an air compressor the large air tank of which still survives on the site.

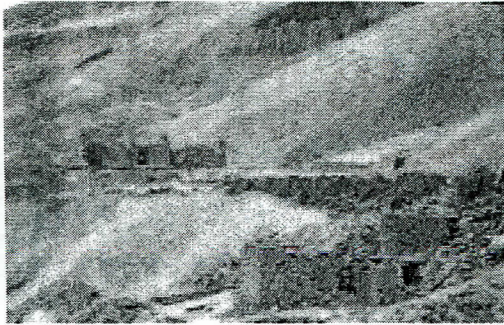


SIR FRANCIS MINE
ENTRANCE AND AIR
STORAGE VESSEL

12 members turned out on a pleasant Sunday for a walk around the mining remains of Gunnerside with Tony Keats. After parking just outside the village of Gunnerside in Swaledale we walked back through the village where Tony pointed out an ingot of lead marked 'Old Gang' on a wall outside the café. We then set off up the Gill and it was not long before we came to the first evidence of mining - a small trial adit and waste heap besides the path. Very little is known about this level and we quickly continued along the path. Discussion

After re-crossing the river lunch was taken in the shelter of a suitable stone wall and the walk continued up the valley to view the complex of remains at the Bunton site. Here there are remains of three large hushes, the entrance to Bunton level and the remains of the dressing floors. During the walk up, the remains of Dolly mine were well visible on the opposite side of the valley. The next mine visited, again required a quick fording of the river to view Priscilla mine entrance.

The last main site visited was the Blakethwaite lead smelt mill. This was another site undergoing consolidation and it was nice to see that the cast iron supports for the furnaces still remained in place. A well preserved peat store and limekiln still remain on the site.



BINTON MINE SITE.

The return to Gunnerside was made via main access track to the smelt mill and the rain just managed to hold off for the day. Tony was heartedly thanked for his leadership. Next year we are hoping to visit the Old Gang and Surrender Mill areas. This promises to be another wonderful day out.

Graham Brooks

HISTORIC NOTES ON MINING IN GUNNERSIDE GILL

The principal mining fields of Gunnerside Gill exploit the same east-west veins as the mines of Beldi Hill, Swinner Gill and Hard Level. You can connect the main veins on an Ordnance Survey map, simply by drawing a straight line from the villages of Keld in Swaledale to Langthwaite in Arkengarthdale. If you trace a finger along this line, you will notice areas of large hushes, mining waste and shafts. This mining field was one of the most productive in the Pennines, and nowhere was it worked more extensively than in Gunnerside Gill. The valley runs north-south, cutting across these veins. The steep sides of the valley made hushing the ideal way of finding and exploiting lead-bearing veins. How successful this method was can be gauged from the size of the hushes: huge, bare, rocky, wholly-man made side-valleys descending right down to Gunnerside Beck. To reach the veins from lower levels than was possible by hushing, mining levels were driven into the valley sides.

The Sir Francis mine was owned by Sir George Denys, who held the mineral rights to a number of mining fields in Swaledale. The mine was named after his son. Sir George started driving the Horse Level in 1864. A long drive was needed to reach productive ground, but early progress was hampered by the hardness of the rock. The work speeded up only when he introduced new rock-drills, operated by compressed air. The compressor was powered by a large (39ft) waterwheel, with a diameter of 12m. The ruined wheel-pit can still be seen, but the wheel itself has long gone. The wheel-pit and receiver can be found just a few feet above the entrance to the Sir Francis level, on the west bank of Gunnerside Gill. Dynamite, used after 1873, also helped to speed up the driving of the level. Four years later the productive Friarfold vein was broached. The level served another useful purpose, draining water from a number of mines further up Gunnerside Gill.

The Sir Francis Level opened up a number of veins giving such good quantities of ore that two dressing floors were built – on either side of the beck – to crush and prepare the ore for smelting. One belonged to the Old Gang Company. The other to the A D Company. Originally these dressing floors were connected by a wooden bridge, over

which wagons of ore could be pulled on rails. The bridge has not survived, though the remains of its stone foundations can be seen on both banks. To power the water wheel, water from the beck was diverted along aqueducts that were raised on pillars. These, too, are gone, leaving just the waterwheel pits. Dressed ore from the Old Gang operation was taken to the Old Gang Smelt Mill in the next valley to the east. Instead of the ore being carried overland, it was taken up Gunnerside Gill to the Bunton Level, and transported underground into the Old Gang workings. Going through the hill into Hard Level Gill was reckoned to be a cheaper option than going over the top. The A D Company smelted their bouse at Surrender Mill further down Hard Level Gill.

The price of lead was subject to fluctuations, at times it was hardly worthwhile bringing ore out of even the most productive mines. In 1882 a price slump almost closed the mine, by the time mining was resumed the hydraulic engine was found to be badly damaged by water. The Sir Francis mine never worked again.

Further up Gunnerside Gill is a massive mining field, made up of huge hushes that scar the valley sides, plus some fascinating remains. What is most striking, however, is the sheer scale of the operation, with a landscape ravaged by hushes and spoil heaps for hundreds of yards in whatever direction you care to look. The scene is breathtaking.

The Lownathwaite mines tunnel west, and meet up with the Swinner Gill mine field. A little further up, and also on the west side of the beck are Sun and North hushes. They face, across the beck, a trio of hushes: Gorton, Friarfold and Bunton. Most of the levels were driven after hushing had uncovered lead-bearing veins as far down as was practicable. Two levels – Bunton and Sir George were driven into the valley side from the base of Bunton hush. The entrance to Bunton Level can be found inside the ruins of a small building; nearby are the mining office, bouse-teams and waterwheel pit. Across the beck are other buildings and the arched entrances to Dolly, Woodward and Priscilla levels. All these levels linked into the extensive Friarfold vein.

Towards the top of Gunnerside Gill, on a flat triangle of land where Blind Gill meets Gunnerside Gill, is Blakethwaite mill. This compact site has the ruined smelt mill, peat house and a little way up Blind Gill, a mining level. Note how the flue from the smelt mill's furnaces was ingeniously built up the rocky cliff at the back, ending in a ruined chimney stack. Once Lownathwaite mill had been abandoned in 1827, all ore from the mining field at the head of Gunnerside Gill was smelted here at Blakethwaite mill. It operated until 1878.

Investigations further north reveal the remains of a dressing floor, almost at beck level, then, finally, Blakethwaite Dams, which ensured a good head of water throughout the year for turning the waterwheels.

Tony Keats

SPRING CONFERENCE 2002 - EARLY TRANSPORT IN CUMBRIA

Dr Alan Richardson presented the first session, his hobby is the Archaeology and Engineering of Roman Roads, especially surveying aspects, which has led to his conclusions that the Romans surveyed and produced a map of Britain prior to undertaking their road building. The map of Roman Britain would have been based on triangles and tangents of 3/5, making up a grid, and the roads were built to markers put down by surveyors and modified to local conditions.

He began with a "potted" history of roadways. Paths existed in remote antiquity, as did bridges, paths were trading routes and when they were muddy they were metalled or built up in some way, to maintain the route. Leems, from the Latin "Lema" meaning mud – were tracks round land to give access, synonymous with boundary, and gave rise to "Limites". Limites were boundary roads built in an "X" cross pattern around public and private land. Emperor Augustus declared standard dimensions and construction methods to regulate by statute the standard of Limites. Types of Roman Road included Viae publicae – public roads and Viae militares, military roads, also local roads, known as Viae vicans and private ones - Viae privatae.

Some Features of Roman Roads: (NB There is dispute among the historians as to these being features of Roman roads, or indeed as to them being of the Roman period at all) a few slides were shown to illustrate;

Aggers - broad mounds 8-30 feet wide depending upon the location and road type- e.g. at Whinlatter Pass.

Kerbs - up to 1m e.g. in Matterdale – used as foundations for dry stone walls.

Marginal ditches - at variable distances from the kerbs.

Terraces - on hillsides e.g. looking left when driving down Kirkstone Pass.

Embankments – expanded aggers, usually approaching bridges etc. over watercourses.

Cuttings – over crags – e.g. Stybarrow.

Culverts – Watercourses.

Bridges – typically, it is said, flat timbers over watercourses.

Roman evidence is disappearing, being ploughed out and trees planted etc. In some instances the only clue would be parallel lines of rushes, which flourished in the marginal ditches at the base of the aggers. We were encouraged to photograph and record – a plea I'm sure any archaeologist whatever his field, would endorse.

Roman roads in the landscape – they are mainly straight but with junctions at well-aligned curves, and some curved sections. Their fate varied – some are still in use as modern roads, more were destroyed and some evolved as true boundaries (medieval forest boundaries, parish boundaries etc.) Tracing locations is possible using place names as clues e.g. Street as in High Street,

Low Street; Stretton; Forth(Seaforth); and Rad e.g. Radlett, Radley; also Gate, a Norse word for road e.g. Streetgate in Lamplugh; and Rake the Norse for path. A series of such place names in a string across a map is a strong clue. Others hints are references on property deeds, especially medieval deeds. Parish boundaries can also be useful.

Roman roads formed a network across Britain based on Pythagorean triangles; for example, Leicester, Colchester and Ilchester are distributed around a 3-4-5 triangle. Dover to Chester is exactly 200 Roman miles forming one side of a further 3-4-5 triangle.

Centuration, a system of measurement - Roman measurements were important, references were filed and used to determine ownership and what taxes were due.

1 Roman foot	= 11.65 inches	
120 Roman feet	= 1 Actus	
1 Actus x 1 Actus		= 1 Actus quaduti
20 Actus x 20 Actus		= 1 <u>centuria</u>

The measurement and taxation system is typically seen in Northern Italy and Southern France, but Dr Richardson proposes that there is evidence of Centuration in Carlisle area, Limites in the Inglewood forest, which are actually Roman roads were previously thought to be mid 18th century boundaries. They measure exactly 80 actus by 400 actus. Every fifth square is enclosed by a substantial quintarius, e.g. Hutton Row, Calthwaite, Unthank. At intersections of limites the angles measure 30 degrees by protractor, and using linear regression one can measure the inclination angle on the Inglewood limites. The angle is 30.96°, the slope -0.6 and the correlation -1.000.

He demonstrated the theory by placing his gridlines over various locations in the Lune valley, Tebay and Brough. He suggests that a survey was carried out and routes planned before building, planning the network based on tangents. 30.96° has the tangent 3/5, this same angle is found in Florence and other important sites.

Reagill - Carlisle is 1 / 2 - if you calculate where the grid lines meet at Carlisle the design line hits at Wall Knowe just outside Carlisle (Stanwix) Wall Knowe is a Roman Datum Point for the Inglewood Limites and a mean alignment of the Reagill to Carlisle road. Wall Knowe is due north of Chester Cathedral, and the Fosse Way makes a 3 / 5 triangle. Features are the inclination of the angles to the Ordnance Survey true north. All refer to due north because true north is not uniform on a flat map; the Greeks and Romans knew this and had in effect Grid North and True North. Each degree of latitude equals 75 Roman miles.

The implication is that there was a Roman grid, (the OS grid based on Totomi (AD120) – mid longitude is 400 Eastings and 2° from Greenwich is the centre, and the Romans used the same.)

The Foss Way inclines at a tangent 3/5 East of both True and Grid North – grid and true north are the same at the mid-longitude.

	<u>True North</u>	<u>OS grid North</u>	
Cumberland Limites	31/50		3/5
Reasgill-Carlisle Road	26/50	1/2	

Dr Richardson proposes that the Romans had a survey of Britain on papyrus or similar, - a tool by which the landscape was planned and exploited, the towns were located deliberately, and not by chance.

A summary of Dr Richardson's thoughts on Roman Road History:

1. Land survey of province – a national ordnance.
2. Mean lines of roads marked on map by planners.
3. Engineering survey modified lines.
4. Engineers pegged out routes (NB Manchester-York peg found under Agger in Oldham)
5. Construction
6. Maintained for 200-400 years
7. 1500 years of neglect
8. Turnpikes.

The second lecture was given by Reg Phillips, Chairman of the Lancaster Canal Trust.

In the 1760's travelling times were slow, e.g. London to Newcastle by the fastest stagecoach took 132 hours, and Leeds to London took 84 hours. The roads were atrocious, and the geography was a major problem in our area, packhorse transport was the norm with up to 100 ponies in a team. Until 1760 there were 1398 miles of canals and there had been little change in the preceding years, but from 1760 there was a huge growth. By 1790 there were 2223 miles, 3074 miles by 1800 with 4003 miles of navigable canal in the networks by 1843.

The Duke of Bridgewater built the first canal of the "canal age" to transport his coal from Worsley mines to the centre of Manchester at a competitive price. The canal was engineered by James Brindley. Around this time, Josia Wedgwood, experiencing severe breakages of his pottery by road transport, founded the Trent and Mersey canal, which was also surveyed by Brindley. The Mersey and Preston Branch and Trent and Shadlow were also added.

Lancaster merchants were losing out to Liverpool on valuable trade with the Americas because the River Lune was silting up. Two solutions were proposed,

one group supported the building of a dock at Glasson, whilst the others wanted a canal to start at Kendal, pass through Lancaster to Preston and on to the Leeds and Liverpool canal, connecting Lancaster with the port at Liverpool. The dock group won the day and the idea of a canal was dropped, but in the 1770's John Rennie was asked to re-survey the canal, and his proposal, an adaptation of the original proposals to include Wigan and the South Lancashire coalfield won favour, the necessary Act of Parliament was passed, and in 1792 construction began. There were financial problems from the start and by 1797 only two parts of the project, Walton Summit, five miles south of Preston, to Wigan and Preston to Tewitfield, had been completed. These sections were connected by a temporary tramway, which was sited near the present Preston station, the two sections were never joined, the tramway became permanent and eventually the southern section was sold.

John Rennie had a good eye for form, his structures include the Lune and Keer aqueducts and the many bridges, the Lancaster merchants specified the use of masonry not "inferior" brick which had been used in the Fylde area. The Lune aqueduct was built on 50,000 timber piles, driven in by steam engine, it took five years to build at a cost of £40,000. Rennie standardised his arched bridges, with two vertical courses and two pillars at either end, but these could be embellished and balustrades added if the landowners required a more ornate structure on their estates.

In 1797 when the canal stopped at Tewitfield, the merchants from Kendal were unhappy, and subscribers were sought to fund the project's completion. The northern reaches extension was started in 1817, the work involved the building of the only locks on the canal, the eight locks at Tewitfield lift the canal 75 feet over three quarters of a mile. Hincaster tunnel was completed in 1819, it has masonry portals but the first bricks (2 million) in use in Westmorland were used for the tube. The clay for the bricks was from Moss Side Farm near Heversham. The tunnel was constructed to take barges close to the Sedgwick Gunpowder Works, there is no towpath and the boats were "legged" through by the boatmen whilst the horses were led over the top. The extension was officially opened on June 18th 1819, and Kendal became the most northerly point on the canal network.

By 1826 the Glasson Dock branch was built, there are records of sea going ships on the Galgate-Glasson Dock arm, boats had to go via a lock into the canal, it is thought they dropped their masts and were moved by horse to Kendal. 60 tonne coasters were able to use this route to bring salt from Middlewich to Kendal. There were other transshipments e.g. from Hest Bank, boats were unloaded and the goods carried across fields to the canal for onward shipment.

Freight costs fell sharply – 50 tonne flat bottomed canal barges could be hauled by two ponies in tandem, carrying coal or lime to Kendal and returning with cargos of wool, snuff and gunpowder. In 1820 typical freight charges were; Kendal - Lancaster 3/11d (20p); Preston - Wigan 2/6d (12½p).

The canal companies found there was profit in packet boats, and ran these to regular timetables. They used several teams of ponies, stabled and changed at the packet houses, situated every 4-5 miles along the route, and because of this they could maintain speeds of 8mph, reducing the journey time from Kendal to Preston to 7 hours. The last remaining packet house is at Farlton. At Tewitfield the passengers were required to disembark at one end of the locks and join a second packet boat at the other end, this was to maintain the journey speed. The only delays were when the canal froze in winter.

By 1880 the canal was in poor condition and there was stiff competition from the railways, which could no longer be fought off. The canal was sold to the London & North Western Railway Company who continued to operate it and used the water for the depots at Preston, Lancaster and Carnforth. By 1940 with the railways also facing competition from roads, water traffic had dwindled and the canal was virtually defunct. The last commercial cargo was coal to the Kendal gas works in 1944, and the final cargo was in 1947, a barge of coal from Glasson Dock to Storey's Mill, Lancaster became stuck in the ice during the severe winter. When it arrived the mill had changed its power source, and the coal had to be given away.

The main water supply for the canal is from Killington reservoir, which feeds up to 17 million gallons each day, which enters the canal just before the Crooklands aqueduct. North of here from Kendal to Stainton was dewatered in 1955, and used as landfill and then landscaped, it was sold off in 1974 but the towpath and bridges remain. Kendal council won't allow building along the canal route.

The canals were nationalised and the new board pushed for closure. The M6 motorway and the A590 cut the canal in several places – in 1955 the highways agency survey said that the canal was obsolete and it was not economically viable to build a navigable culvert at Holme, (at that time it would have cost £50,000, the cost now is put at £2-3million.)

In 1963, the Association for Preservation and Restoration of the Lancaster Canal was formed, and subsequently renamed as the Lancaster Canal Trust, with the aim of restoring the canal, and re-opening the section from Tewitfield to Kendal, and although initially thwarted by the M6 extension, they continue to work, in partnership with other groups towards their goal. The Northern Reaches Group was founded in 1990, and in 1992 an engineers report by Scott Wilson Kirkpatrick (the M6 engineer who already had the drawings) put the cost of a plan to restore and open the section by 2015 at £17 million.

In 1997 the government changed and a warning that canals are dangerous and action was needed, resulted in the report "Unlocking the Potential" which identified the canal network as a national asset "The government is determined

to provide a new framework for British Waterways that will unlock the potential and provide a network worthy of the new millennium".

British waterways were made an independent trust, a way round the legislation, (by making it a charity it can raise funding to pay for restoration projects.) It is now estimated that it will cost up to £30million to reopen the Lancaster canal, including £2-3million for each motorway crossing. A survey says it is feasible because of sustainable tourism £14million in visitor spend, 21,900 car journeys diverted, 60,000 visitors diverted to water buses/ trips via park and ride schemes and transport interchange marinas. Start date is planned for 2005, there is enough headroom at Tewitfield to build a culvert, at Cinder-barrow the M6 and canal are virtually at the same level, the top lock will be moved to the westerly side, which will give 10foot of headroom sufficient to get under the M6. At the Spinney culvert north of Holme the M6 rises as it goes south and the canal will be diverted to a point where the motorway is high enough for a new culvert to be built. At Howards Aqueduct on the A590, the canal is higher than the road and new piers will be built and an aqueduct lifted into place by crane. A car park and small marina are planned in the Crookland area with park and ride waterbuses to Kendal.

Various restorations have been undertaken, Leakage of 20million litres a day in one stretch has been repaired with butyl rubber liner surrounded with concrete at a cost of £1000/metre. Malkinsons Bridge near Crooklands is now restored, at Old Hall Bridge, the original stone has been used to maintain the appearance of the outer face but new material is used inside. Care has been taken to preserve holes allowing access for a resident bat colony, and ivy has been left to maintain the habitat for bats and birds. The Kendal Civic Society have just completed renovation of the Change bridge which is unique in Cumbria, it was officially reopened in May.

Other projects on the northern canal network, such as work on the Huddersfield canal are bringing in the media (TV locations etc) and visitors, and there will be increased pressure to restore the Northern Reaches later this year when the Ribble link opens on July 12th. This is the first new navigation to open since the Manchester Ship Canal in the 19th century. It will be possible to travel by canal from the Leeds and Liverpool canal via the River Ribble up to the Lancaster canal, and if all goes to plan eventually once more to the most northerly point on the English canal network.

Peter van Zeller presented the third session on Ravenglass & it's Railways.

Peter gave us a whirlwind tour of the history of Ravenglass - once equal in prominence with Egremont and Ambleside, from Roman Port to Railway junction. There are few early records, but its importance probably developed because of the geography - a confluence of three rivers, a port and possibly a market on the shore, it was a reasonable harbour and easy to find from the sea - a slot

between two mountain ranges. Evidence of the Roman settlement can be found in the bathhouse, some half a mile out of Ravenglass, and the name "Caster" of Muncaster relates to Roman occupation. The port of Egremont could have been founded by the Percys in any one of several places, but Ravenglass was already established. By the 1200's the Main street was established as a trading place, and in 1208 it had a market, one of the earliest in the North West. Richard de Lucy was influential from his castle and started to organise the area. Contrary to rumour Ravenglass was not under the influence of Muncaster. The Penningtons moved from Furness after the Norman Conquest, they had considerable lands and eventually arrived in Ravenglass, by about 1500 they had money in sheep and were very successful. They also had interests in iron so perhaps came to the area for the minerals. Forge Farm was certainly a major industrial structure. The earliest dated house is 1689, and the shape of the village had not changed much in 200 years. Today the estuary is virtually identical to the ordnance maps of the 1850's. On the 1823/4 charts the fish garths are shown (i.e. who had rights to fish etc.) and the tower on the Knott is first shown – it was erected by public subscription in the 1820's. The manure boats – 300 tonne vessels carrying guano from the other side of the world, used the port up until 1914. Plans were approved by parliament for piers into the estuary, but the railway came and the piers were not developed.

In 1849 the railway came to Ravenglass, Stephenson thought it better that local communities funded their railway, his lines were predominantly level or easy gradients. The Whitehaven and Furness railway could not get as much funding as the main line over Shap, this was at the peak of expansion of the railways, and so the line was only developed as a local line rather than a main line. There were different attempts to get around the Duddon Estuary, Robert Stephenson left to build the Royal Border Bridge and a local contractor took over the engineering. In July 1849 the Ravenglass railhead opened, and reached Barrow in Furness in 1850. For ten years it was a railway to nowhere as the Furness Railway did not extend beyond Barrow.

There were several attempts to cross the estuary and link into the main line railway, but eventually due to the cost of bridges, or tunnels through the mountains the railway took a coast-hugging route. The Furness railway took over the route, rebuilt the timber bridges in stone and built signal boxes.

Up until the turn of the century there was little building or growth, a few half-timbered buildings e.g. the Parish Hall were built. At the turn of the century, the goods shed (one of the biggest structures in Ravenglass) and the station buildings were constructed. Ravenglass was intended as the Grange over Sands of the west coast, a large housing estate was proposed but never built, and instead as the hematite price soared, Ravenglass concentrated on the iron ore industry. From 1871–3 the price rose to 10 shillings a ton and companies were acquiring every promising site for development, this stimulated the building of a railway.

Iron mines were developed at Beck Foot, and a railway was built from the railhead at Ravenglass. with sidings for the wagons. Originally planned to be standard gauge, but laid to 3ft gauge, the railway opened in 1875 and passed an inspection in 1876 so by November 1876 it was able to carry passengers. From the census and contemporary photographs we know that the driver was called Chapman and Woodlee was the Clerk-manager of the railway. The line continued almost as far as Boot, adjacent to the iron mines.

By way of a final development in the 1880's a tramway was proposed to link the mines cottages to the workplace, the 1881 census tells us that 120 people lived here in wooden huts, there were families from Scotland, Ireland and Cornwall, and 2 families remain in Ravenglass descended from these pioneers. It is unclear if the tramway was ever built.

The railway headed across the fells to the south side of the valley, and over the River Esk on an iron bridge. But the mines were in decline and closed, thus the railway was in danger of bankruptcy. It was saved by passenger traffic – the passengers rode in the iron ore wagons.

Ravenglass became a tourist destination for people from Moor Row, Millom and Barrow, it was a popular day trip at Bank holidays. The area was promoted as the "English Alps", and passengers rushed to the open air carriages. Eskdale Green developed because of the railway. There were several incidents and accidents, Tom Bell, a guard, fell under the wagons whilst shunting in 1898. His grave is at Muncaster, and in 1905 a locomotive fell on its side at Murthwaite.

In 1908 the line was in a bad state of repair and a trespasser sent a letter of complaint to the president of the board of trade (Winston Churchill) as a result, the railway was closed on the 30th November that year.

In 1915 the line was still intact and Bassett-Lowke Ltd model makers who were looking for a "train set" on a big scale became interested. Within seven weeks of acquiring the lease they had a loco and were running trains. They adopted a smaller gauge, with smaller trains, (the earlier wagons became garden sheds). By early 1916 the railway was busier than ever and Easter was very successful. The Inspector of Nuisances received complaints about the "toy" railway, but in fact it was a true working line carrying freight such as coal, timber, potatoes and mail.

In the post war period quarries were opened and a crushing plant was built at Murthwaite. Granite and other road building materials were carried in great quantities and steam locomotives were replaced by diesel. In the 1930's the line was opened to the present Eskdale Station, and up to 55 people were employed.

But during the Second World War the quarries closed and there was virtually no traffic, the railway was almost lost. In 1953 the Beckfoot quarry closed for good and the standard gauge track was removed. In August 1960 the railway was sold at auction, to the newly formed Ravenglass and Eskdale Railway Preservation Society and has since gone from strength to strength. The locomotive River Irt is over 100 years old and still in service, together with River Mite (built by the railway in 1967), and the newer River Esk and Northern Rock.

Looking to the future – there are conservation plans for the mine sites.

Gordon Biddle gave the final presentation titled "I've got a Little List", it was an illustrated tour of the tremendous variety of railway structures in the country, most of which are not afforded any statutory protection. There are approximately half a million listed buildings in Great Britain, and about 2000 are railway structures, but many more-important buildings remain unlisted.

Gordon showed over 30 slides and gave a description of each, starting with the Ribbleshead, Arten Gill and Dent Head viaducts, moving through large and smaller stations, such as Langwathby (large) and the small station at Little Salkeld. There were private stations, e.g. Crofton Hall, and station houses and other railway dwellings were given prominence. The railways were the largest collective private homeowners, with the collieries second. Bridges, signal boxes and footbridges (Aspatria's is listed) and other structures such as the mechanical coaling plant at Carnforth, water tanks and platform canopies (and the iron columns and different types of brackets) were all included, we also visited the tenements on Barrow Island, where the original rail tracks down the middle of the streets have largely been covered by grassed central reservations, but there are survivors. To counter the depression over such losses our tour also visited sites where restoration work has been undertaken, Ulverston and Grange-over-Sands being good examples. Some disused structures such as Keekle viaduct were listed, but now have been delisted and may be demolished, so listing does not always guarantee preservation.

This was a fascinating show, with lots of information, and it was good to end the day in such an enjoyable way – Poo Bah had nothing on Gordon!

Cathy & Jan Bennett.

CIHS VISIT TO ULVERSTON (JUNE 2001)

Twenty two members and friends assembled in the brewery car park on an evening which though fine, threatened a storm, to be guided by Jennifer Snell who set the scene by reading extracts from the diaries of Father West and Harry Birkett (the latter who was quoted throughout the evening wrote accounts of his strolls through Ulverston and conversations with the elder locals, in the early 1900's).

“People of Furness in general and Ulverston especially are civil and well behaved....”
(Father West 1774).

Jennifer gave us all handouts and started to explain; the Ulverston crest illustrates the industrial heritage of the town, it depicts the former iron works, a plough representing agriculture (struggling) and a sailing ship (the Hearts of Oak a 34ft Morecambe Bay prawner which Jennifer is involved in preserving, is the only surviving example).

We were shown an aerial photograph of the site where we were standing, which until the mid 60's was housing, cleared for the development of the county road. To the right of the photograph was Ellers High Mill (now Rachels Court) which was once a brush works – “Brushy Taylor” made Horse brushes, also yard and sweeping.

The site which is now Myerscough's garage was Brocklebank's Timber Yard. The former County Hotel (now the Coronation Hall) and a square area behind it which was the county bowling green, were clearly visible, to the right was county mews.

We left the car park and started up Brewery Mount, (also known as Picadilly Hill,) at the bottom of the mount is a building which was Preston North's coal store, the wall is strengthened with a piece of rail, and has the remains of a drive shaft protruding from it. (Preston North was a foundling from Preston named by the work house, who moved to Ulverston and made good). Many of the buildings at the top of Brewery Mount have been cleared to make way for new homes, and the last building still standing is Beers Treacle Toffee factory (Stan Laurel's favourite) – there was speculation that the cottage he lived in was the original foundry cottages at the rear of this building, NOT the recognised house in what is now Argyle St).

Brocklebank's Timber Yard supplied domino-sized pieces of wood to the toffee works, the exact use is long forgotten, but the toffee was sold in similar sized slabs, so they could have been for moulds.

From here we went down Tarnside, there are some dwellings with curved window tops, which Mike Davies-Shiel told us were typical of Ulverston in 1810-1830. Just round the corner was the former Catholic school with a plaque over the door confirming the date. (Donaghue the axe murderer lived in this area.)

Some of the houses are 3 storey, mirroring the Georgian mills of the their time, and the cottages just around the corner from the catholic school was once a malt kiln for the brewery, It became disused when the lorries replaced horses and carts and the access was too narrow. (Jennifer remembers the “funny holey floor” of the yards from her childhood). The nearby wall has a face built into it, which may have come from the churchyard of the former parish church which was nearby.

We walked past the Victoria Higher school building, built in 1901 but now closed and awaiting demolition, for house building. Opposite the school was the cemetery of the former Catholic church, now a children's play area.

We passed St Mary's church, founded in 1111. Harry Birket wrote in his diary, "Oct 16th 1914 –they have altered the old church floor, to make it level, and used the earth and bones to level the path outside our house." From the church a track leads down to Spout Lane. On the left was a tenter ground, probably for Ellers Mill.

Ainsworth St- Birth place of Rt Hon Lord Wm Norman Birkett PC 1883-1962. During his career he defended Dr Buck Paxton at his murder trial in Lancaster, and helped with the Wallace Simpson divorce case. He was a British judge at the Nuremberg war trials and became Lord Birkett of Ulverston.

We walked through Back Lane, to Soutergate, on Back Lane we stopped to look at what was once a congregational church, there is a conveyance dated 13/2/1777 for a chapel and cemetery with a recreational ground (the latter two are no longer here) and among the trustees named were:

Robert Briggs – Dyer; William Woodburn – Tallow chandler; William Briggs – Manufacturer and Richard Brunton-Fellmonger

We emerged onto Soutergate now and turned left down towards the Gill (the front of the congregational church still has the appearance of a church building). In the Gill the Ulverston hospital original building was the workhouse of 1838, originally it had a bell tower and other features. It is due for demolition when the new health centre is developed.

At the top of the Gill, diagonally opposite the hospital is the former site of the mill dam (for the town corn mill), all that now remains is a garden rock pool!

It is thought that the public toilets in the gill are built on the site of the town jail if not the same building, In Harry Birkett's diary of 1912 he says that old Mr Barrow remembers a cockpit in the Gill, and the roundhouse (the town jail). There were 2 old cells 6'x3' and the light was a grated opening. One was the cell of Donaghue the murderer. In 1838 there were no houses opposite, but the slaughterhouse and a grassy area.

The town beck originally flowed along the surface, and together with Simms Carriages premises is shown in a picture of Town mill and luries.

At this point it started to rain heavily and the threat of bad weather became a reality, we pressed on, down the course of the beck, stopping first at what was the Hoppers pub, to hear about Edwin Woodburn, a champion pole vaulter of 1875. He was a very good sculptor and his work can be seen on the building, four faces representing the four seasons of man, also a cupid on the door frame. Next door to this building was Brushey Taylor's first brush factory before he relocated to the later site. We walked through the ??? car park, there was a Snuff mill on the beck here, but the beck is now under the tarmac. As we sheltered under an arch Jennifer showed us her drawing of what Low

Eller's High Mill might have looked like, from the little evidence available. Sadly nothing now remains.

The rain got heavier, and every one was now quite wet, but we carried on, down Market Street, across the County Road to the Police Station. Mounted on the wall is a cast iron measuring block – marked in 1ft, 2ft and a yard, to end market disputes over short measures.

Just down the road is the Ellers corn mill (now an engineering works) and Jennifer retailed a story from the newspapers of the day, an account of a serious fire probably caused by the new mill machinery, it spread and caused extensive damage due to failure of newly formed fire brigade to take pumping engine to the scene as it was out of action.

Still it poured, and we made our way back to the car park via the site of the old Mid Eller's High Mill, nothing remains now and the site is completely remodelled.

A wet, but very enjoyable evening.

Jan Bennett

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