Cumbria Industrial History Society

BULLETIN

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EDITORIAL

Well another year is nearly over and I think I can happily say that the Society has had yet another very successful year. With two well organised and attended conferences and a number of very successful visits, some of which were I am afraid spoilt by the poor summer weather, as well. 2008 proposes to be just as good with the April conference already full organised and booking forms are enclosed within this Bulletin and a full programme of visits already organised to parts of the county not yet visited by the Society. I hope all members will take this opportunity to thank all the committee members for their hard work over the years in organising these trips.

I think one of the most astounding features of the Society is the number of trips that are organised over the years and yet the committee still keeps finding areas of the county with Industrial archaeology in it that we have not previously visited. One of the great successes of the last two years is the September weekend trip and 2008 promises to be even better with a trip to the Edinburgh area look out for details in the next Bulletin.

I would just like to take this opportunity to wish all the members a Merry Christmas and a Happy New Year and hope they enjoy their industrial archaeology in 2008.

Graham Brooks.

CIHS ACTIVITIES IN 2008

FEBRUARY EVENING MEETING

The February Open Evening will again be held at the Penrith Conservative Club on Tuesday 19th at 7.30 p.m. This venue backs onto the very large Southend Road car park. Members and others are very welcome to attend and short contributions or displays will be very welcome. It would be helpful if you could let a committee member know in advance if you have something of interest to share.

MARCH MEETING

On Sunday 16th March, David Powell, who spoke at the Autumn Conference about the Rowrah & Kelton Fell Mineral Railway, will be leading a walk at Kelton Fell & Knockmurton. Meet at The Leaps on Kelton Fell, grid ref: NY 086 184 at 10 a.m. with picnic lunch and walking gear. There is ample space for roadside parking.

SPRING CONFERENCE

The Spring Conference and A.G.M. will be held at Ambleside as usual on Saturday April 19th. The title of the Conference is "Industrial Archaeology of the Lake Counties – 40 years on" and the day will be devoted to reviewing the research and surveying which has been done in the last 40 years and looking at where the gaps are and what we should be recording for the future. There will be a larger than usual number of speakers, each with a shorter time slot. As the application form did not have space for all the detail, the full programme follows:

9.30 – 10.10	**Coffee**	
!0.10 – 10.15	**Chairman's welcome and Introduction**	
10.15 – 11.00	**I.A.of the Lake Counties - looking back to the sixties**	Mike Davies-Shiel
11.00 – 11.30	**Research in Cumbria's I.A. since 1970**	Richard Newman
11.30 – 11.50	**The contribution of the individual**	Graham Brooks
11.50 – 12.10	**The contribution of a Society – CATMHS**	Ian Matheson (Coniston)
12.10 – 1.40	**LUNCH**	
	Working together – the society & the professional:	
1.40 - 2.00	1. The Duddon Valley Survey	John Hoggett
2.00 - 2.20	2. Nenthead	Frank Giecco
	A wider view:	
2.20 – 2.40	1. The Cumbrian Gunpowder Industry	Marcus Jecock (English Heritage)
2.40 – 3.00	2. Bloomeries	John Hodgson (LDNPA)
3.00 – 3.20	3. The Carlisle Survey (Cumbria County Council)	Caron Newman
3.20 – 3.50	**Developer Funded Industrial Archaeology** The Barrow Steam Corn Mill.	Dan Elsworth (Greenlane Archaeology)

3.50 – 4.15	**Conclusion,** including - other pieces of the jigsaw e.g. National Trust, the universities - identifying gaps - keeping and publishing a record of research - what the future holds	Richard Newman
4.15 - 4.20	**Thanks and closing remarks**	Chairman

It will, of course, be followed by the CIHS Annual General Meeting.

BOOKING FORM ENCLOSED IN THIS MAILING.

MAY MEETING

On Saturday 17th May, Chris Gregory will lead a visit to the slate quarries and the reservoir at Kentmere, starting at 10.30, bring packed lunch. Chris is hoping to arrange parking with a local farmer, so look for details of the meeting place in the Spring Bulletin.

JUNE EVENING MEETING

Geoff Brambles will be taking us to see the remains of a copper crushing plant and other places of interest in Tilberthwaite on the evening of Wednesday 18th June. Meet at NY 306 010 at 6.30 p.m.

JULY MEETING

On Sunday 13th July Graham Brooks will lead us round the remains of the lead mining sites in the Scordale valley part of the Warcop army ranges. Start at 10.30, bring packed lunch and mountain gear. Meet at Hilton NY 736 207 (Car park at entry to ranges)

AUGUST MEETING

Geoff Brambles has negotiated an opportunity for a maximum of 15 members to visit British Gypsum on Tuesday 5th August. Anyone interested should contact him for further information and to book a place. Please remember to let him know if you have to cancel so that others can be offered a place.

SEPTEMBER WEEKEND

Following the success of the two recent years' out of county weekends in September, we are hoping to arrange one in the area to the west of Edinburgh in 2008. More details will follow in the Spring Bulletin.

AUTUMN CONFERENCE

It is hoped to arrange the Autumn Conference in October on the subject of the industries of the Eden Valley.

NOVEMBER EVENING MEETING

On Thursday 13th November at the Church Centre, Church Walk, Ulverston, 7.30 p.m, CIHS member Lawrence Hill has agreed to show his Aerial Photographs of some Industrial History sites in South Cumbria. He says this will be an audience participation evening to pool knowledge about the various places.

NON SOCIETY EVENTS

WILKINSON ANNIVERSARY

The villagers of Lindale, near Grange-over-Sands, are planning to celebrate the 200th anniversary of John "Iron Mad" Wilkinson over the weekend of July 12th and 13th . CIHS has made a contribution towards the restoration/ preservation of his monument there and there will be some sort of ceremony and a chance to look round his house, Castlehead, now a Field Studies Centre, on the Saturday. Parish Councillor Jane Hall will be writing a piece for the Spring Bulletin with more details about their plans.

SITE NEWS

SMALLCLEUGH LEAD MINE

This Summer has seen further work on the outlying buildings on the Nenthead site and in particular the recording and consolidation of the remains in the area adjacent to Smallcleugh Horse Level.. Smallcleugh shop is the small ruined building on the north west of Smallcleugh level. It originally was two storeys and dated probably from the early 19th century. The back wall survives to a height of 2.2m. Excavation has revealed a complete flagged floor and substantial remains of a smithy hearth.

Thompsons level has been reopened, the level dating to the late 18th century was covered by mine waste in the early 1980s to prevent further stone robbing. The surviving stonework is being recorded and will be repaired. The newly opened portal is an important element to the Smallcleugh dressing floor.

Also at Nenthead repairs to the smeltmill flue are also taking place.

WILKINSON MONUMENT

An engineers inspection of this monument has been carried out. It involved removing the plaque, which has a raised impression of Wilkinson’s head on it. The space revealed was big enough for the engineer to crawl inside the monument itself, and with the aid of some ingenious ladders and planks, to take a good look at what has been hidden for over 20 years. The report does not indicate any serious defects, but it does advise some remedial and maintenance work to the interior of the monument as part of any refurbishment programme. There is some rusting and pitting and we were surprised to learn that the monument is not actually fastened down, but rests on its own weight

WITH SURREY IN SHEFFIELD REPORT ON WEEKEND VISIT 8-10 SEPTEMBER 2007

Fourteen CIHS members joined a dozen members of the Surrey Industrial History Group for a joint visit to the Sheffield area. The ready supply of water for power, wood (and later coal) for fuel and rock for grindstone and refactory bricks were identified as the reason for metal working in the Don Valley and the eventual reputation of Sheffield as 'Steel City'. The earliest phase of the industry was small scale with many farms having a forge in an outbuilding to provide winter employment. By the 17th century local landowners were developing small water-powered metal-working enterprises on the fast-flowing streams running off the hills to the west of the town. By the 1790s the rivers above Sheffield supported 140 mills. By this time the area had a well-established reputation for its specialized knowledge of iron and had become a celebrated centre of the cutlery trade. Manufacture was then in the hands of 'small masters' who with their journeymen and apprentices needed little more than skill and tools to ply their craft. With the arrival of steam power from the 1790s, of organized business capital and the onset of urbanization metal production became more specialised and was concentrated in large factory units close to the town centre and harnessing the water available at the confluence of the Rivers Don and Sheaf (hence Sheffield which then rapidly expanded and attained corporation status.) These were the years during which Sheffield became the great centre of cutlery manufacture for the empire. Improvements in steam power and the development of rail transport brought a further movement of industrial operations eastwards on to the wider lands of the lower Don Valley. Here volume steel production and heavy engineering took off through the 19th century continuing until the final quarter of the last century. World-renowned companies – the likes of Cammells, Vickers, Firths, John Brown, and Sanderson – turned out prodigious tonnages of rails, rolled steel and armaments and covered the Lower Don valley with a permanent pall of smoke.

Our visit commenced on Saturday afternoon at Kelham Island, site of Sheffields's earliest mill stream and later the centre of the first factory phase of the iron trade's evolution. That water could be the agent of destruction as well as production was soon made evident. I March 1864 severe flooding along the River Don had accelerated the process of industrial relocation from the constricted central area on to the wider flood plain to the east. The narrow Kelham Island site lies between the main river channel of the Don and a 12th century goit that fed the water to the mills. This summer's floods had completely overwhelmed the entire area and left both water courses littered with debris. Tide marks were visible at waist height on the side of buildings and bridges had had their parapets dislodged. Disappointment at finding the Industrial Museum still out of commission was slightly tempered for the Cumbrian contingent by the sight of a former Bessemer converter from Moss Bay standing proudly at the entrance. Robin Fielder, our local guide, provided an excellent commentary that revealed the concentration of businesses that once thrived in this area producing silverware, cast-iron grates, edge tools as well as every variety of cutlery, and the volume of employment that had existed in such a compact area. All the original back-to-back housing, the old town workhouse and many of the former works have now vanished but some substantial factory buildings remain, retaining much of their original grandeur, and have been converted into attractive apartments. Such industry as survives here tends to be in rather shabby premises and will soon give way to blocks of student accommodation or smart flats for new inner-city dwellers. Characterful survivals from earlier days are several local pubs, now reborn as real ale taverns, to link the old and new flourishings of Kelham Island. An illustrated lecture that evening from Robin gave a wider context to our observations during the afternoon.

For our Sunday trip, again led by Robin Fielder, our Surrey friends had chartered a coach with a marvelously patient driver. The excursion began with a circuit of the eastern side of Sheffield, passing the site of Sheffield Castle (now occupied by the city market), Norfolk Park (a reminder of the Duke of Norfolk's large local land holdings and place of cholera burials), and Manor Lodge of the Earl of Shrewsbury (one time place of confinement for Mary, Queen of Scots and now surrounded by council houses), before we descended into the Lower Don industrial area. Much of this district contained the first concentration of bulk steel-making in the world. Now it is rapidly assuming the character of any modern retail estate. Robin was able to point out a section of wall here, a surviving frontage of one of the steel company offices there, but it required a huge effort of imagination to recreate the crowded scene depicted on photographs of the area at the height of its industrial prosperity. We passed through the 'industrial canyon' of the great River Don Works, former home of the vast Vickers empire. The biggest naval manufacturer in World War I, and saw sites associated with the birth of stainless steel in the early 20th Century. A pause in our progress allowed us to visit Carbrook Hall, an attractive old pub stranded in the midst of redevelopment, which embodies a wonderful Jacobean panelled dining room with a stunning plaster ceiling and a resident knight in armour. The landlord kept a good pint and some splendidly clean loos both of which gave satisfaction before we resumed our tour. Our next stop was to inspect Sheffield's best preserved line of crucible furnace stacks at the former steel works of Benjamin huntsman, inventor of the crucible process. This had to be done from the roadway as the premises are now unoccupied. Before reboarding the coach the opportunity was taken for us to walk a short way along the towpath of the adjacent Sheffield & Tinsley Canal, opened 1819, which played a vital role in the early growth of the iron and steel industry in pre-railway days.

A brief journey northwards along the M1 brought us close to the 200 year old site of Newton Chambers, iron miners, coal miners, and makers of the famous Izal germicide en route to our picnic site. The journey also served to carry us back a century or more in industrial time. Top Forge at Wortley is largely 18th century in date although records of iron-making at the spot go back to 1621. It is a wonderful survival thanks to South Yorkshire Trade Historical Trust. The business of the forge from 1840 to 1912 was the manufacture of wrought iron railway axles and it made the proud boast that no Wortley axles ever failed in service. Power came from three waterwheels – two having trip hammers and the third driving the bellows. All three wheels are again in working order as was demonstrated to us and most of the machinery is extant together with four cranes and a furnace. The former foundry buildings now house a reconstruction of a typical blacksmith's shop and a fascinating assemblage of machine tools powered from line shafts driven by two paraffin engines. The equipment is a vital resource in the renovation of the forge and its artifacts. Within the grounds of Top Forge is a triple-gauge miniature railway layout which was further evidence of the range of engineering skills and raw enthusiasm that Wortley Forge can tap into.

Our return route towards Sheffield gave us another encounter with the effects of the recent floods. The road alongside the Don at Oughtibridge has been undermined and an awkward diversion through Worrall was necessary. Our final destination was the Abbeydale Industrial Hamlet not far from the remains of Beauchief Abbey south-west of the city centre. This site owes its survival to the Council for the Conservation of Sheffield Antiquities which began restoration work in 1964. dating from 1714, Abbeydale Works was powered by water from the river Sheaf and manufactured scythes, grass hooks, hay knives and other agricultural edge tools. The works remained in continuous operation until 1933. In its conserved state,

Abbeydale represents a perfect example of a self-contained 18th century water-powered manufacturing forge. Clay crucibles were cast and annealed from clay mixed and puddle on site. Above the Pot Shop was a Charging Room where the pots were loaded with blister steel and a measured quantity of lime as a flux ready to be lowered into one of the five melting holes in the furnace which was fuelled with coke. A melt lasted three to four hours following which molten metal was poured into an ingot. Ingots when cooled had to be carted to an adjacent rolling mill to be reduced to inch-square bars which were brought back to Abbeydale for further processing. Water from a large mill pond powered four wheels to drive the tilt-hammers, blowing engine, grindstones and boring machinery needed to fashion the steel bars into the required tools. Working at "full-tilt" a hammer man would have been turning out seven dozen scythe blades per day. After forging every blade required plating, tempering, hardening, grinding, boring and polishing, each of which processes was completed in workshops within the complex. Abeydale Hamlet transports visitors back to the beginnings of industrial mechanisation. Watching a two-hundred old triple-acting iron cam turning languidly on a water-wheel shaft still generating a steady draft for a forge hearth from two huge overhead cylinders was both mesmerizing and magical.

On the Monday morning our Sheffield weekend concluded with a visit to one of the more recent advantages in UK steel manufacture. The discovery of stainless steel is credited to the experiments of Harry Brearley working in Sheffield in 1913 and its production has been in the local industry's repertoire ever since. Part of the operation of the former British Steel Corporation in Sheffield was the giant stainless steel plant at Tinsley adjacent to the M1. This site, since much reduced in size, is now in the hands of a finnish-Swedish consortium called Outokumpu (meaning 'Strange Hill'). Our party was welcomed in the Brearley Centre – a modern training and visitor centre clad appropriately in stainless steel sheet. All suitably attired in hard hats, safety jackets and equipped with ear and eye protection we were escorted to the SMACC (**S**tainless **M**elting and **C**ontinuous **C**asting) facility – this year celebrating its 30th birthday – where, from a viewing gallery, we were able to witness several stages of an integrated operation all housed within one huge enclosed shop. First graded scrap steel is loaded into a large electric arc furnace holding a 130 tonnes charge of metal which is melted by the inserting of three massive carbon electrodes. The electrical charge these deliver was said to be equivalent to the energy requirement of the entire town of Doncaster (SMACC's electricity bill is £12m per annum, this machine itself accounting for £10m of the cost). In around 80 minutes the steel is melted to 1620^{o}C and then poured into a gialt AOD (argon oxygen decaburizing) vessel which refines the steel by removing carbon and adjusting the composition of the melt by controlled additions. The process time for the 145 tonnes now being handled is around 1 hour 20 minutes. The hot metal is then transferred to a second arc furnace where sampling is done to achieve an accurate analysis of the metal and to adjust its temperature. The continuous casting process requires the metal to be at a critical temperature as it is fed into a water-cooled copper mould and through formers that can deliver the finished as either slab, billet or bloom. Once moulded to the required dimensions the finished steel must be handled, cut, rotated and cooled by remotely controlled operations to retain its molecular properties, consistency and shape. If the process were to be producing spaghetti or macaroni from a lump of solid pasta it would be impressive but the sight of this volume of red-hot metal emerging as a continuous strand is mind-blowing when one considers the heat and stress imposed on the multitude of motors and components involved. Outokumpu can produce in this plant specialist steels to meet any specification and are able to supply in around seven days with negligible stockholding. The entire works employs only around 250 personnel. Experiencing SMACC in operation was a most impressive climax to a very instructive and enjoyable weekend visit.

Thanks are due to Tony Gregory of SHIG who presided over the preparations for the weekend, his Sheffield colleagues who suggested our itinerary (and rejigged it in face of the summer floods) and to all the members of the Surrey group who allowed CIHS members to join them in their visit and made us so very welcome.

Alan Postlethwaite

A PLOT OF LAND …. KNOWN AS THE MINE FLOOR

Earlier this year Maureen and I came across a little plot of land for sale by the shore of Morecambe Bay, down the lane opposite the Fisherman's Arms at Baycliff on the Ulverston to Barrow coast road.

It was just what we wanted – a wonderful location in which to create a garden that we couldn't do in the tiny back yard of our house in Ulverston. So we went straight back to the estate agent's to make an offer. By early May the plot was ours and we could start digging up the grass and planting vegetables.

But what intrigued me was the name of this plot on the sale documents – The Mine Floor. Something I had to investigate! Of course it could just been somebody's favourite name, nothing to do with the location, in the same way that you can find "Seaview" in the middle of Birmingham. It didn't seem very likely to me that there had been a mine there, although I did know about workings in a similar location a mile along the coast at Sea Wood, Bardsea. So I checked a few mining books, including Eric Holland's "Underground in Furness" (?), but no mention there.

Next stop The Industrial Archaeology of the Lake Counties whose gazetteer revealed:

BAYCLIFF
Iron-ore shipping point. This tiny Furness 'port' was used in the eighteenth and nineteenth centuries; at Baycliff Gate Foot (288716) is a lane running down to the beach south-west of Baycliff village, which was another ore outlet. At the extreme foot of the lane, near the beach, are the foundations of a former office used for recording ore cartloads, in the north wall or boundary of a private garden there. Numerous ore fragments are to be found here and at similar points along this section of the Furness coast.

Was our plot the "ore outlet"? Where were the remains of "the office"? Could I find any "ore fragments"? I wasn't convinced we were talking about the same place. The lane divides before it reaches the beach – I thought the shipments were made from the end of the other branch, not ours.

So I went back to Alfred Fell's classic "The early iron industry of Furness and district", published in 1908, and subtitled "an historical and descriptive account from earliest times to the end of the 18th century". This at least gave me an explanation of the term "mine-floor" which turned out to be not <u>at</u> the mine but rather the places along the coast to which ore was carted and stored ready for shipment. Fell gives the impression that each inland mine (or group of mines) had its own mine-floor on the coast:

"The Adgarley ore was carted to Baycliff Gate Foot, and that from Whitriggs to Conishead Bank and Wathead or Wadhead. Most of the ore from the pits at Stainton went to Beanwell, a place on the shore a little below Baycliff, where the mine-floor and shipper's hut or cabin are still to be seen." Beanwell is the name of the spring that issues from the limestone a few yards from our plot. But if our plot is the mine-floor where is the shipper's hut?

I would turn to look at old maps, but first a surprise. Scattered throughout the pages of Fell's book are a number of sketches by Mr A Heaton-Cooper, specially drawn for the book, and one of them is titled "An eighteenth century shipping port, Beanwell". In the sketch a man trundles a wheelbarrow across a piece of land towards the shore where a sailing ship is beached. The area behind the man is at a higher level, faced with a stone wall. On that level is a pile of rocks and what looks like a small house with trees behind. So what are we looking at? Which is the mine-floor? Is it the same as our plot? Remember, these sketches were made in the early 1900s, recreating a scene that disappeared many years before when the transport routes switched to the canal at Ulverston and the staithes at Barrow.

I needed to check with the maps. Off to the Record Office and there, on the 1891 25" is the same wall and the building with trees behind. Can I find the building on the ground? No, and the trees have all gone, but the wall is still there – at the back of our plot!

So we are agreed that Beanwell was a shipping point for iron ore from Furness mines. Ore was carted overland to the mine-floor, and then loaded onto ships which took it to furnaces up the estuary or further round the coast. It's not the shipping point referred to in 'Industrial Archaeology of the Lake Counties, but rather the one shown in 'Early Iron Industry of Furness and District'. However our plot is <u>not</u> the mine-floor. It is the piece of land across which the ore was wheeled from the mine-floor behind us. The boundary wall is still there but nothing else remains. Any of the "numerous ore fragments", dropped on their way across our land? Just one small piece so far. But as our vegetable plot expands it's a good incentive to keep me digging!

Roger Baker

J B FELL'S PARKHOUSE TRAMWAY

An interesting addition to the sparce literature on the work of John Barraclough Fell, civil and railway engineer of Spark Bridge, is to be found in a recent monograph on "*The Torrington & Marland Light Railway*" by Rod Garner (Kestrel Books 2006, ISBN 0954485971, price £14)

Fell was appointed engineer for the line built to serve a North Devon clay field and brickworks, but the Cumbrian interest is the inclusion in the book of three fascinating engravings illustrating the Fell patent trestle 8-inch gauge tramway built in 1870 to transport ore from the haematite mine at Yarlside near Barrow down to the Furness Railway at Roose Station.

Fell's cable-hauled Parkhouse Tramway apparently operated efficiently for three years until its capacity was overtaken by output from the mine. Fell was less successful in his ambition of using the tramway to demonstrate to the Royal Engineers that such a type of construction would serve the Army for moving military materials and casualties on the battlefield. Although he was commissioned in 1872 to build at Aldershot an experimental 18-inch gauge

line with locomotive haulage for assessment by the Royal Engineers, any further development of this project had by 1874 been abandoned.

Alan Postlethwaite

MADE IN CUMBRIA

This crane mounted on a small boat was built by Cowan Sheldon Carlisle in 1957. Seen Belfast harbour next to the ferry terminal.

AN UNEXPECTED FIND

"White Island lies 49km north of Whakatane in the Bay of Plenty. New Zealand's most active volcano, it is the summit of a large submarine volcano believed to be 150,000-200,000 years old." Thus read the publicity material and as we planned our trip, a visit became a must. The day finally arrived and we boarded our launch for the 90 minute journey to the island. This is a short account of our day, and what we found on the island, the background information is all taken from a guide book purchased back at base, since our touring schedule did not allow time for research.

It was an awesome place, the landscape was almost alien. Pumice and ash covered the beach, crunching under foot, a result of the most recent eruption and lahar of magma in July 2000. Further inland were bare rocks with steam issuing from minute cracks; bright yellow sulphurous vents; pools of various sizes filled with bubbling mud, or boiling greenish yellow liquid giving off sulphur dioxide. Domes formed from slabs of once flat rocks, deformed by the energy beneath, and multicoloured layers of minerals and rocks cleaved by past activity.

There was a constant sensation of energy deep below us, not really a vibration but a distant trembling. On approaching the crater rim, a vast boiling lake is visible. This crater, formed in 2000, is about 120 metres in diameter, at first dry, it gradually filled as steam emitting from cracks in the crater bed condensed faster than the resulting lake was evaporating.

CRATER LAKE FROM THE RIM

REMAINS OF 1933 WORKS

Our tour continued; we walked along being Careful to avoid the white areas, which were hot enough to burn our feet through the soles of our boots. Some of us used gas masks when the sulphur dioxide got too much for our throats. Then we rounded a bend, and imagine our surprise to be confronted by a series or ruined buildings. These were the remains of the last attempt to extract sulphur from the island in 1933.

White Island was discovered and named by Captain (then Lieutenant) James Cook in 1769 and in 1826 the naval officer turned missionary Rev Henry Williams sailed out to the island and realised it was a volcano – it was his comment “the whole island is composed of sulphur” that inspired what followed. After various ownership disputes, with first the Maori people, then the government claiming it, it was purchased in the late 1830s for two hogsheads of rum, by Philip Tapsell, a Bay of Plenty trader. In 1874 his son in law sold to John Wilson and William Kelly. Kelly’s share was sold on 2 years later, in the first of many transactions until finally in 1885 Henry Johnson purchased it and started the first sulphur mine with John Wilson, trading as The New Zealand Manure and Chemical Company.

The operation ceased in 1886 after the Tarawere eruption on the mainland, presumably due to fears that White Island held a similar threat.

Henry Johnson sold his shares to the Bank of New Zealand and George Morris, and this new group resumed mining in 1898, but the company collapsed in 1901. (Estimates of the quantity of sulphur, and the ease of mining it were highly inaccurate!) The island was purchased by Andrew Gray in 1907 but he did not mine and sold it in 1913 to Archibald Mercer and John Browne. These two were acting on behalf of the White Island Sulphur Company Ltd, of Vancouver. Mining started again in February 1914, but only three months later disaster struck as one of the large retorts used in the extraction process suddenly burst, a fireman called John Williams was badly burned and died the same evening. The plant reopened after repairs, but production was short lived. Another fireman went missing, his boots were found by the crater rim and it was thought he had committed suicide by jumping into the crater. In September 1914 the south-western rim of the crater collapsed causing a lahar to sweep down, bulldozing all the buildings into the sea, ten lives were lost, the only survivor being the cat. Rescue parties dug trenches through the steaming debris, but found no trace of the men or buildings, though some wreckage was later washed up further south on the main land. Mining attempts were then abandoned until 1923 when Archibald Mercer acquired title in his own name and raised money for another attempt. He established White Island Agricultural Chemical Company Ltd, which he registered in Vancouver, and set about selling shares to raise capital. In later years this company became White Island Products, based in New Zealand. The share broking firm GA Buttle & Co was enlisted to sell share in New Zealand and a prospectus grossly exaggerated the “immense” quantities of minerals awaiting extraction.

By 1925 a new factory had been constructed closer to Crater Bay, on debris from the 1914 lahar. This time the accommodation was built on the southern beaches in an area now known as Bungalow Beach, as it was decided that no one should live in the inner crater area again. From here on calm days the men could use small boats to make their way around to the works, but in rough weather they had to navigate a narrow and precipitous path that weaved around the southern wall and zigzagged steeply over the crater rim and down to the floor. All

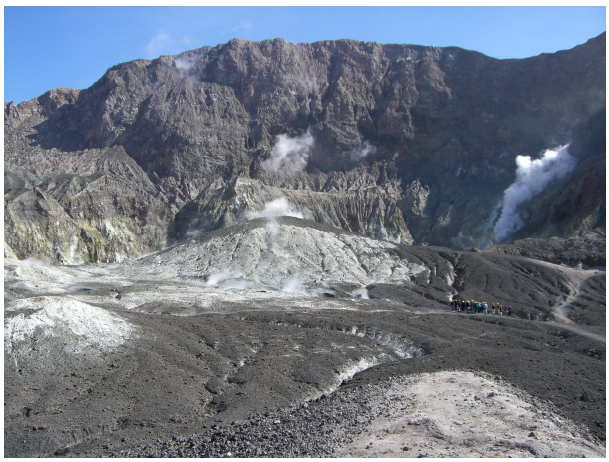
that remains of the camp today is a chimney and a rough line which may be the path.

Mining continued into the 1930s but because of the depression and consequent reduced demand for fertiliser, the company never made a profit and ceased in 1933.

White Island is now a scenic reserve, day trips by boat or helicopter operate from Whakatane.

Bungalow Beach

1. Approaching the beach, the plume of steam is not the main crater, but a vent from peripheral activity. It is clearly visible from several miles away.



2. Looking towards the crater, the white mounds on the ground are hot areas, and the light coloured streaks on the vertical rocks are sulphur, deposited where sulphur dioxide has seeped through the rock.

3 .The bases are all that remain of 3 hoppers, these were originally at least 3 times the current height and fed from trucks on an overhead tramway

4. Remains of a 60 ft rotary drier

5. The Last Retort – the atmosphere is very corrosive, so not much remains of the 1930s equipment. Jan Matthews.

AIA ANNUAL CONFERENCE 2007

This years AIA Conference was held at the University of Central Lancashire, Preston, (UCLan) as usual the event started with the Pre-Conference Seminars on the Friday afternoon, this year the presentations covered topics as diverse as Modern Uses of Terraced Housing & Textile Mills in East Lancs; Planning Aid England & Urban Regeneration Projects; The Regeneration of the Royal Arsenal, Woolwich in the Context of the SHARP project on Historic Arsenals; and included a presentation from our County Archaeologist Richard Newman – The Adaptive Reuse of Warehouses and Port Facilities in Lancashire and West Cumbria.

The main conference commenced with the evening meal on the Friday, which was followed by three 20 minute sessions covering the Industrial Archaeology of the Lancashire Textile Industry. Presentations were by David Lewis of the Northern Mills Engine Society, Ian Gibson from the Lancashire County Museum Service and Roger Holden from the Manchester Region IA Society

Due to work commitments I was only able to attend on the Saturday and Sunday, when the traditional programme of conference session in the morning, followed by an afternoon visit was upheld. On Saturday morning the session was chaired by Dr Mike Nevell, chairman of the North West Industrial Archaeology Panel. There were three 40 minute talks followed by questions. Starting the proceedings was Peter Iles, County Archaeologist for Lancashire, who presented on Lancashire's Archaeology, from earliest times to post-medieval, illustrating how developments tended first to develop along the communication routes of the Lune and Ribble valleys, before fanning out to more remote areas. The same pattern recurred throughout history. He was followed by Dr Geoff Timmins, Senior Lecturer UClan, on Weavers' Housing; this was an interesting presentation on the typical styles of cottages built specifically to accommodate and encourage weaving families into the areas. Not all had the typical three windows on the second floor, but all had through rooms with matching windows on front and rear to maximise the light, an alternative was to have windows at ground level to light a cellar, these buildings always had steps to the entrance door. The third session was by Dr Richard Newman, County Archaeologist for Cumbria, a presentation on Rural Industries, illustrated with examples from the old county of Lancashire (i.e. including many Cumbrian examples!).

After lunch there was a choice of tour, Group A – including me – took a coach trip to Helmshore Mills. The site comprises two mills, Higher Mill was built in 1789, as a water powered fulling mill, and its function never changed until it finally closed in 1967. The second mill, was built in the late 1820s and about 80% rebuilt following a fire in 1858. Originally they were both operated by the Turner family and the last member of the family, William Turner 1793-1852 was a very powerful figure, both as a JP, and owner of several mills and much other property. This second mill is today known as Whitaker's Mill since it was operated for most of the 20th century by L Whitaker & Son as a condenser cotton spinning mill. It ceased commercial operation at Christmas 1978. Today Higher Mill, still has a full range of wool cloth finishing machines including the water powered fulling stocks, rotary milling machines etc all in situ in the "mill bottoms" An exhibition telling the story of the East Lancashire Woollen Industry is planned for the middle floor, which will include an early non-self action woollen mule. The top floor will house a range of hand looms. Whitaker's Mill has an entire floor of carding and mule spinning machinery, situated exactly where it worked.

until 1978. Twenty five carding engines and some 2,856 mule spindles make an impressive sight.

Photo J Matthews, Cumbria

On the ground floor are machines used for the dangerous and noisy preparation of waste yarn, the "devils" one of which is a fine six cylinder example. Unfortunately much of the machinery was covered for our visit because of delayed renovation and building work, however the machinery on the top floor was demonstrated. There is also a "Revolution" gallery, telling the story of the Mechanised Lancashire textile industry from inception to its peak just before the first world war. The gallery contains a 96-spindle Waterframe produced whilst Arkwright was still alive, which is the only surviving complete machine of its type in the word

Alternative choices were trips to Blackpool to visit the Tower and look at the heritage sights, or a visit to Carnforth Station and Sedgewick Gunpowder Mill.

Sunday started with the AGM which was followed by the Rolt Memorial Lecture (in memory of LT Rolt) which this year was given by Dr Colin Rynne from University of Cork titled "The Society of Friends in Nineteenth-century Ireland and Technological Change as "Colonial" Discourse. After lunch the tour choices were either walking tours of Preston – Mills and Housing or Mills and Canal or a visit to Preston Dock, Ribble Steam Museum and the Millennium Canal Link, this trip was over subscribed and I followed the Mill and Canal route.

We were guided by David George around the streets of Preston. Parts of the UClan campus are built on the former Preston and Wyre Railway's Maudland Road goods yard and one of the first sights was an example of adaptive re-use – a large single storey goods shed has been converted and extended, now a lecture theatre, and accommodation, the five bays and two half bays of the original brick and stone structure are retained. After this we toured the area looking at several mills, the first we visited is probably the oldest surviving mill in Preston, Hanover Mill was built by the Horrock family in 1796, the mill is 11 x 3 bays long and there

is a central bay and plaque to commemorate Richard Arkwright. The Arkwright Mill, built in 1854 was our next stop, a four storey mill with internal cast iron pillars and timber beams. We looked at several other mills on our tour but the last one will stick in my mind, for sheer size and impressive design. Tulkeith Mill situated on Blackpool Road is a large, Edwardian spinning mill built in 1905, it is a striking building with its brick built, four storey structure decorated with yellow brick. It is 42 x 13 bays and has internal construction of steel beams and concrete floors. There as an ornamental water tower and a six bay engine house. The mill offices are now used by the Car Phone Warehouse.

Photo Tony Yoward, Hampshire

We made our return along the towpath of the northern section of the Lancaster Canal. This section is level for 41 miles from Preston to Tewitfield locks, near Carnforth. The canal boats would have typically been 72ft long by 14ft wide and carried 50 tons. Limestone was carried south from Kendal, with coal from Wigan being the return cargo. There was a fast packet boat service between Lancaster and Preston in the early 19th century. The basin at Shelley Road is now moorings for leisure cruisers, but would have originally been used for fuel and raw materials. The canal ends abruptly at Aqueduct Street, the last mile to the terminus at Preston Basin having been built over in the 20th century .

The conference continued through to Thursday with the now traditional programme of speakers each evening describing the highlights of the next days visits in the area.

Jan Matthews

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ARCHAEOLOGY IN THE LAKE DISTRICT 2007

Annual conference of the Lake District National Park Authority at the Theatre By the Lake, Keswick; Saturday, 13th October 2007.

This year's event was particularly interesting for Industrial Archaeologists, including, along with a **general coverage** by John Hodgson and Eleanor Kingston; **Aerial Survey** by Peter Home, Head of Aerial Survey and Investigation, English Heritage; **Castlerigg Stone Circle: a brief history of appreciation and conservation** by Jamie Lund, National Trust; **Excavation of Bronze Age Ring Cairns at Seathwaite Tarn 2007**, John Hodgson LDPNA and and Alastair Vannan, Oxford Archaeology North **:-**

An Industrial Archaeological Survey of a Lakeland Mountain: a report on a Heritage Lottery funded project to record the Industrial History of Coniston Old Man by Alastair Cameron [who has led several CIHS field trips to the area]. The survey included oral history by local people - examples of recordings were played; surveying of the whole mountain - for example **sled tracks** and the **return tracks;** the production of a report. The last included a leaflet showing the various aspects covered.

The Discovery of the Earliest Primitive Wagonway in Britain at Silver Gill Mine, Caldbeck by Warren Allison. This was a short progress report. An early level - Emanuel , started in 1573 - filled in by later miners is being excavated. Photographs of the timbers found fixed in the floor of the level were presented. These appear to fit the description of a wagon trackway by Agricola - *De Re Metallica,* 1556, [page 156 in the Hoover translation, Dover, 1950]. The four wheeled truck has an iron pin projecting below the wheels. As the truck is pushed along it is kept on the track by the pin running in a groove or gap in the timbers. The timber has been radio carbon dated to 1420 - 1640 to 95% probability. A recent find is a wooden item, rather resembling a large ping pong bat, with a piece broken or cut off. This is dated to 1020 - 1200. The earliest record of mining, referring to Caldbeck is 1319, but this artifact suggests there may have been much earlier working.

[Subsequent conversations with Warren Allison and Sam Murphy have brought up the following. A German mining archaeologist has sent a picture of a mediaeval miners' shovel similar to this, with a handle wedged into it at an angle - all wood, no iron edging, which was usual for agricultural spades from Roman times. Agricola does not show such a tool. The early date is the same as a sample of charcoal from the lead smelt site between the ford on Carrock Beck (See Bulletin 66, Dec. 2006, p.7.) and Calebreck. The explanation for the early tool being in the 1573 level is that the earliest workings would be in the outcropping vein above. The level could have broken into these allowing debris and backfill to fall in.]

The Archaeology of Prehistoric Mines and Quarries: a perspective from ethnoarchaeology by Peter Topping, Head of Archaeological Investigation, English Heritage. The flint mines in Norfolk and the peace pipe stone quarries in North America were studied. In both, special 'offerings' were placed, maybe in thanks for or hope of success. It was noted that when making the peace pipes - a very spiritual process - all the waste, including polishing swarf, was put back into the quarry. Tribes at war with the 'owners' of the quarry were nevertheless allowed access to obtain stone. Study of present day customs by 'stone age' people may help an understanding of the archaeology of societies long gone. Why did the Lake District stone tool makers choose to work in the high fells? Possibly so that they could return the waste to the quarry. Possibly they felt it was spiritually

appropriate to be high up. Tool makers in the Alps similarly chose to work high in the mountains.

To promote ***Access to Archaeology,*** the L.D.N.P.A. has a new Project Officer, Lisa Keys. She will be taking presentations around the area - talks, exhibitions etc. - to village halls schools, local societies, libraries. A useful set of six leaflets on aspects of archaeology is available. LDNPA's phone number is 01539 724555. After January '08, try www.ads.ahds.ac.uk/catalogues.

Ian Dunmur.

BOOK REVIEW

THE HUTTON MOOR ROAD A brief history of the Keswick to Penrith Turnpike.
by Colin Smith; ISBN978-0-9556574-0-5; 32pp, A5; published by Brow Bottom Enterprises, Bowscale, Mungrisdale, Penrith, CA11 0XH.

The author is Cumbria Representative to the Milestone Society (successor to our member Ken Broadhurst) and has been very active in finding and restoring township boundary markers and milestones around his home. The General Turnpike Act of 1767 made it compulsory for the trusts to erect milestones. An Act of 1762 set up one of the biggest trusts - roughly covering Cockermouth, Keswick, Penrith, Kendal - which involved over 62 miles of roads. The Keswick to Penrith part of this was known as the Hutton Moor Road. There would have been 17 milestones from 'Keswick 1 - Penrith 17' to 'Keswick 17 - Penrith 1'. Ten of these remain - some original some repaired some replicas. A map shows where they all are.

There are over 50 high quality colour photos, 26 footnote references and other information. Two appendices show examples of other local milestone types, and toll houses. Altogether a beautiful little book stuffed with information, and some rather bizarre word processor generated typesetting (MS Word).

Ian Dunmur.

ABSTRACTS

BRITISH PAPER MILLS: EDWARD SWEETAPPLE'S MILLS IN CUMBRIA.
by Alan Crocker; in The Quarterly No. 64, The Journal of the British Association of Paper Historians; October 2007; 11pp including 37 references and an appendix on **Branthwaite Paper Mill, Cumberland.** The article is based in part on the researches of the late John Gavin (CIHS vice president).

The author (CIHS member), resident in Surrey, while studying something there, usually seems to find a Cumbrian connexion. This is why he has time-shares at the Elterwater Gunpowder Mill. With help of other CIHS members (Jack Lancaster and Ann Hillman) and Denis Perriam (Carlisle local historian) he located John Gavin's papers and MPhil thesis and details on the mills and the Sweetapple family in Cumbria.

From 1817 to 1865, a Quaker, Thomas Sweetapple was a papermaker in Godalming, Surrey. His son, Edward was born in 1831 and after managing paper mills in many places, finally

moved to Cumberland in 1881 - first at Allenwood Mill, Heads Nook, near Carlisle; six years later, Branthwaite Mill, between Cockermouth and Workington and, in 1892, Derwent Mill in Workington. In 1893, Sweetapple United Paper Mills Co. Ltd. was formed with these three mills plus one in Bootle, Liverpool and premises in Newcastle upon Tyne. They failed, 1894. Edward Sweetapple filed for bankruptcy and died in1910. The company was restarted by the Receiver, J. Jackson Saint. In 1897 the Derwent Mill was owned by the Derwent Paper Mill Co. and known as 'Cloffocks'. From 1899 to 1902 it was operated by Makin and Pollitt as a subsidiary of Canalside Mill, Ulverston. Edward's youngest brother, Thomas, managed Allenwood and died in 1896. By 1899 the mill was operated by the Vegetable Parchment and Chemical Co of Liverpool ('greaseproof paper'), but in1899 the Allenwood Paper Mill Co. was formed, failing two years later, after which the mill was demolished. The manager's house, coach house and two cottages survive as the Coach House Bar and Restaurant. Branthwaite or Marron Bank Mill was established by William Borrowdale, bookseller and printer in Workington, in1826; 8 km SW of Cockermouth. After many changes of ownership, and liquidation in 1878, it was taken by Edward Sweetapple in 1887. After the collapse of Sweetapple Paper Mills in 1894, this mill is not listed in directories of 1895-7. John Gavin, in 1987 found only the ivy covered chimney and outline of the buildings.

Much more detail of the owners and operators, of the financial aspects and of the machinery and products is given, with several old photographs and sketch maps.

John Gavin was a founder member of the British Association of Paper Historians.

Ian Dunmur.

COMMITTEE MEMBERS

Roger Baker, Membership Sec.
4 Barnes Cottages
Back Lane
Preesall
Poulton FY6 0HT
mbarb@freenetname.co.uk

Mrs Jan Matthews, Vice Chairman
Broombank Cottage
Lindal-in-Furness
Cumbria LA12 0LW
psfc@btinternet.com

Geoff Brambles, Chairman
21 Derwent Drive
Kendal
LA9 7PB

Mrs Helen Caldwell, Secretary
Low Ludderburn
Cartmel Fell
Windermere LA23 3PD
lowludderburn@btinternet.com

Ron Lyon
Chrondrenn
Church St
Skirwith
Penrith CA10 1RQ
Ron_Lyon@chronserve.freeserve.co.uk

David Beale
Low Row
Hesket Newmarket
Wigton
CA7 8JU
david.lowrow@virgin.net

Dr Ian Dunmur
Croft House
Mosedale
Penrith CA11 0XQ
dunmur@ktdinternet.com

Graham Brooks, Bulletin Editor
Coomara
Carleton
Carlisle CA4 0BU
gbrooksvet@tiscali.co.uk

Alan Postlethwaite, Treasurer
17 Railway Terrace
Lindal-in-Furness
Ulverston LA12 0LQ

Geoff Oxley
9 Hugh Little Garth
Upperby
Carlisle
CA2 4LQ
mail@mcintyre-oxley.fsnet.co.uk