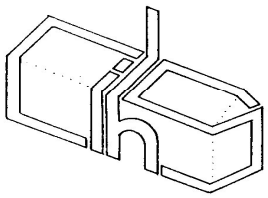
Cumbria Industrial History Society



BULLETIN

www. Cumbria-industries.org.uk

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CONTENTS

EDITORIAL

Welcome to another year, the weather this year to date has not been generally good for visits to outside sites and has certainly limited my foiled work to-date. However the Society has a very full programme arranged for 2008 and we hope for better weather for the outdoor events. The two events already held the members evening in February and the visit to the Kelton Fell mineral lines were well attended. I hope people will make the effort to attend as many of the events as possible because of all the hard work put in organising them by both the committee and the leaders. The next major event is the spring conference and there are still places available.

The Society has at long last managed to get the proceedings of the joint autumn 2003 conference on iron making in Cumbria printed. For those of you who attended the conference you should have received your complementary copy. Details of the papers published in the book are given in the Bulletin and any member can obtain a copy for £6.50 plus £1.00 postage and packaging from the Bulletin editor.

The publishing of papers and there by spreading information on the industrial history and archaeology of the county is part of the role of the Society and we are at present looking for papers either in a short format for the Bulletin or in longer version for the next edition of the Industrialist which hopefully could be published in early 2009. Any suggestions for papers would be gratefully received by the editor and anyone wanting advice should contact me.

Graham Brooks.

CIHS ACTIVITIES IN 2008

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 (Coniston)	**The contribution of a Society – CATMHS**	Ian Matheson
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.

Bookings are still available from Daniel Elsworth or on the day at the door.

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 am meeting at Hartrigg, the last farm on the west side of the valley NGR NY457 060. Allow half an hour from staveley and please park ONLY in the farmyard as directed not anywhere on the road. Bring packed lunch. The walk will be about 4 miles with 600ft of easy ascent.

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

On the 5th August a tour of the plasterboard manufacturing plant at British Gypsum Kirby Thorpe site has been arranged. This tour will start at the reception area at 9.00am and will continue till 3.00pm. Lunch will be provided in the canteen.

This trip must be booked in advance by contacting Geoff Brambles.

PEOPLE HOW HAVE NOT PRE-BOOKED WILL NOT BE ALLOWED IN .

SEPTEMBER WEEKEND

Following the success of the two recent years' out of county weekends in September, we are visiting the area to the west of Edinburgh. More details ae on the enclosed booking form.

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.

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BOOK REVIEW

MASTER OF THEM ALL IRON MAKING IN CUMBRIA. Proceedings of a joint conference of the CIHS and the HMS. Pp 134. Price £7.50 to members of CIHS. Retail £9.50 both plus £1.00 postage and packaging. Available from the Bulletin editor.

This book has been a long time in the production with the original conference taking place in autumn 2003. The book contains papers dealing the geology of iron deposits in Cumnbria by Brian Young. A report on the archaeology of Cunsey Forge by Ian Miller, The bloomsmithes of South Westmorland and North Lancashire by Richard Newman. An investigation into Wilson House #Lindal by David Cranstone. A description of Hodbarrow mine based on the notes of the late Eric Holland. A look at the final days of the Millom steel works and the spray steel making process by David Robson Davis. The final paper is by Mike Davies-Shiels on the Backbarrow Furnace from 1868 till 1967.

This book adds a lot of detail to the history of iron making in Cumbria and brings the subject further up to date.

MORE PLAIN PEOPLE Holme St. Cuthbert History Group. ISBN 978-0-95488-232-7. pp157 £9.95.

In the late 1905's the Solway Group of teachers and students led by John Hartley recorded many industrial and transport sites on the Solway Coast, gave slide talks to local societies and published a guide book "English Solway" (1963). Brian Blake who did the hardback study utilised our student labour on his Romano-British archaeological digs in the Allonby and Maryport locations. Compared with the massive outpouring of books about the Lakes, the Solway since then has been relatively neglected. Therefore this new book, the second in the series is welcome (CIHS is acknowledged as one of its supports.) Part one may broadly be described as about people; part two is a survey of the development of the key places from Silloth to the outskirts of Maryport. Some of the chapters are a national history writ small and applied to the area for example the Civil War, Smuggling on the Solway etc. Others miht be described as episodes in family history and are about local farmers, shopkeepers and fisher folk by name, derived from the memories of local people. In part two we learn more about some of the buildings such as the Long House at Skinburness, the reading room and North Lodge at Allonby and various schools and churches including Holm Cultram Abbey. The section on Silloth is particularly well illustrated with an arial view of the Docks, pictures of the hotels, ships, the railway and the problematic sea wall. The black and white pictures throughout are good. There is a bibliography but no index.

A D George.

Whitehaven: the Railways and Waggonways of a unique Cumbrian Port.

By Howard Quayle. ISBN 978-0-95400232-5-6 102 pages Price 13.50 Cumbrian Railway Association.

This book describes the development of the town of Whitehaven as a coal port and particularly the provision of initially waggonways and later railways to speed up the communication between pits and the ships in the harbour. In the early days of the port the major part of the cost of the coals was the transport to the harbour and anything to reduce this cost was rapidly developed. The author also describes the way in which the town was

connected to the national railway network and also the various local and national companies involved.

This is the usual well written and produced book we have come to expect from the Cumbrian Railway Association. It is well illustrated with both black and white and colour photographs and also over 25 maps and plans of the area.

This is not just a book for the railway enthusiast but also anyone interested in the development of the port of Whitehaven and its associated coal mining industry but also the other industries in the area.

ABSTRACTS

THE WINDERMERE GASWORKS 1862-2004
Blake Tyson C&W transactions 2007 pp135 – 167

This is a very detailed look at the development of the gas works in Windermere and their use and management and change up to their closure after 1986. Thee are a series of very useful appendix especially one listing all the companies which supplied equipment to the works over their lifetime.

SEASCALE GASWORKS
James and Joyce Cherry. C&W 2007 pp170 – 178

This is a very similar article to the one on Windermere gasworks but due to the size of the Seascale operation the amount of later development of the site was less. It gives a good contrast to the running of a large site such as the one at Windermere.

Limekiln at Scordale part of the July visit.

VISIT TO SHEFFIELD
8 - 10th September 2007

Joint meeting of Cumbria Industrial History Society and Surrey Industrial History Group

(Although we published an account of this trip in the last Bulletin this account brings a bit more to the subject. Ed.)

TOURS and LECTURES

Lead mining and smelting were carried on in the district in prehistoric and Roman times. However, apparently, the earliest record to iron working is that the Lord of Hallamshire granted rights to monks of Kirkstead Abbey in 1161. They may have used water power. Chaucer (1348-1400) his miller in the Canterbury Tales carried a *Schefeld thwytel* (knife).

The iron-steel-cutlery industry was stimulated by the coincidence of **iron ore** (albeit of poor quality), **sandstone** of good quality for grinding, **wood** for furnaces, 5 **rivers** in steep valleys for water wheels. Later the presence of good **ganister** (a close-grained siliceous stone from coal-measures) became important to form furnace hearths and to line and seal joints in Bessemer converters.

WALK AROUND KELHAM ISLAND AREA

The 25 ton Bessemer converter standing outside the Kelham Island Museum is believed to be the only one left in Britain. It came from Workington where steel production ceased in 1974 - later than elsewhere because of the haematite ore, low in phosphorus, obtained locally.

Walking the area around Kelham, here and there, among the once prosperous great factories, many converted we saw older relics. Flue stacks of crucible furnaces recognized by the horizontal banding of yellow fire bricks remain because they are integral with the wall of a building still in use. Also near is the one remaining, and carefully restored, cementation furnace, built by **Daniel Doncaster** in 1848. This, the last one in Sheffield, was used until 1952.

[Cementation was a German invention, arriving in South Yorkshire in 1672. Alternate layers of iron and carbon are heated at ~1000°C for 5 to 12 days after which they cool over several more days. The iron absorbs carbon from the charcoal forming 'blister steel' - because of the blowholes on its surface. A pile of 9 or 10 of these bars forged together made **'shear steel'.** *Forged again they became 'double shear steel', the top quality.]*

It is usually said the name *shear steel* comes from its use particularly in shears for the wool industry.

Although shear steel was good for edge tools, it was still inhomogeneous - carburization was not constant throughout; and there were strings of slag incorporated.

TOUR OF LOWER DON VALLEY.

Ordnance survey maps of 1850 and 1907 show the growth of industry along the relatively level ground in the Lower Don Valley - NE, between Sheffield and Rotherham. A canal reached Sheffield in 1819 and railways in 1838, joining Sheffield and Rotherham and thence to the growing national system in 1840. Prior to these the area had been rather inaccessible, relying on pack horse roads So Sheffield had concentrated on smaller, high value products. *[In the 1950s it was said that Sheffield made one sixth of the country's tonnage of steel but half its value.]* Factories spread along the canal and railway. In 1855, Bessemer's invention of the Converter and his setting up in Sheffield in 1858 enabled steel production in large quantity, encouraging the necessary heavy engineering. Bessemer House (1905), is all that remains of the original company. Many companies bought land and built works, expanded, leapfrogged each other and the railway, then amalgamated, until in the 20th century enormous melting and rolling shops and forges stretched along the Don from near the centre of Sheffield into Rotherham 8 km away. Well known companies included Firth, John Brown, Cammell, Vickers. They built so close to the road that Savile Street was known as The Canyon.

On Sunday, we approached the Lower Don Valley, by coach, passing the Manor Lodge of the Earl of Shrewsbury (Elizabethan industrial entrepreneur) where Mary Queen of Scots lived for 14 years. (The Shrewsbury estates passed by marriage to the Dukes of Norfolk, who still own half of Sheffield, whose ground rents paid for the rebuilding of Arundel Castle in the 19th century.) We also passed the world famous Park Hill flats - now reduced in height, but still impressive. Then down into the valley to see where most of the enormous old corrugated iron sheds, which used to form the canyon of Savile Street, had been replaced by much smaller modern brick buildings with open areas between, occupied by various light engineering works etc. Some old buildings remain - often just the offices of the big companies, now with new uses. But there are some big sheds to give an idea of what it used to be like when they were packed close together for miles along the valley - Burngreave, Attercliffe, Brightside, Carbrook, Tinsley. In Savile Streete,"the canyon" we passed a Nasmyth steam hammer by the Brightside Foundry & Engineering Ltd. 1947 as a roadside ornament.

One of the famous old works was John Brown's. Their President Works offices and the neighbouring Thomas Firth's West Gun Works now form a pleasant modern development for offices and light industry. The gun works is now Gripple Ltd making Hugh Facey's 1988 invention for joining strands of wire - illustrated by the car park fencing and a spider's web decoration.

Brown's and Firth's built a joint research lab in 1908 and put **Harry Brearley** (1871-1948) in charge. In 1913 he produced the prototype of modern **stainless steels**. The building is now English Pewter Co.

Another of Sheffield's alloy steels industries is **magnets** - although a lot are made of ceramics now - represented by H Shaw (Magnets) at the Anchor Works since 1964. The firm started in 1783 and makes compass needles, fridge magnets etc.

Close by is the three arch Darnall Aqueduct for the **Sheffield and Tinsley Canal** (1819). Adjacent is the old railway bridge carrying the new tramline out to Meadow Hall shopping.

We had a pleasant walk along the canal which was said to have boats moored at the Sheffield end and has various nature reserve and preserved industrial features. Back on the road we had a view of the Don Valley Arena with a steel ladle on a mound while behind us was a crucible furnace stack.

In the 18th century, **Benjamin Huntsman** (1704-76), a clock maker in Doncaster was bothered by lack of homogeneity in his springs - made by the cementation process - ie shear steel. He moved to Attercliffe and developed crucible materials to withstand melting the steel to give a more uniform product - **crucible or cast steel**. The flue stacks mentioned above were for these crucibles. We saw the Britannia Inn where Huntsman lived his last years, it is believed. The date **1772** on the gable end of the inn is probably made of his steel. Both of his works have disappeared.

We paused at the entrance of the burial ground of Hill Top Chapel, Attercliffe Common where his family memorial is, along with tombs of other iron and steel families.

WORTLEY TOP FORGE.

We motored north up the M1 to the **Wortley Top Forge** which is in the **Upper Don Valley**, a delightful, rural spot. We sat in the back yard of the forge cottages for our packed lunches. The earliest record is 1623. The Spencers had it; Cockshutts from 1739 to 1819. James Cockshutt early adopted Cort's puddling furnace. From 1871 to 1907 forge directed by Thomas Andrews. He researched wrought iron and had test rig there. Both these men were fellows of the Royal Society.

*[**Henry Cort's Puddling Process (1784)** made **wrought iron** from blast furnace pig iron (containing carbon) using a reverberatory furnace burning coal, in which the fuel is kept separate from the charge which sat on a sand base. [Coal was kept separate from the iron to avoid the take up of sulphur.] The iron was not quite melted, forming a pasty mass. This was rabbled (i.e. stirred with a rabble) until the impurities had burnt off, and formed into a ball which was hammered to expel slag and worked into a solid bloom. This is **Dry Puddling.**]*

There are three working water wheels to drive two tilt hammers and, when it has been built, a replica of a blowing engine patented by James Cockshutt in 1771. Forge has datestone of 1713. Four original cranes remain. There are rebuilt foundry, blacksmiths' and joiners' shops. The buildings contain a machine shop and collection of steam engines. Incidentally, the 7¼ inch gauge Model Railway Society meets and has a track there.

No. 1 hammer, the old one, is of belly helve with spring beam type. (Typically these would have a 1 ton oak beam with a ¾ ton cast iron head.) Top Forge made wrought iron railway axles by 1835. No.2 hammer is 19th century, used especially for this. It was the preference for steel that led to the decline of the Wortley Top Forge which closed in 1908.

ABBEYDALE WORKS.

South through central Sheffield and up the River Sheaf valley to the Abbeydale works. There we saw more tilt hammers and grindstones, driven by water wheels from the river. There is a well preserved line of crucible furnaces, the operation of which was demonstrated. It has in recent times been operated at low temperature to cast aluminium ingots in the way it used to

be done for steel. The secret in this technique - developed by Benjamin Huntsman in 1742 - was to make crucibles to stand high temperature and rough handling.

[The pots (crucibles) are made from a mixture of clays: fireclay from Derbyshire, Stannington, Sheffield, and Stourbridge, Worcs., China clay, coke dust, old pots finely crushed. The dry powders are mixed and left overnight with the correct amount of water. Next morning the clay is spread in a shallow tray and trodden with bare feet. 15 kg of clay is kneaded into a ball and placed into a mould. A plug shaped to the inside contour of the pot is pushed into the mould. Mould and plug are smeared with creosote oil beforehand to prevent sticking. The pot is removed from the mould and dried for 2 or 3 weeks. The day before use the pots are baked in a slow coke fire.]

The product was **crucible steel**. Large castings could be made by *teeming* (= pouring) many crucibles into one mould. In the 1840s Sheffield made about 90% of Britain's steel and 50% of the world's. In addition to springs, such steel was used for cutting tools, machine parts, dies, rolls and wire. The last crucible steel melt was in 1972.

W. Tyzack & Sons set up in Sheffield in 1817, initially noted for saws but soon becoming major scythe makers. They took the Abbeydale works in 1849. At that time there was some rolling equipment for the crucible steel but this activity was transferred to Totley Rolling Mills to make thin sheets for bladed tools. Crown scythes were made by sandwiching a strip of crucible steel between two pieces of wrought iron by heating and forging. This was *steeling* to produce a *strip.* The ratio of steel to iron was a closely guarded secret. Next, the strip was cut in half to make two equal blades. They were thinned and spread to the scythe blade shape in the tilt forge, with shaped anvil and hammer. This was *plating*. The blade was called a *skelp.* Then the back was turned 120° by hand forging to stiffen it. It was then bent back *(gristing)* so that the thick backing strip would not obstruct the grinding process. The blade was then ground on ~ 2 m diameter grind stones of local sandstone(later man-made composites). [As stones wore down they would be used for other types of blade, eventually, at 150 mm, for razor blades.] The rough edge produced by grinding - *beard* - was removed on a bearding wheel and the blade finished on a *glazing* wheel - wood covered in leather and coated in tallow mixed with a fine grinding powder made of emery or fine silver sand. The blade was then painted, oiled and wrapped in straw rope. [In the Mosedale collection we have a blade stamped TYZACK & SONS SHEFFIELD ABBEYDALE WORKS.]

Also at Abbeydale there is a shop for assembly of rivetted scythe blades, a design patented by Tyzack Thin rolled steel sheet is sheared to shape and a groove forged along the back to accommodate the iron back, which is forged to fit. The two parts are drilled and rivetted together.

OUTO KUMPU - S.M.A.C.C.

- Stainless Melting and Continuous Casting. Most of us went to see this on Monday morning. The following is based on notes in Outokumpu's brochure which they sent us a few copies of. After seeing antique machines and furnaces it was exciting to see large scale modern steel-working.

1. The **raw material** is scrap stainless steel, in particular nickel and chromium ferro alloys, which are carefully made into charges of up to 130 tonnes (1 tonne = 0.9842 ton) for -

2. the **electric arc furnace**. This has a 6.7 m diameter hearth; powered from a 90 MVA transformer. It will melt 130 tonnes in 80 minutes, to 1620° C.
3. The **argon oxygen decarburizing** vessel (AOD) takes molten metal from the arc furnace. Carbon content is reduced and other elements added as required. [We saw samples being taken with a long handled spoon for dispatch, by a pneumatic tube system, to the chemists for analysis. Instructions for the additions returned in a few minutes. The writer remembers seeing additions to an open hearth furnace, in a brown paper parcel, many years ago] The process time for 145 tonnes is around 1 hour 20 minutes.
4. **Ladle arc furnace** is used to trim the analysis and adjust temperature by heating with the arc or cooling by bubbling argon through, ready for the -
5. **continuous casting.** The combi-caster receives liquid metal and produces a solid slab or two solid blooms. Another one will process six stands of billets. [The molten metal is poured into a vertical mould the bottom of which is the already solidified but plastic metal. Gravity and a vibrating system persuades this to move down and round a curve until it comes out horizontally.] It is eventually cut off by a torch.
6. Three large **grinders** can handle slabs up to 30 tonnes to remove scale or blemishes.

Standard products, in various grades of stainless include **slabs** 170 ×1575 ×11000 mm, **blooms** 300 × 400 mm × 12 m, **billets** 150 × 12 m.

Help yourself to coffee at reception; and that was the end of the organized Visit to Sheffield, and very well organized and pleasurable it was. Thanks to our tour guides and lecturers, and especially to Tony Gregory of SIHG who did most of the arranging.

Ian Dunmur.

THE ROWRAH AND KELTON FELL (MINERAL) RAILWAY

Development of railways

The explosion of railways in West Cumberland during the latter half of the 19th century was very much due to the mineral wealth found in west Cumberland at that time. There was coal stretching from Whitehaven along the coast to Maryport and in land to Aspatria and Wigton. Then there was Iron ore in the Egremont, Cleator Moor and Frizington area. (The rich haematite iron ore that was being mined in this area was in great demand for the Bessemer processes because it was particularly low in phosphorus and sulphur.) We also had limestone lying with the iron ore.

With the proximity of these raw materials the scene was set for an iron making industry. But the ore was not mined in any substantial quantity until the mid 18th century and then very little was used locally. The bulk of the ore was shipped out through Whitehaven to Scotland, South Wales and other parts of the country. At this time all the transportation was done by pack horse and horse and cart. The early furnace at Maryport was lucky in that it was close to the sea and received most of its ore from the Barrow area by ship. But it was short of river water for blowing and cooling purposes some times that's another story! With the coming of the steam engine it also allowed the old water driven furnaces to move away from the rivers that drove the blowers and other machines.

So what caused the change? As I have just mentioned - the steam engine. It was the introduction of the steam engine which allowed the development of the railways. By 1844

there was a railway connecting Carlisle to Whitehaven via the coast and extended to Broughton – in – Furness by 1850. But there was no link into the iron ore field from this line and it was obvious by now that a line was required.

This requirement was filled in 1855 by the Whitehaven, Cleator and Egremont Railway which left the existing Whitehaven and Barrow line about one mile south of Corkickle station at Mirehouse.

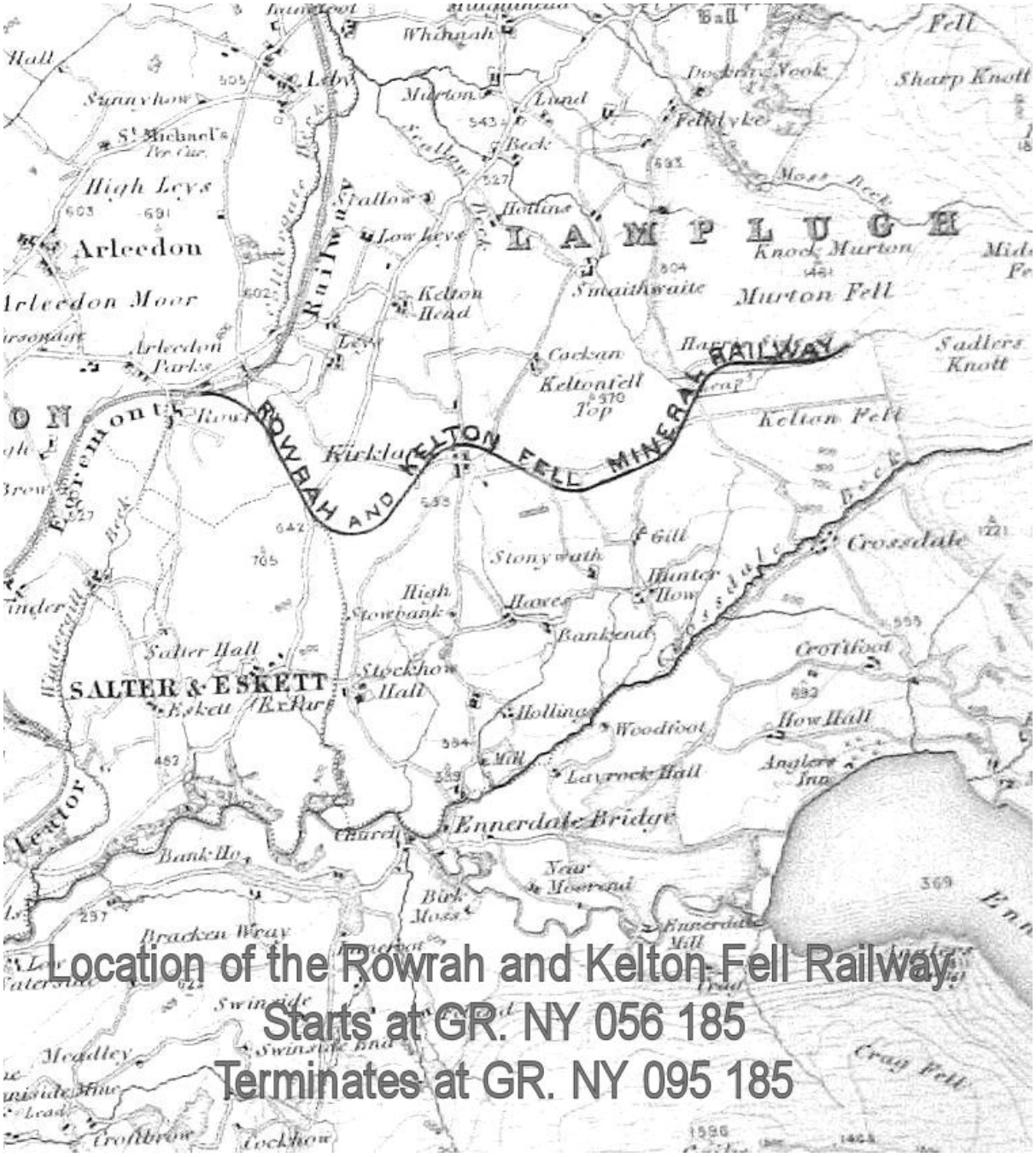
This line opened up the Cumberland ore field to the coastal line and better output of ore shipments from Whitehaven. We can assume that the local entrepreneurs became aware of the possibilities. With all the raw materials available for the smelting of iron taking the ore to a point nearer the ports for smelting would be attractive. At this time the Whitehaven, Cleator and Egremont Railway only went as far as Moore Row and Frizington but was extended to Rowrah and then on to Wrights Green (Lamplugh) in 1862 and then reaching Marron Junction on the Cockermouth Workington line by 1866.

By now the railways were well established and they were moving vast amounts of raw materials in and out of Cumberland - the iron ore and limestone to the furnaces, coal to the ports and coke from Durham.

We now have the overall picture of how the railways built up to serve the iron ore and coal mines

There had been some prospecting for iron ore in the Kelton area east of Rowrah and as early as 1853 a Thomas Carmichael had workings there as well as S & J Lindow by 1854. By 1869, it was eventually proved. There were three shafts sunk, one at Knockmurton and two at Kelton Fell. The mines at this time were owned by William Baird and Co. the well known Scottish Iron Master with a vast industrial empire in Scotland. Unfortunately these mines were working at a disadvantage as the nearest rail head was at Rowrah or Wrights Green (Lamplugh) some four or five miles away respectively. The only way to transport the ore was by horse and cart down hill to Rowrah or Lamplugh and during the winter months the roads were impassable. The ore had to be stock piled at the mines.

R.E. Hewer (mentions in is mining book) “The Kelton & Knockmurton Iron Mines”. “The amount of money drawn from the rates to pay for the upkeep of the roads at Kelton in 1873 amounted to £180 – 15s – 0d, but repairs cost £318 – 17s – 3d such was the state of the road. This was all blamed on the carters for over loading the carts, spilling the ore and blocking the gutters. The owners of the mines were aware of the situation and Bairds give £40 towards the upkeep of the road.” It was suggested that Bairds should do more to help in the upkeep of the roads. It appears that they were the only company that helped towards the upkeep of the roads. We must remember that while the ore was coming down hill all the supplies had to go



up the hill and as R.E. Hewer points out it cost 2/9d (13.75p) per ton for the ore to be transported to Rowrah (that's down hill) The supplies of goods and coal cost 4/- (20p) on the return journey up the hill. So that was the situation in 1873 at the remote mines on the side of the fells above Ennerdale. This sort of situation would not be tolerated for long by any company where their mine was producing high quality ore and due to the lack of transport infrastructure they had to stockpile until the weather improved. It was quoted during the inquiry that the road gradients were 1 in 9, 1 in 9 ½, and 1 in 12 ½ and road widths of only 9 to 20 feet.

It was not only Baird that wanted the railway built. The majority of the Kelton Township supported the railway and petitioned parliament to have it built. Kelton is one of the four townships of in the Lamplugh parish - the others being Lamplugh, Murton and Winder.

Eventually Baird and company decided to promote a Railway of their own from a junction with the Whitehaven, Cleator and Egremont railway at Rowrah passing just north of Kirkland and terminating close to the Knockmurton mine in the valley of Leaps Beck between Murton Fell and Kelton Fell and at an elevation of 850 feet above sea level.

This was a busy time in this area because there was iron "in them there hills." People were digging for ore up in the Ennerdale valley and also higher up the fells above Knockmurton at Floutern Tarn.

The route that the line was eventually built was not the first that was surveyed. See R.E. HEWERS book for a good description of them.

Beyond the Knockmurton mine there was a level at Red Gill known as Iron Sett or Floutern Tarn which was owned by Faithful Cookson and Co. from 1870 to 71 then the Whitehaven iron company from 1872 to 1877. The agent was WH Hoskin. In 1871 a local surveyor named John Hoskins had surveyed the intended R&KF with an extension through to Red Gill using a three foot gauge. In 1872 another proposal to Red Gill was with a ¼ mile tunnel. Others proposed the use of stationary steam engines to haul the ore up from the mine to the transport.

The proposal that I like is the standard gauge from Cockermouth up the Lorton valley passing Scale Hill Hotel, along the Mosedale Beck valley to the foot of Gale Fell. We could have caught the train to have lunch at the Kirkstile Inn!

Another route was a bogie way commencing at Knockmurton mine and rising over High Pen crossing the upper section of Comb gill to Floutern Tarn and from there an incline would be required to the base of Gale Fell. The line was to be 2 foot gauge and double tracked. The incline was to be partially self acting but a stationary engine would be required above Floutern Tarn on the side of Gavel Fell. Without the proof that the deposits were economical £22,000 was too much of a gamble.

Bairds were reluctant to build their own railway as the tariff on the WC&E was so high and when the latter was approached they refused saying it would not provide sufficient return on the capital investment to extend a branch up to Kelton. With the refusal of the WC&E to build the line Bairds had no option but to build the line themselves. Bairds were no strangers to building railways; they had laid many miles of track in and about Scotland.

The Rowrah and Kelton Fell (Mineral) Railway Company obtained its Act of Incorporation on July 16th 1874, with a share capital of £30,000. The offices were situated in Queen Street Whitehaven, and the first directors were-

James Baird
Robert A Robinson
Alexander Brogden MP
Alexander Whitelaw
Martin Boundy
William Wallace

William Wallace was the first chairman but died in 1876 and was succeeded by Andrew Kirkwood McCosh (who had replaced Martin Boundy in the first year of the company's existence).

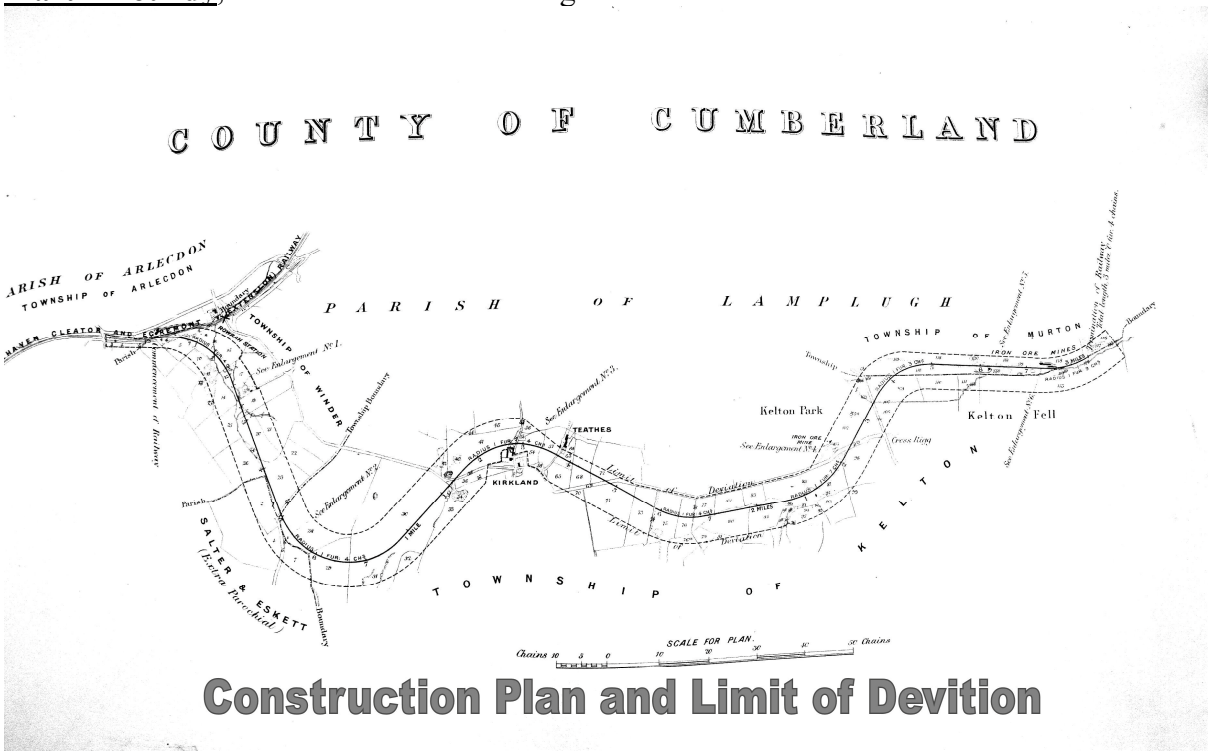
James Baird was the managing partner the Lonsdale Haematite Iron Company at Bransty Whitehaven. He was also later on (in 1887) a prime mover in the formation of the West Cumberland Ironmasters Association.

Alexander Brogden, MP

Robert A Robinson, of Cockermouth was Chief Agent for Lord Lonsdale and was an original promoter for the Cleator and Workington junction Railway.

Alexander Whitelaw, Great-Grandfather of William Whitelaw MP and one time manager at the Gartsherrie Ironworks and from 1860 a partner in William Baird and Company.

Martin Boundy, Iron ore mine owner thought to be from Cornwall



Construction Plan and Limit of Devition

In 1874 Baird's were desperate for a rail link to the rail system. They had a contract with Messrs Bain & company at Harrington that had to be fulfilled and the ore was stock piled at the mine. The contract to build the line was given to a local contractor, Messrs. Harrison Hodgson of Workington, who agreed to build the line for £25,000. The points and crossings were supplied by W. Barningham & Company Pendleton Ironworks, Manchester, chairs from Hannay and Clark of Barrow. The construction of the embankments, cuttings and bridges commenced and for only a short length of line, some of these are impressive. There was an expensive delay during the construction when 400 tons of defective rails (at a cost of £9 a ton) from Barrow Haematite Steel Company were laid. Later on 105 ton of rails were supplied for additional track. The line was ready for opening on 11th November 1876 but the opening was delayed by a legal dispute with the WC&ER. The line eventually opened in January 1877.

Inevitably during the building of the line there would be complaints and the one that's documented is the loss of water to Rowrah Station and the answer was to have the contractor divert the beck to re-supply the station.

Before and during Bairds building this line there was a lot of unrest between the iron masters and the WC&ER When in 1873 the WC&ER increased freight charges which were promptly copied by the North Western and Furness Companies was the finale straw for the iron masters. In 1874 the ironmasters propounded to run an independent line from Cleator Moor to Workington and on to Maryport. Now Baird's must have seen the significance of this new line. As the WC&E. was the line they would have make a junction with at Rowrah and after the refusal from the WC&E to build a branch up to Kelton Fell I doubt that the relationship was very close. Baird's had been in correspondence with the new C&WJR about a branch line from Distington to meet the R&KF with an end on junction at Rowrah.

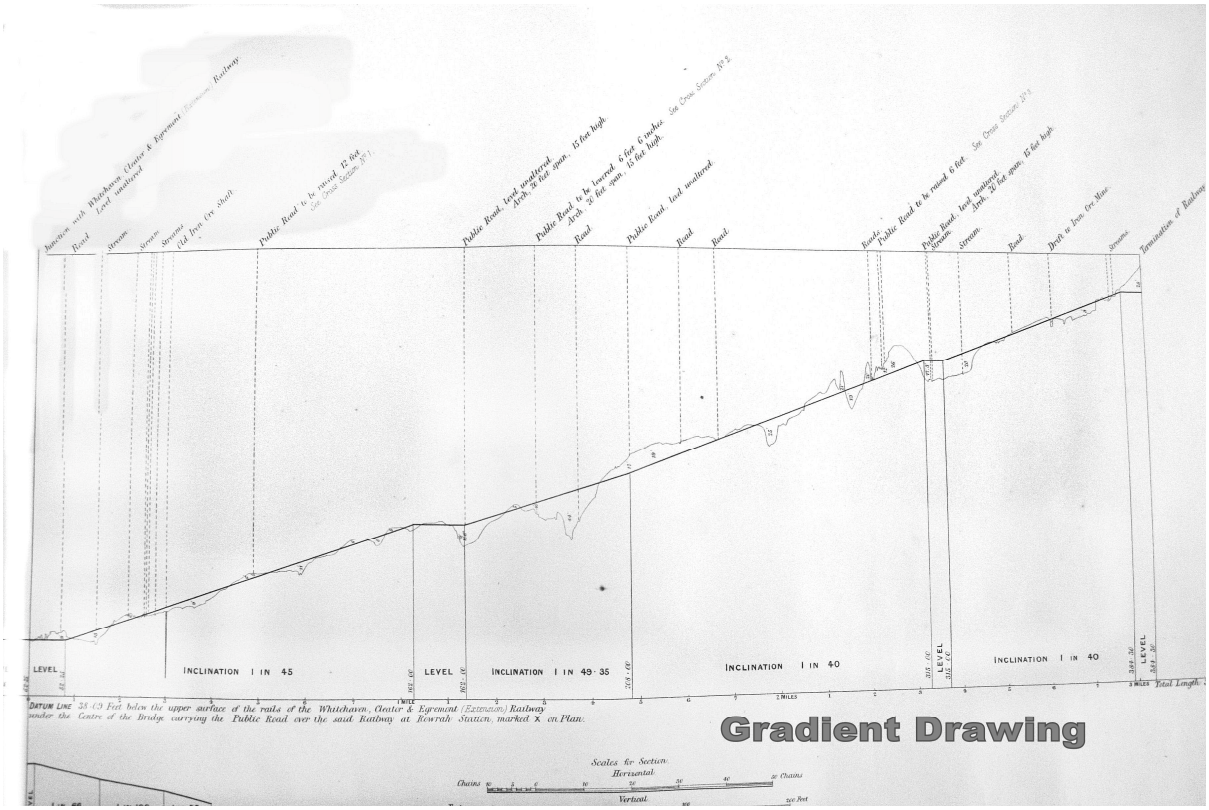
This branch was opened in May 1882 and this is Baird's line. Bairds honoured the agreement with the WC&E until the new branch was completed and the end on junction was achieved by an over bridge over the WC&E west of Rowrah station with branches off to serve the Rowrah Hall and Rowrah Head Quarries. By this time the WC&E had lost its independence having been taken over by the L&NWR in 1878 and eventually jointly by the Furness railway in 1879. The old junction with the WC&E was reduced to a back shunt.

Bairds agreed to supply the locos and rolling stock for the line except for private wagons supplied by the owners. A loco was purchased from Neilson and Company Glasgow to work the line. It was a 0-4-0 Saddle Tank loco and named Kelton Fell. This engine operated from the small shed at Sheriffs gate. This loco ended its working life working for the NCB at Gartshore. It was presented to the Scottish Railway Preservation Society in 1968 and can be seen at the Bo'ness Railway Falkirk.

The railway has been built and the mines and limestone quarries have their access to the railway network. But, as with all industries, the iron industry of west Cumberland of that time had its highs and lows.

The C&WJ were now working their line with their own locos to Rowrah and after 1889 also worked the limestone traffic on the R&KF.

The line leaves Rowrah at point west of Rowrah station that became known as the Kelton Fell Junction and heads south east over some wet ground just after it leaves the main line and curves away to Sheriff's Gate. It passes over a bridge that allowed access in to Rowrah Head Quarry and further on there is a cattle pass and a culvert for a stream. In this same area you can see an embankment and other ground workings and walls connected with the railway and the quarries. This area has had a lot of reclamation work done with the new cycle way from Whitehaven. The cycle way actually picks up the track bed just before you reach Sheriffs Gate.



At Sheriffs Gate the line passes under the road but it's now filled in and nothing much is left. Just after this bridge we have a turnout that goes to Salterhall limestone quarry and Salterhall iron ore mines owned by the Salter and Eskett Park Mining Company and this junction is known as Rowrah Junction. Most of the output from the quarry and the mines was consumed by the Cleator Moor ironworks. This off shoot as it was called was built at the same time as the line was built. The off shoot that went in to Stockhowhall Quarry was built 6 years later. This Quarry was owned by James Bain and Company who also owned the Harrington Ironworks and Collieries. The C&WJ built a Signal box here complete with lattice work girder signals.

The line continues on and just before Stockhow it passes over a cattle pass and then through the wood and curves round to the north east. It then passes over another cattle pass and climbs towards the village of Kirkland. Just before it crosses over the road bridge there was a one track siding with a coal and goods depot. The only remains left of this bridge is the one side abutment. The other abutment has been removed completely with a good part of an embankment for a local council storage area. Just to the back of this storage area there is a complete cattle pass.

The line now curves round the north of the village and over the road bridge. There is nothing left to see except the high embankment to the next road bridge that goes over the farm road to Teathes. This is complete. To the north of this high embankment is the site of the Barbara mine.

Not far after this point we start with the first cutting that takes the line under the road east of the village. (This bridge has been filled in) The line continues in an easterly direction and virtually parallel with the road and comes out of the cutting after about 400 meters. It has one more cattle bridge and some shallow cuttings before it reaches the Kelton Fell mine. Just

before the mine it has another under pass and a road bridge over that has been removed completely and only thing left is a dip in the road.

We still have one more bridge over the Leaps road that takes the line on to Knockmurton mine. On this last bridge there was the start of a turnout and a run round loop to allow shunting into Kelton mine. Just along from this last bridge there is the last cattle pass. This one is complete but has been robbed and is starting to deteriorate.

By 1899 the mines at Kelton Fell and Knockmurton had started to decline and also the other mines up in that area. If we look at the map 1899 and 1925 we can see that some of the lines have gone and that the Salter mine had closed. Also the Stockhow limestone quarry had closed and the line was not used.

The Salter mine had closed in 1903 by the Wyndham Mining Company due to water problems. The mine was reopened again in 1905 but it was only short lived and closed in 1910.

The good times were coming to an end. The limestone traffic was now the main stay of the R&KF but in 1908 The Harrington Iron and Coal company (Successors to James Bain and Company) closed the Stockhow quarry but the Salter hall quarry stayed open. The main blow came when in 1913 after almost continuous working for 45 years the Kelton Fell mine closed down. The Knockmurton mine was by now also having problems and the outputs had dropped. They were searching for more ore but having serious problems with water and machinery breakdowns. The mine was abandoned in 1914. That is to say that Baird and Company terminated the lease. The lease for Knockmurton was taken up in 1920 but the mine was abandoned in 1923.

There were two mines in the Kirkland area - one called the Barbara mine and the other called Bankstead mine but their contribution to the traffic on the line was negligible. The Barbara mine was abandoned on the 31st March 1926

During the World War one there was some traffic coming from the mines area but it was mostly the movement of waste from the mines for the war effort and was completed by 1916.

With the closure of their mines Baird and Company withdrew all their rolling stock which I would say was in about the same condition as the line. They were also trying to get rid of the line and complete abandonment was contemplated. (Because of the war effort they would not be allowed to abandon it)

Beyond the Rowrah Junction the line was in a very bad condition and derailments were a daily occurrence. There was the occasional coal wagon and van with farm feeding stuff to Kirkland. These trips were usually allotted to Moresby Coal Company's saddle tanks that were based at Oatlands Colliery. The iron ore traffic from the Barbara and Bankstead pits (there was not much of it!) were allocated to the WC&E saddle tanks. After the war the Company was allowed to dispose of the line and the Whitehaven Haematite Iron Steel Company of Cleator Moor and the Slalter Quarry Company purchased the line in 1920 for £750 and an undisclosed sum for the track. The owners spent £600 on refurbishment but this was only spent on the line from the quarry to Rowrah. In 1923 under the regrouping it became part of the LMS. The goods depot was closed when the line changed hands. We

must remember that by now motorised road transport was starting to arrive and the roads were a lot better.

The last death blow was in 1927 when the last two remaining furnaces at Cleator Moor were blown out. The furnaces had only been on blast for a year after the disastrous coal strike. This had the knock on effect that the Salter quarry closed down and the company went into liquidation. This then was the last of the traffic on the last half mile of line from Rowrah Junction (Sheriff's Gate) to the Kelton Fell junction at Rowrah. I would doubt that there would be any traffic on this line after this date but for the odd rake of wagons shunted out of the way. So that was the end of the working life of the Rowrah and Kelton Fell Railway. In 1933 the line was sold by the Whitehaven Haematite Iron and Steel Co. (Prior to its liquidation) to a Mr J W Kitchin of Moor Row. The track was lifted and sold for scrap in 1934.

The Rowrah and Kelton Fell Railway Never carried passengers but still had an impact on the people in the area. The local mine owners built houses for their workers and Baird's were no exception. There were 30 of these houses built in Kirkland. There are only two of the five terraces remaining today. The influx of people to the area is shown in the 1841 census and in the directory of Cumberland published in 1847 Kirkland is described as a hamlet. In the 1851 census there were 40 separate households with 170 inhabitants. Twenty six of the households depended on farming for their means of subsistence.

By 1881 there were 472 people living in the township living in 60 dwellings. As you can see the hamlet has been transformed into a cosmopolitan village with people from all over the country including Scotland, Ireland, Wales, Isle of Man, Cornwall, Devon, Cumberland and even one Russia.

The village contained: a dressmaker, Tailor, Boot and shoe maker,
Blacksmith, Joinery building and Cartwright business,
Alexander Twiname's building Contracting and Grocery business
Pub (The Wheatsheaf), A Board School and a Methodist Chapel

There we have it. This small railway only three and half miles long transformed the area around it, as did all the railways in West Cumberland.

I would like to thank all the following people in helping me with this project.

David Taylor
Mervyn Dodd

Jenny and staff at the Whitehaven and Carlisle Records Office.

Information was gathered from the following books articles web sites.

"The Iron & Steel Industry of West Cumberland"
by JY Lancaster & D.R. Wattleworth.

"The Kelton & Knockmurton Iron Mines" by R.E. Hewer.

"Kelton Iron" the making of Kirkland by Geoff Brown & Donald Hayton.

"Rowrah & Kelton Fell Railway" From the Whitehaven News parts 1 & 2 Oct. 1973 by Glasson.

The Rowrah and Kelton Fell annual reports from years 1916/17/18, 1920, 1923, 1925, supplied by J.Y. Lancaster.

A VIEW Of AN OVERBRIDGE ON THE ROWRAH AND KELTON FELL RAILWAY
(Bridge is north of Ghyll Farm at Kelton Fell)

By Dave Garrett.

A report of the Society's meeting will appear in the next Bulletin.

An old AA sign on the garage at Ivegill

INFORMATION WANTED

I have had a letter from a Mr Evans who after reading the Societies latest publication 'Master of Them All' and especially the article on Backbarrow. He is looking for information on the delivery of iron ore from the Furness region to furnaces in the SE of England. He is aware that Alfred Fell describes the epic journey of William Rawlinson to Bacon Moritt's iron mine at Plumpton in 1744. He was wondering if this journey was the reason for the delivery of ore to the SE.

If any members have any information on the sale of iron ore from Furness to SE England the editor can supply details for Mr Evans.

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