North East Derbyshire Industrial Archaeology Society



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Electricity Production from the former Staveley Works site Philip Cousins

lectricity is again being generated from the Staveley Works site. Modular generating engines, stationed to the east of the site, (at the Hall Lane end) which can be seen from Chesterfield Road, are powered by natural gas from a nearby pipeline. The spark ignition units are operated remotely from the operator's Infinis base at Markham Vale, being switched on to input electricity into the national grid to meet peak demand times, at the request of the National Grid plc. The modular engines use the gas as a fuel source, converting it into electricity, which is fed in to the nearby ex-works substation, presumably at 11,000 volts. Each engine produces 2 MW of electricity and is contained in a dark-green painted metal box. There is planning permission for eight units in total. The original application (reference CHE/15/00491/FUL) was approved in November 2015. The engines are said to be quite noisy when in operation.

This facility is additional to another site that has been operating for a longer time, also off Hall Road, but not part of the original Staveley works complex, on the site of the former landfill site. Also operated by the Infinis, this has reported 2.8 MW export capacity, first being connected to the National Grid in December 2004.¹

NEDIAS members will be aware of the historic production, from the old Devonshire Works site (in which the new units sit) of electricity generation. Under the leadership of Charles Paxton Markham, the Staveley Coal and Iron Company developed a large generating capacity, primarily using waste blast furnace gas, via three



Looking rather like steam boilers with chimneys, the top of six of the Infinis generating engines, housed in metal containers, (presumably silencers and waste stacks) that are viewable from Chesterfield Road, are seen in late December 2020. To the right of them, out of view here, are two further units with different stack designs. The storage tank behind is a remnant of the former PAP plant, also on the Devonshire Works site of the old Staveley Coal & Iron Company. It is not connected with the generating activities. *Philip Cousins*



https://www.facebook.com/nediaschesterfield/?fref = ts

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massive gas engines (in their day the largest in the country). Supplemented by other generating plant, the company claimed that generating capacity was some 37,575 kW in 1946. Unfortunately, electricity was at a non-standard 30Hz and voltage. Its distribution to local communities and industry connected with the erstwhile company caused some issues with non-standard electrical equipment having to be used, or standard equipment adapted. This problem is not, of course, encountered with today's generation activities.

¹<u>www.westernpower.co.uk%2Fdownloads%2F154156&usg=AOvVaw1XgSBrYSXjLH4yytHoByam</u>

For further information on the Staveley company's electrical generation activities see NEDIAS Journal, Volume 3: June 2010, pp. 61-70.



Ron Presswood sends this photograph, adding that the storage tank seen in the previous photograph was part of the PAP plant on the Devonshire Works site which was eventually sold by Staveley Chemicals Ltd. to Mallincrodt Speciality Chemical in 1989. This photograph dates from 2010. The tank was used to store Ammonium sulphate liquor which initially arose as an ~11% by-product waste liquor but was subsequently concentrated to a higher strength and used as seasonal fertilizer. It needed to be large so as to accommodate the yearly ongoing production. (For further information see NEDIAS Journal Volume 3: June 2010, pp. 38-39). PAP is para-aminophenol, - a precursor for paracetamol

COLONEL SIR VIVIAN DERING MAJENDIE - PART 2 Render Safe and Investigation of Improvised Explosive Devices John Hodson



ver his lifetime Colonel Majendie served as a soldier, worked on explosives at Woolwich Arsenal, became the first Chief Inspector of Explosives, revised the Explosives Act in 1877, carried out investigations into IED's (Improvised Explosive Devices) and render safe of IED's and was one of the first persons to apply science to the forensic investigation of IED's.

During the 1880's London was subjected to a series of bombings by the Irish Republican Brotherhood (Fenians).

- 1881 March 15th Bomb found and defused in the Mansion House.
- 1882 May 12th Bomb exploded at the Mansion House.
- 1883 March 15th Bomb exploded near a new block of government offices at Whitehall. No injuries.
- 1883 March 15th Unsuccessful bombing attempt on The Times newspaper offices.
- 1883 October 30th Bombs exploded at Paddington (Praed Street) injuring 70 people and at Westminster Bridge Station.
- 1884 February 25th Bomb exploded at Victoria station, London no-one was injured. Other bombs defused at Charing Cross station, Ludgate Hill station and Paddington station.
- 1884 May 30th Bombs at the Headquarters of the Criminal Investigation Department (CID), the Metropolitan Police Service's Special Irish Branch, the Carlton Club and at the home of a Conservative MP. Ten people were injured. A fourth bomb was planted at the foot of Nelson's Column but failed to explode.

- 1885 January 2nd Bomb exploded near Gower Street Station.
- 1885 January 24th Bombs exploded in the House of Commons, Westminster Hall and the Tower of London. Two police officers and four civilians injured.

Majendie was tasked with overseeing the safe disposal and investigation of these improvised explosive devices (IEDs, at the time they were known as infernal machines). He was often assisted in this by Colonel Arthur Ford. A failed IED was investigated at Charing Cross Station. The bomb was "defused" but no details are available as to how this was done, but it must have been a very hazardous process! A suspicious portmanteau was opened "with suitable precautions" once again no details given. An alarm clock, modified so that when the alarm ran the winding handle impinged on the trigger of a vest pocket pistol, was found. The pistol was aimed at powerful detonators found to contain "an exceptionally heavy charge "of mercury fulminate and potassium chlorate. The main charge consisted of 20lbs of dynamite.



The Explosion at Scotland Yard

- A spring found in the bombing debris at Victoria Station was found to be identical to the spring of the Ansonia Clock.
- Infernal Machines found at Paddington and Ludgate Hill were "precisely similar" and failed due to the failure of the alarm mechanism pistol cartridges.



The Modified "Peep of the Day" Ansonia Alarm Clock

Findings from Examination of the Failed IED's

- The "Peep of Day" clock was made by the Ansonia Clock Company of New York. Available in London for 10s.
- The dynamite was found to consist of purified nitroglycerine so likely to be commercially made rather than "home-made".
- Analysis of the dynamite indicated that it was an American powder not used or licensed for importation into the UK, but employed for industrial purposes in America.
- The device failed because the pistol cartridge miss-fired.

It was obvious from the examination of the failed IED's that there was an American connection. Following Majendie's examination of failed infernal machines the police kept a watch on ports and made enquiries, particularly around Liverpool.

• Six Infernal Machines hidden in barrels of cement were intercepted aboard a ship at Liverpool They contained American dynamite with a clockwork mechanism for firing it. Four similar devices were found aboard a ship at Liverpool. American dynamite was found in the roof of a sawmill in Bootle.

In order to obtain a successful prosecution it was necessary to prove the viability of an infernal machine.

- In April 1884 three bombs containing dynamite were found, at Birkenhead, in the possession of a man called Daly.
- Daly stated that the bombs were used for killing fish.
- The deadly wrecking powers of the bombs were proved. Majendie took a bomb and exploded it in a room used for testing shells at Woolwich Arsenal. The room contained a dozen wooden life size models and they received no fewer than 168 wounds.

At his trial Daly was sentenced to penal servitude for life.

The End



Majendie with the clock and pistol from the "Infernal Machine" left at Charing Cross Station in 1884.

"He is full of that cool pluck which is rare even among brave men. He once raided the lodgings of a Fenian and having captured a bag full of nitro-glycerine, he hailed a cab and conveyed it to Woolwich, nursing it in his lap with motherly care warning the cabman that should he run into another vehicle he might hear no more about it."

"Yet he is a gentle fellow and most fond of Church music"

Cartoon and text published by Vanity Fair, April 23rd 1892.

Majendie was made a Companion of the Order of the Bath (CB) in 1875 and a Knight Commander of the Order of the Bath (KCB) in 1895. He was President of the Association of Mining Engineers.

Colonel Sir Vivian Dering Majendie died suddenly on Sunday 24th April, 1898 at Oxford. He had been visiting his sister and was taken ill whilst attending evening service at the local church. He was moved to the vicarage where he died after a short time. A weak heart was given as the cause of death. The funeral was conducted at Charlton and he is buried in Charlton Cemetery, south-east London.

He is remembered with respect and admiration 120 years after his death.

References for Parts I and 2.

The Times: March 16th, 1883, February 27th, 1884, April 14th, 1884, June 2nd, 1884, January 5th, 1885 and April 26th 1898. Up Among the Pandies, Vivian Dering Majendie, 1859, republished 2007, Leonaur Ltd. Men of the Day, Vanity Fair, p293, April 23rd, 1892. Explosions in The Goyt Valley, Whaley Bridge Local History, http://www.whaleybridge.net/localhistory/explosions.html A Chat with the Chief Inspector of Explosives, The Sketch, April 25th, 1894. Dangerous Energy, Wayne D Cocroft, English Heritage, 2000. The Engineer, p 400, 29th April, 1898. The Strand Magazine, 'Crimes and Criminals, No1, Dynamite and Dynamiters, p119-132, vol VII, January-June 1894. Death of Colonel Majendie, A Brave Inspector, Colonist, p3, vol XL, New Zealand, 16th June 1898. www.oldbaileyonline.org. https://greenwich peninsular history.wordpress.com Survey of London, Chapter 3, Woolwich Arsenal, English Heritage, 2012. The Strand Magazine, p540, November, 1895.

NORTH DERBYSHIRE MOTOR CYCLE CLUB, SERVICE MOTORS AND WILFRED WADDINGTON Barbara Gilmore

In his article "Some Early Motoring in Derbyshire" (*NEDIAS Newsletter* No. 79 – August 2020), John Hodson mentioned the North Derbyshire Motor Cycle Club (NDMCC).

NEDIAS members who came along to the presentation about the Wingerworth Stone Saw Mill, which included my historical research, may recall Wilfred Waddington. He was born in 1880. In the 1911 census, he was living at Bole Hill having inherited his father's business as a stone merchant and quarry owner. However, apart from an entry in Kelly's 1912 *Directory of Derbyshire*, which referred to Wilfred Waddington's involvement with the Wingerworth quarries and saw mills, I have found no evidence of Wilfred Waddington having any significant involvement in stone working. In the *Derbyshire Courier* on 13 February 1913, Bole Hill Quarry and Farm were advertised to let. Wilfred served in the Sherwood Rangers Imperial Yeomanry in the Boer War and First World War and in the Home Guard in the Second World War. He later lived at Woodthorpe House, Old Tupton.

Wilfred (Wilf) Waddington was one of the original members of the NDMCC, which was formed in 1912. He was an important and active member of the club particularly during its early years. In 1912 he was elected as Chairman of the Committee and by 1920 was one of the club's Vice-Presidents. On 01 March 1913, the *Derbyshire Courier* contained a report on the club's hill climb held at Bole Hill the previous month, when Wilf was clerk of the course.

In addition to officiating at events, he took part in local competitions like the 100 mile East Midland Centre Open Reliability Trial held on 03 May 1913. Wilfred came in highest of NDMCC's members finishing 13th on a 3¹/₄ HP. Campion having completed the course starting from Alfreton Road, Nottingham and finishing on Gregory Boulevard, Nottingham via Chesterfield and Matlock. In April 1914, he won the first competitive event of the season, a100-mile reliability trial. Alan Chapman in his *History of North Derbyshire Motor Club* mentions that while competing in the annual speed trial in Hardwick Park in August 1914, Wilfred narrowly escaped serious injury when the engine of his motorcycle seized up at over 65mph and the back wheel stopped turning. Fortunately, he was able to keep control of the machine and stop it. In addition, Wilfred donated a cup to the NDMCC – the Waddington Cup.

By October 1920, Wilfred Waddington had established Service Motors - Automobile Engineers and Agents with his business partner E. A. Parke at the Portland and Park Road garages. An early publicity notice in the *Derbyshire Times* on 9 October 1920 advertised the business with particular reference to the 1920 Beardmore Precision – "the Business Man's All-Weather Motor Cycle". From 1920 onwards, Service Motors advertised widely in the local press giving details of the range of vehicles available for sale including Chevrolet and Buick cars and an extensive selection of motor cycles, plus the after sales services available to customers. On 19 January1930, a notice in the *Derbyshire Times* indicated that the company had moved to premises in Knifesmith Gate and was an agent for Fiat, Jowett, Swift, Austin and Morris and could provide a quote for well-known makes of car, lorry, van or motor cycle.

I have no information about Wilfred's involvement with the NDMCC or Service Motors after the Second World War. He died in 1954 aged 73.

Finally one further piece of information, which appeared in the *Derbyshire Times* on 25 October 1940, and connected with Service Motors, relates to the display of a German Messerschmitt 109 plane at Service Motors' car park in Saltergate. It could be viewed from 26 October until 08 November 1940. Proceeds from the event, where the entrance fee was 6d with an additional 6d to be paid to inspect the cockpit, were to go to local charities.

For information about NDMCC see:-

History of North Derbyshire Motor Club 1912-2003 by Alan Chapman (Chesterfield Local Studies Library)

FINDERS KEEPERS? – ASSESSING THE FINDS FROM THE WINGERWORTH SAWMILL

Jamie Mather

etween 2011 and 2018, NEDIAS carried out a survey and excavation at the site of an early 19th century stone sawing mill in Wingerworth, along with documentary research into the history of the site. It falls to me to record the archaeological finds and write up the excavation report so I thought an update might be of interest.

By way of background, we believe the first industrial use of the site was for smelting the local iron ore, perhaps in the late medieval period. A water system, presumably also associated with iron production, was in place by the 1750s and this was adapted when the stone sawing mill was built around 1825. The sawmill comprised two stone cutting and polishing shops, one powered by water and the other by steam, plus a smithy. A small corrugated iron building was added later in the 19th century. Production ended around the time of the First World War and the buildings were stripped of salvageable materials and demolished about 1920.

So what happened to the finds that we excavated at Wingerworth? At first, I must confess, not very much. A desire to travel, coupled with extra working hours to pay for it, meant that progress was slow. However the Covid-19 pandemic, coupled with a significant birthday, led to a decision to take early retirement – so no more excuses!

The first thing to say is that archaeologists do not keep everything they find. How much is kept will vary with the nature of the site. If you are Howard Carter and you are clearing the tomb of Tutankhamun it is crucial to retain anything that can physically be preserved, but objects from a non-scheduled former industrial site in Derbyshire will stretch the definition of "wonderful things" and a different approach is appropriate. Several thousand items were uncovered at Wingerworth but most were things like corroded iron fastenings and fragments of coal, stoneware and glass which as individual objects tell us little but whose location on the site can tell us a lot. It was important to record these items but necessary to be selective about what to keep. We therefore decided to group everything into three categories according to its significance and rarity.

Continuing the Egyptian analogy, picture a step pyramid. The lowest and largest tier comprises those finds which, taken individually, tell us least about the history of the site. Each was categorised against a list of around 60 object types relevant to the site, photographed in groups, and the location recorded, before where possible being reburied at the site. This work is now complete and we have over 1,700 photographs (and scope for the most boring slideshow in NEDIAS history) plus a spreadsheet analysis of which more anon.

The second tier includes finds to be cleaned, photographed and recorded in more detail but then discarded. This work is ongoing, but the category includes the bulk of the pottery fragments and non-diagnostic ironwork. It also includes items that are hard to preserve such as shapes of machinery cast into oil residues. For these and some of the other more tactile objects we plan to use photogrammetry software to create 3D scans – more about this in a future Newsletter perhaps.

The final tier – the tip of the pyramid – comprises finds to be cleaned, recorded, and retained as a permanent record. This includes items specific to the process of stone sawing such as machine parts, personal items from those who worked there, finds that are key to dating the site, and anything else that helps tell its story including the earlier history. Where these finds will be deposited long term still needs to be determined.

As part of the work we undertook a spreadsheet analysis using three types of data from the excavation. First the object type from our 60 categories, and then the context where it was found, this being the location plus the characteristics of that location. Finally, for the most numerous types of find where we just sampled the material, an admittedly subjective view of how common that object type was compared with its frequency elsewhere on the site. This information was fed into a spreadsheet model to estimate the relative density of each type of find in each area of the site, and the results plotted on a plan. The resulting patterns should then give us clues about the activities carried out in different parts of the site.

I've selected four types of find to illustrate the results so far. Each diagram is approximately to scale, shows the building wall lines, but stops slightly short of the boundaries of the site. For the purposes of this article

Wingerworth Stone Sawing Mill - Examples of Finds Distribution



the top of the diagram is referred to as north, though in reality it is close to north east. The darkest colours represent the densest concentrations of finds, white means the object type was not recorded at all. No attempt is made to show stratigraphy, so concentrations of finds from the same area may be at different depths according to when they were deposited.

Given that we were excavating a stone sawing mill, it seems logical to start with a diagram showing the distribution of iron saw blade fragments. These blades were untoothed metal strips of various sizes, abrasive sand or iron shot being introduced as a cutting medium. Unsurprisingly they were common throughout the cutting shops but largely absent from the roadways between and from the yard to the north. More unexpected was a scatter of blade fragments across the open areas to the east and south of the site, though other evidence suggested these areas became something of a dumping ground for all kinds of used materials. The highest density of all was found in a wood sawing pit later reused as a rubbish tip.

The second diagram shows the distribution of zinc sheet, commonly used by stonemasons to make templates. It shows a concentration in the side extension of the steam shop where we think at least one stone moulding machine was housed, which makes sense. A further concentration was found amongst other metal fragments in the smithy at the south of the site, and there was again a scatter to the east of the buildings, no surprise given the other material dumped there. Interestingly there was nothing at all around the corrugated iron building just north of the smithy. The purpose of this building, a later addition, is unclear. It wouldn't have had access to either water or steam power but had a hearth and chimney so was probably more than just a store shed. We had speculated that it might be a stonemason's workshop, but the evidence from this diagram would suggest otherwise.

The third diagram shows the distribution of metal swarf, an indicator of machining activities. Again there was a concentration in the side extension to the steam shop suggesting a lathe was also located there. More surprising was a concentration around the corrugated iron building. This hints that machining took place here too, but if so what was the power source? One intriguing possibility is the use of electric power generated from a turbine which we know to have replaced the waterwheel, however we found no archaeological evidence to support this idea.

The final diagram is perhaps the most interesting. It shows the distribution of bloomery slag, a waste product from the iron smelting which we believe took place before the sawmill was built. Slag was strongly concentrated at the west side of the site alongside the likely original course of the Tricket Brook and the later millrace, and at the south where the site adjoins an outcrop of ironstone, and was largely absent elsewhere. The slag itself was extensively sampled but has yet to be examined in detail, however it appears to be uniform in type across the site suggesting it is all of similar date. It would be logical for smelting to take place as close as possible to sources of raw material and power, and the evidence hints at the presence of a water powered bloomery. However any structural remains were probably destroyed or deeply buried by the development of the sawmill.

This approach is proving to be particularly revealing for those types of object that were found regularly but were not abundant. It tells us little about others that were either everywhere (iron fastenings, pantiles) or very rare (coins, or to be strictly accurate, the coin). However there is much still to learn from the Wingerworth finds and work will continue for some months yet. But hopefully we will end up with a comprehensive record of a site that would otherwise have gone unrecorded and a new insight into an otherwise forgotten local industry.

BARROW HILL SEES CLOSURE OF PLACES OF WORSHIP *Philip Cousins*

Barrow Hill will soon have no places of Christian worship following the announcement that the Parker and Unwin designed church of St Andrew, Barrow Hill, will probably close.

A public notice was published in the *Derbyshire Times* on 9 July 2020 regarding a draft pastoral scheme for closure of the church building. Representations were to be made by 20 July 2020. The church, which forms part of the benefice of Staveley and Barrow Hill, was built in 1895. It represents the first collaboration between Raymond Unwin and Barry Parker, both of whom went on to champion garden cities, planning and



The interior of St Andrew, Barrow Hill, before the Town & Country Planning Association presentation 'Land of Promise' on Friday 31 May 2019, when the building was open for viewing. The window above the altar was given by George Bond, general manager of the Staveley Coal & Iron Company, then of Brimington Hall, in memory of his late wife. Note particularly the Arts and Crafts influenced roof design. *Philip Cousins*



Under threat; St Andrew Barrow Hill. (Photograph taken 31 May 2019). The house to the rear is on a development built on the site of the former church hall, which had closed in 1995. The money from the sale of the land was ring-fenced for the use of the church, but it is believed that this money is now exhausted. *Philip Cousins*



The now-closed Barrow Hill Methodist Church building, in a photograph taken on 29 March 2019. Philip Cousins

architecture. Unwin had previously worked for the Staveley Coal & Iron Company. Despite efforts, the building is not listed and its future must be in doubt. This should come as no surprise. A public meeting was convened on a very cold 26 January 2019 to discuss options for the building. According to the publicity poster; 'after many years of struggling to keep going, the problems with the building are so huge, that the small congregation believe it is no longer viable or sustainable'. The Town and Country Planning Association held an event at the church in 31 May 2019, when its travelling words and music presentation 'A Land of Promise' was given. This was revised to highlight the importance of the building.

What future is now in-store for this church, which retains most of its original Barry Parker internal fittings and houses an historic Holt of Leeds organ?

Fortunately, all is not yet lost, as a community group is currently looking at 're-purposing' the building, in a project itself called 'Land of Promise'. Early ideas have included a possible arts venue, preservation of the Holt organ, display area and an interpretative exhibition highlighting the work of Unwin and Parker, alongside others such as Edward Carpenter. More information is expected as the project progresses, but inevitably the success will depend on having a workable and sustainable business plan with support from a strong volunteer team.

The former Methodist Church, on Cavendish Place, which was closed in 2019, was for sale and declared as 'under offer' by June 2020. Offers of £145,000 had been invited for the 2,711 square foot property. The building was first opened as a Free Methodist church in 1873 and had been the centre of Methodist worship in Barrow Hill since closure of the former Primitive Methodist Church, on Campbell Drive in 1966.

Another nearby place of worship, Brimington Congregational Church on Chapel Street, Brimington, closed at the end of 2019. This building dates from 1895.

Religion, particularly it has to be said nonconformity, played an important role in the religious, social life and organisation of the working classes in the 19th century and beyond. The closing of places of worship remind us just how much the organisation of labour, type of employment and commonality of community have changed over the last 50 or so years.

Further information on the Barrow Hill churches can be found on the excellent Barrow Hill Heritage Trail A comprehensive account for the Church of England building can be found in Ann Pickard's *The parish* church of Saint Andrew, Barrow Hill with Hollingwood. The Parker and Unwin Church (2010).

BUT BETTER NEWS FROM THE MEMORIAL HALL

Philip Cousins

here is better news from the Barrow Hill Memorial Hall, which is now run by a community trust. It is presently (January 2021) surrounded in scaffolding to enable a new roof to be installed. The building, erected as part of Richard Barrow's village, was originally opened in April 1864 as a Dining Hall to enable local workmen to purchase a cheap meal.

Progress on the Memorial Hall project can be found on their Facebook page at: <u>https://</u><u>www.facebook.com/barrowhillcommunity</u>. The history of building is also covered on the Barrow Heritage Trail website.



The Barrow Hill memorial club, encased in scaffolding, on 4 January 2021, to allow replacement of the roof. In the distance, to the left, is the site of the original Barrow Hill station, which could see passenger traffic again. *Philip Cousins*

THE SECRETS OF HARPUR HILL



n 1936 with war clouds looming, the Air Ministry estimated that an initial war reserve of ariel munitions comprised of 98,000 tons of bombs, 82,000 tons of which would be 250 lb and 500 lb bombs. The RAF decided to store these weapons in a number of underground depots, each having a • capacity of about 10,000 to 30,000 tons. The decision to store the material underground was taken because the thin-walled ariel bombs were extremely vulnerable to enemy blast impacts, much more so than hardened artillery shells. The planning for the pre-war storages was finalised in 1938, with three principal underground depots (one each in northern, central and southern England), with a total capacity of around 25,000 tons each. Over a hundred sites had been considered, but most were rejected in the search for ideal storage facilities, preferably with existing railway access. Eventually, the RAF purchased from Imperial Chemical Industries, the disused Sorrow Quarry which occupied an area of 500 acres at Harpur Hill in North Derbyshire. Work immediately commenced to build concrete storage structures within the excavated area of the open air quarry. The storage areas would then be buried in an overall covering of stone rubble, which was in abundance locally as quarry waste. This acted as a camouflage, but was also for bomb blast protection. Harpur Hill then became the principal central depot to store ariel bombs, as from April 1940. The first consignments arrived in June of that year, comprising of captured German chemical bombs, such as mustard gas and phosgene which had been evacuated from Dunkirk after the fall of France.

Harpur Hill quarry was established in 1845 by the Buxton Lime Firms Ltd. and is located two miles south of the town of Buxton, but the remoteness of the surrounding countryside made it an ideal choice for the War Office. The area had previously been used for military training in World War 1, when it was known as the Firth Gunnery Ranges and in particular it was used for the testing of trench mortars. Plans to convert the 500 acre site for munitions bunkers were signed with the civil engineering contractor Sir Robert McAlpine and the bunkers became operational on 15th December 1939, although the internal railway track installation was not fully operational until March 1940. The total cost of construction was £6,500,000.

initially served by sidings from the adjacent ex-London and North Western Railway's Ladmanlow branch. The Ordnance Survey 1:2500 scale map of 1938 also shows a siding connection off the Cromford and High Peak Railway to the North side of the site. From the West side, a narrow gauge rail line (2'-0" track gauge) also ran from the quarry and terminated parallel to the C&HP running line. On entering the site, the connecting track split into four reception sidings and at the far end, a single line entered the underground storage area. Further sidings diverged off to several transhipment platforms and a locomotive shed. In addition, narrow gauge lines served further storage areas.

On the surface, buildings such as packing sheds, a canteen block, washrooms and offices were provided, together with several pillbox emplacements for defence protection. Several of these buildings still survive today, including the remains of foundations from many more structures which have now been demolished. The principal design for the main storage facility was in the form of a series of seven long tunnel-like arches, the largest being 25 feet wide with an overall height of 17 feet to the centre of the arches. Each arch had a narrow gauge siding running through their length and unloading platforms were provided on both sides for stacking material. The floor of the original quarry sloped downwards at one end of the site and this area allowed for the building of a two-level structure. The lower levels were reached from the upper tunnels by means of electric lifts.

After much hard work was expended upon the construction of the facility, the momentous occasion of the first train of munitions wagons to enter the storage tunnels was somewhat muted, when the roof of the vans became tightly wedged in the tunnel. Someone at the design stage had assumed that the standard gauge trains would comprise of conventional gunpowder vans, being a type that were used by all of the UK main line railways. These were derived originally from the Great Western Railway vans commonly known as "Iron Minks", which had all-steel bodies and had a low overall height of only 10'-6.5" between rail and roof apex. In practice, there were insufficient quantities of these specialised vans available during the war and conventional vans had to be pressed into service. The overall height of these vans was typically greater at 11'-10". The first train comprising of the latter type of vans duly arrived and had been capable of entering the tunnel while fully laden, with the suspension springs thus compressed. Upon the vans each being unloaded of 10 tons of munitions, they had risen up on their springs to the full unladen height and were consequently rendered immobile. The only solution was to reload the munitions back into the vans and thereby reduce the overall height again, so that the train could be reversed back out! The track had been built by embedding it in a concrete roadway "tramway fashion", so subsequently the track had to be dug up with some difficulty and relaid again at a lower level.

In 1940-1, Ruston Hornsby of Lincoln provided batches of 4-wheel diesel mechanical locomotives, seven in number for the standard gauge and thirteen for the narrow gauge. A wartime article in the "Railway Magazine" concerning the rail operations in the surrounding area appeared in the May/June 1944 edition, which made reference to the operating practices, informing that "Explosives were carried daily". No doubt this was as much as could be said on the subject under wartime censorship!

Throughout WW2, Harpur Hill survived unscathed and without incident. Other munitions storage sites were not so lucky. Following the apparent success of the design employed at Harpur Hill, the Air Ministry decided to use the same technique at Llanberis, in North Wales, by converting a disused slate quarry into an underground storage depot. However, because of the great depth of this quarry the design was adapted to produce a structure with two floors throughout. The lower level had a conventional flat reinforced concrete ceiling, which also formed the floor of the upper level which was topped by an arched roof, similar to that at Harpur Hill. Standard and narrow gauge railway sidings entered the lower level of the depot through the original quarry access tunnels, while three electric lifts transported bombs to the upper floor. Overhead protection was given by covering the roof with broken slate to a depth of 42 feet. In response to pressure from the treasury, efforts were made to reduce costs and accelerate the construction. Unfortunately, the cost cutting had disastrous consequences, only six months after the depot was opened. On 25th January 1942, two-thirds of the structure collapsed within seconds under the weight of the overlaying slate backfill, completely engulfing a train of twenty seven wagons which was in the process of unloading. The collapse buried over 14,000 tons of bombs which at the time represented 14% of the total RAF stock. A subsequent court of inquiry concluded that faulty design was the principal cause of the failure. Cracks had been noticed in the structure as the building neared completion, but these were attributed to minor defects rather than miscalculations in the strength of the design.

A similar munitions site existed at Fauld in Staffordshire, where a disused alabaster mine had been acquired. On 27 November 1944, the entire complex exploded, destroying two adjacent farms and much of the village

of Scropton, killing seventy men and women in an instant. Approximately 4,000 tons of bombs had exploded en-mass in the mine, which was some ninety feet below ground, leaving a crater nearly half-a-mile in diameter. The Fauld disaster still maintains the dubious distinction of having been the largest and most devastating explosion ever to have occurred on the British mainland, outside of the coal mining industry. The crater is shown on current 1:50,000 OS maps as it is still a very large hole, surrounded by barbed wire fencing. It is estimated that some live munitions remain buried on site, which is still constantly guarded.

In wartime, the risk of an explosion on a munitions train in transit was ever-present of course, especially as hot embers ejected from the chimneys of steam locomotives could potentially start a fire in one of the open wagons. Consignments of ariel bombs in wagons were supposed to have the load completely covered with a tarpaulin, but this was not always possible when tarpaulins were in short supply. The inevitable happened in Soham, Cambridgeshire on the night of 1st June 1944. A fully loaded munitions train, hauled by an "Austerity" class 2-8-0 steam locomotive number 7337 was proceeding through the station. A wagon directly behind the loco had caught fire and the load of forty 500 pound bombs were engulfed in the flames and the rest of the train was threatened. Thanks to the actions of the train crew, the burning wagon was uncoupled from the rest of the train. The intention of the crew was to haul it to the end of the station platform, where there was a locomotive watering column that could be used to dowse the flames. But as the loco was drawing the wagon forward, the explosion occurred. This particular wagon had previously carried a consignment of loose sulphur and the residues of this load had contributed to fuelling the fire. The remainder of the train comprised of another 51 open wagons plus a brake van, of which 44 wagons carried a total of 400 tons of bombs. The explosion caused a crater 66 feet deep, the station was largely destroyed and 700 adjacent properties were severely damaged. Although significant, the destruction would have been catastrophic if the whole train of wagons had exploded. Mercifully, a potentially bigger disaster was thus averted, thanks to the bravery of the loco crew. Fortunately, due to their heroic actions, they saved the rest of the train and the town of Soham was spared from destruction. Driver Ben Gimbert was injured and fireman James Nightall was killed. Both were awarded the George Cross for their bravery.

The RAF still needed further subsidiary storages around the country, both for future expansion of the war effort and also in the event that the Harpur Hill storages might be lost due to enemy bombing. The Air Ministry approached the Railways Executive (the wartime committee formed by members of the "Big Four" main line railways) and asked for their assistance in finding additional storage sites. The London Midland and Scottish Railway offered the use of two disused railway tunnels and following site inspections, these were found suitable for munitions storage. For the RAF's purposes, these locations were disadvantaged in that they were no longer rail served, as the respective railways had already been closed. However, better options could not be found in the region. As the running lines had already been removed, the redundant track beds provided access for road vehicles to haul the munitions in and out of the tunnels. One of these locations was Burbage Tunnel (length 580 yards) which was on an abandoned portion of the Cromford and High Peak Railway, between the stations of Ladmanlow and Whaley Bridge. Today, Burbage tunnel still survives, but both the portals are bricked up for safety reasons, due to the decaying state of the brickwork. The second location was Rowthorne Tunnel (length 929 yards) which was south east of Chesterfield and close to the site of Glapwell station on the former Midland Railway Doe Lea route. Here, there was a capacity for 5,000 tons of munitions. One end of the tunnel was sealed off with a brick wall and a 2'-0" narrow gauge light railway ran throughout the length from the opposite end. After the war, the tunnel was eventually abandoned in 1956. Rowthorne tunnel no longer exists today, as it was seriously damaged due to subsidence caused by coal mining. The tunnel was therefore infilled with rubble and the approach cuttings were landscaped. The line is now a nature trail and a popular route for ramblers and dog walkers.

On the abandoned route of the 2'-6" narrow gauge Leek and Manifold Light Railway, is Swainsby tunnel, (also known as Butterton), having a length 164 yards. It lies within the Staffordshire portion of the Peak District between the villages of Ecton and Butterton and was built close by to the stately home of Swainsby Hall. The tunnel was brought back into use specifically for the storage of captured chemical weapons from 26th February 1941. This new operational role was managed by staff from the Harpur Hill storages and again road haulage was used. Today, this tunnel has a public road running through it, although being formally built to narrow gauge proportions with a single track, it has a restricted width and recesses had to be cut into the side walls for pedestrians to safely pass.

Hilton in South Derbyshire was a "satellite" depot for Fauld munitions depot, the fate of the latter being referred to previously. The depot was adjacent to the Crewe to Derby main line and extensive storage sidings were provided. In the 1950's, Hilton became a Central Vehicle Depot for military road vehicles and a large complex of storage sheds was constructed. The land comprised of 280 acres and in 2000 an industrial estate

was built on the site.

Apart from munitions storage, there were also logistical issues with the storage and distribution of high octane aviation fuel. A typical "thousand bomber" air raid to Europe consumed 2.6 million gallons of fuel, which required a total of 28 trains convey it to the chosen airfield and another 8 trains of munitions for every such raid. A storage site for aviation fuel and lubricating oil tanks was found at a disused limestone quarry called Dove Holes in Derbyshire. This was adjacent to the ex-LNWR station of the same name on the Whaley Bridge to Buxton line. Fortunately the former quarry had once been rail served, so it was straightforward to link the storage facility with direct railway access to serve a number of RAF airfields. In addition, buried pipelines linked the facility to other fuel storage facilities close by. The modern day railway line still passes the site today, which includes Dove Holes Tunnel. Leakages from the fuel storage tanks (now long gone) over the years had seeped into the ground and railway maintenance workers now comment that the petrol can still be distinctly smelt, when walking through the tunnel.

In the immediate post-war period, Harpur Hill was designated as RAF Maintenance Unit No. 28 as from May 1947. It continued to be used as the principal centre in the UK for the safe rendering of surplus munitions and their eventual safe disposal. This now included a number of captured German V2 rocket warheads. The enemy chemical weapons in particular had to be urgently disposed of and Harpur Hill became one of the main collection centres in the UK. Bulk mustard gas was graded and loaded into 45 gallon steel drums and later dumped at sea, either in the Hurd Deep in the English Channel, or in Beaufort's Dyke in the Irish Sea. Almost 71,000 bombs containing the nerve gases Tabun and Sarin had been seized in Germany. These were stored until 1955-6 when, in "Operation Sandcastle", they were transported to Cairnryan on the west coast of Scotland for temporary storage. Ultimately, the munitions were scuttled in the Atlantic Ocean in three redundant merchant ships, 120 miles off shore from north-west Ireland.

The RAF finally vacated Harpur Hill in December 1960 and later the tunnels were rented out for use as a mushroom farm. Production began in the autumn of 1964, under the ownership of Wrington Vale Nurseries, who at the time were the largest producer of mushrooms in Europe. No doubt the mushrooms found the stygian conditions to their liking. Freshly-picked mushrooms were sent out across the country by rail, to reach markets as far away as Newcastle, Glasgow and Edinburgh on the same days that they were picked. At it's peak, the company were producing around 2,000lbs of mushrooms every week.

Today, the site is used as a vehicle maintenance workshop and park for road haulage contractors. Part of the site was also taken over by the Ministry of Technology, for their Safety in Mines Research Establishment. Later becoming the Health & Safety Executive, they established a training school and testing laboratories on an open air part of the site. A newly built narrow gauge railway served the site and a single Greenwood Batley diesel electric locomotive, (works number 6099 of 1964) was the only form of motive power. Interestingly, the chosen track gauge was 3'-0" which was an unusual choice for an England location. Normally it would be the gauge of choice for Northern Ireland and Irish Republic narrow gauge branch lines.

Following the terrorist bombings of two London Underground tube trains on 7th July 2005, some experiments were conducted at the Mines Research Establishment. For this purpose, two lines of standard gauge railway tracks were laid and some redundant tube cars from the Jubilee Line were delivered. These were used to simulate the circumstances of the incident and to determine the structural strength of the cars. An above ground simulated tube tunnel structure was built and Newcastle University assisted in experiments to improve the designs of future tube train designs. Today, the HSE complex covers 550 acres and this still includes the two sidings.



Former military bunker at Harpur Hill <u>Harpur Hill | Crazy Places (crazy-places.com)</u>

It was not until 2007 that the Ministry of Defence decided to conduct a survey on the former RAF portion of the Harpur Hill site to check for the presence of any remaining explosive ordinance. This project was named "Operation Cleansweep". It was soon discovered that there were still old munitions and residues of chemical weapons in the surface areas, covering an area of 104 acres. These items were carefully removed and the site has now reverted to nature. A portion of the area is an industrial estate for parking commercial road haulage vehicles. There are still some concrete bunkers, pill boxes and ventilation shafts visible in the surrounding area, but the underground parts remain "out of bounds" and will probably remain so indefinitely.

IA News and Notes

Reopening 'The Old Road' for railway passenger traffic

Philip Cousins

In early September it was announced the Sheffield and Chesterfield via Barrow Hill railway line reopening for passenger traffic bid had passed the first stage of the Government's 'Restoring Your Railway Fund' bidding process. The project, which would include new railway stations (on their historic locations) at Whittington, Barrow Hill, Eckington & Renishaw, Killamarsh and at Beighton will was made eligible for funding to develop business cases in partnership with local businesses and stakeholders. Ten schemes were approved at this first stage. In late November 2020 it was announced that the bid was to be worked up into a 'strategic outline business case', with this being submitted to the Department for Transport.

In a paper to the Sheffield Region Mayoral Combined Authority (MCA) for their 7 January 2021 Transport and Environment Board it was stated that:

Work is now being undertaken by the MCA team, in support of the Sponsoring MP Lee Rowley and the Local Authority Partners to develop a Strategic Outline Business Case (SOBC) for the Barrow Hill Line. The aim of the project team is to submit the SOBC for Barrow Hill to the Department for Transport (DfT) in early 2021. The appropriate budget and resources are agreed and in place to achieve this.

The line is, of course, regularly used for freight and passenger diversions. Driver route knowledge is also kept up-to-date by a few regular timetabled passenger trains along the line. Further information will doubtless be awaited with great interest by NEDIAS members.

Wappenshall Basin warehouse

The Shrewsbury and Newport Canals Trust has achieved a major milestone in their long-term plan to restore this waterway with the impending re-watering of the canal basin at Wappenshall. Volunteers have been working for two years to remove more than 1,400 cubic metres of infill to achieve this. This work is part of a project to restore the wharf and its Grade II-listed warehouse, to create a café and visitor centre focussing on the work of Thomas Telford. The project has received a £20,000 Restoration Grant from AIA, and is due to be complete by the end of 2021.



RIGHT: Wappenshall Basin warehouse prior to the start of restoration work (photo credit the late John Powell)

A Miller & his Mill: The Story of John Else and Warney Mill

This new book, published by the Midland Wind & Water Mills Group describes the life and times of John Else, miller at Darley, near Matlock in Derbyshire, and the mill he rebuilt in 1860.

The author, Judith Cooper, is the great-great grand daughter of John Else, and her book draws on the evidence found in the papers left by John Else that have survived through the generations and have passed into her possession.

The book paints a picture of the life of a rural miller in the mid-19th century, the people he worked with and his position in the local community. The documents provide details from when the mill was completely

rebuilt, giving information about the process of building a mill in Victorian Britain. The documents also illustrate how John Else's milling business expanded to include two other local corn mills, with information about the products he produced and the customers he supplied.

The documents show a window onto the miller's social life and give a glimpse into the lives of the workmen who built and operated the mill at a time when the railways were changing all their lives with the introduction of the modern world that we can all recognise today.

Although John Else died at the early age of 42 in 1869, the book also covers the Else family's struggle in the last quarter of the 19th century due to the massive *changes*

taking place in the milling industry. Nonetheless, the family continued to successfully operate Warney Mill until after the Second World War. In the late 1950s the mill was fitted with modern roller milling plant but although the mill building still stands today, it is no longer used as a mill.

A Miller & his Mill: The Story of John Else and Warney Mill - by Judith Cooper 132 pages, 120 illustrations, A4 Softback ISBN 978 0 95177 946 0. Price £15 + £3.50 p&p.

Chairman's Chat

Cliff Lea

ell Covid-19 continues to vex us all, and we still can't start our meetings again at St Thomas's. I popped in recently just to let them know we're still here, raring to start again, but this seems just as far away as it was 9 months ago. The good news is that Doug is happy to produce for us a Newsletter each month to keep boredom away – <u>provided you can still keep</u> feeding to us short articles. Do please keep it up - we're benefiting from a variety of authors and lots of new

material. Do keep the taps running – so many thanks to you contributors!

In the meantime, let me confirm that in 2021 we require no subscriptions from members.

In this edition of the Newsletter, Philip Cousins writes of the recent installations generating electricity from gas on the site of the old Staveley Works. Part of the new generating capacity at Staveley uses landfill gas, so going some way to reduce carbon emissions.

But go back 250 years, think of Chesterfield's industries taking their power directly from rivers for operating forges, bellows for furnaces, potteries, textile spinning and weaving, stone crushers, grist mills, papermaking, etc.

There were so many **water wheels** here which took power from River Rother and its tributaries. Interestingly, a recent study looked at the potential for power generation from hydro applications – <u>and it</u> <u>identified 26 river sites for hydro electricity in Chesterfield</u>. Not individually major sources, but it all adds up.

Many of us have been to see the Archimedes Screw at New Mills, and much closer was the more recently installed water turbine at Cromford, near the old corn mill, using water power from the Bonsall Brook. Great demonstrations of pollution-free electricity. <u>At Cromford there are plans to have a fresh look at the potential</u>. Is Chesterfield being left behind?

STOP PRESS: small installations using modern "Turbulent Hydro Whirlpool Microhydro" cascades are even being installed on canal by-washes and similar. Just have a look at their simplicity in this YouTube demo:

<u>https://youtu.be/s_ogoAHRvQU</u> – Could this be something for Chesterfield?

The town which originally drove its industry by water power ... how fitting if it could now generate hydro power from the same source!





And finally Tom Wedgwood – from Pottery to Pot via Photography

his year marks the **250th anniversary** of the birth of Tom Wedgwood, the fifth of potter Josiah's eight offspring. In childhood he was surrounded by the scientific and industrial movers-andshakers of his day, the family so close to the Darwins, and the other "Lunars". His father wanted him to study the sciences and by age 15

he was at Edinburgh University. He met and studied under great names, medicine with Joseph Black, geology with James Hutton. Later meeting up with the great writers, Wordsworth and his great friend Samuel Taylor Coleridge.

Back in Etruria he was looking at colours and pigments (in which his father had great interest) and the effect of light on chemicals such as Silver compounds, interested to find ways of recording images. His results shared with James Watt and with Royal Society when just 20, and by age 30 his latest results published by another friend Humphrey Davy at the Royal Institution.

TW is now appreciated as the first person to have used light sensitive chemicals such as Silver to produce silhouette images on paper from the camera obscura. So forget Fox Talbot and Daguerre, Tom Wedgwood is certainly regarded as the **father of photography**.



Cliff Lea

Thomas Wedgewood (1771-1805) https://en.wikipedia.org/wiki/ Thomas_Wedgwood_(photographer)#/media/ File:Thomas_Wedgwood_(1771-1805).jpg



But finally, he suffered chronic stomach problems, the effect perhaps of the chemicals he studied. It was Taylor Coleridge who probably introduced him to hemp to alleviate his symptoms. He became a heavy user, and passed away at age 34.

A life from pottery to pot via a great place in the history of photography.

LEFT: *Photograms* like these are made without a camera. They record the shadows cast by actual objects placed on or near a sheet of photographic paper, which darkens where it is exposed to light. The first reliably documented images of this kind were made by Thomas Wedgwood around the year 1800.

File:Facsimile-print Thomas Wedgwood.jpg - Wikimedia Commons

Contributions, no matter how short (maybe about a visit you have made), and preferably by email to editor@nedias.co.uk, for inclusion in future editions of this newsletter are most welcome.

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