



**Britain's
Oldest
Brain**



Inside:
Dating the Roman Defences
Heslington Brain
Industrial Hungate



YORK
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Yorkshire Archaeology Today

Autumn 2009

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Cover Photo

Exceptional preservation of brain material recovered from a skull excavated at Heslington East (see p.10). Photo: Richard Hall.



Number 17

Editors: Richard Hall, Christine Kyriacou
Photo editing, design & layout: Lesley Collett
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Tel: 01904 663000

Email: ckyriacou@yorkat.co.uk

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New light on the Roman fortress defences

A Trajanic date for the Multangular Tower?

Post-excavation analysis of York Archaeological Trust's excavations at St Leonard's Hospital has revealed evidence indicating that the impressive stone defences on the south-west side of the fortress, including the Multangular Tower, could be much earlier than previously thought (accounts of the excavations, which were run as a training excavation during 2001-4, appear in *Yorkshire Archaeology Today* issues 2, 4 and 8).

When the Romans established a fortress at York around AD71, the defences and internal buildings were initially built in turf and timber, but rebuilding of the defences in stone probably began early in the 2nd century. Basically, the rebuilding involved constructing a stone wall up to 7m high at the front of the original turf rampart, increasing the size of the rampart to the rear, and rebuilding the towers and gateways in stone.

The form of the stone defences differs from one part of the fortress to the next. For example, towards the east corner, the wall has a plinth near the base, whereas to the west there is no plinth but there are bands of brickwork. Most notably, the towers on the south-west side of the defences are massive and their fronts project beyond the line of the fortress wall, whereas the towers elsewhere are more modest structures that do not project beyond the fortress wall. The impressive west corner tower, better known as the Multangular Tower, and the adjoining fortress walls, can be seen standing in the gardens of the Yorkshire Museum.

It has generally been thought that these more massive south-west defences were constructed around the time of Constantine the Great, who was declared emperor in York in 306. This is partly on archaeological grounds, as some material of 3rd century date has been found within the extended rampart. The claim is otherwise based on architectural

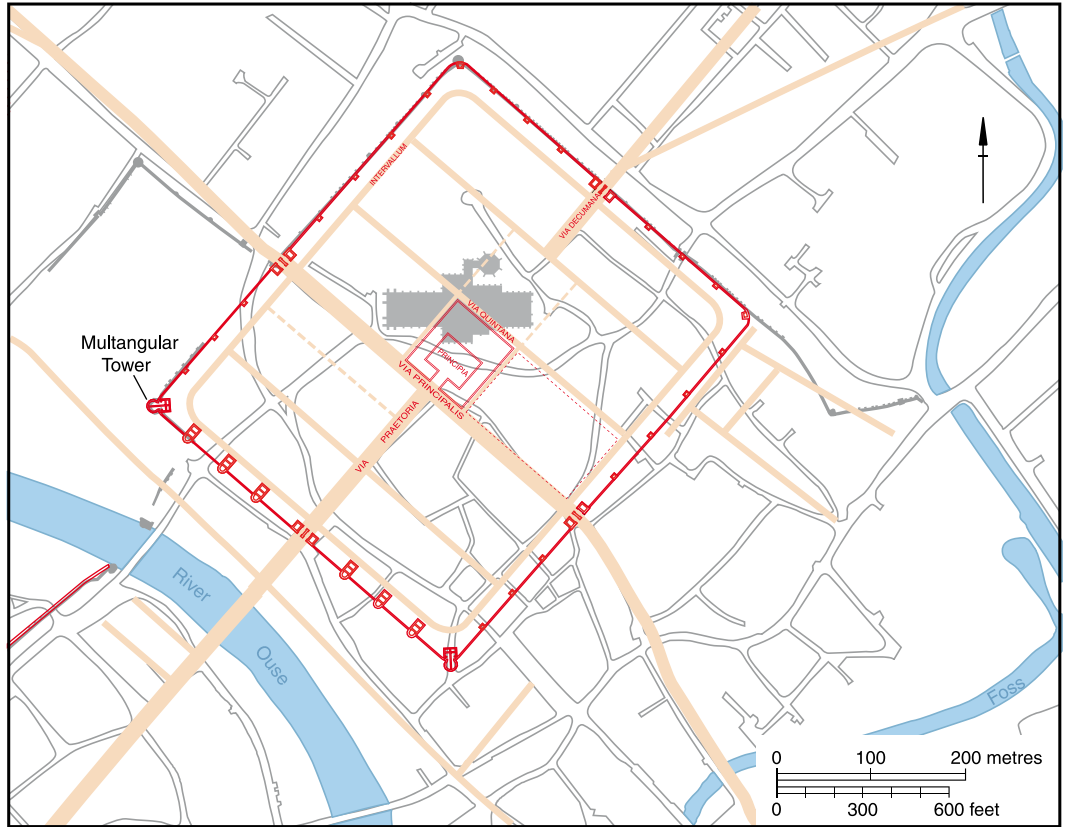
parallels. The alternating bands of stone and brick produce an appearance similar to the walls of Constantinople, which were built by Constantine early in the 4th century. In addition, the closest parallels to the Multangular Tower in plan are the towers of the early 4th century Imperial palace at Gamzigrad, in modern-day Serbia. Furthermore, the projecting towers were sufficiently large to house artillery on their uppermost storey, and could provide enfilading fire (crossfire) along the front of the walls. These military features suggest that the purpose of the structures was primarily defensive, which would be more in keeping with a date during the later Roman period (late 3rd century onwards), when even fortresses were threatened by raiding.

One of the aims of the St Leonard's Hospital excavations was to obtain further evidence on the construction history of the legionary fortress defences. The early turf

The Multangular Tower in Museum Gardens, York.



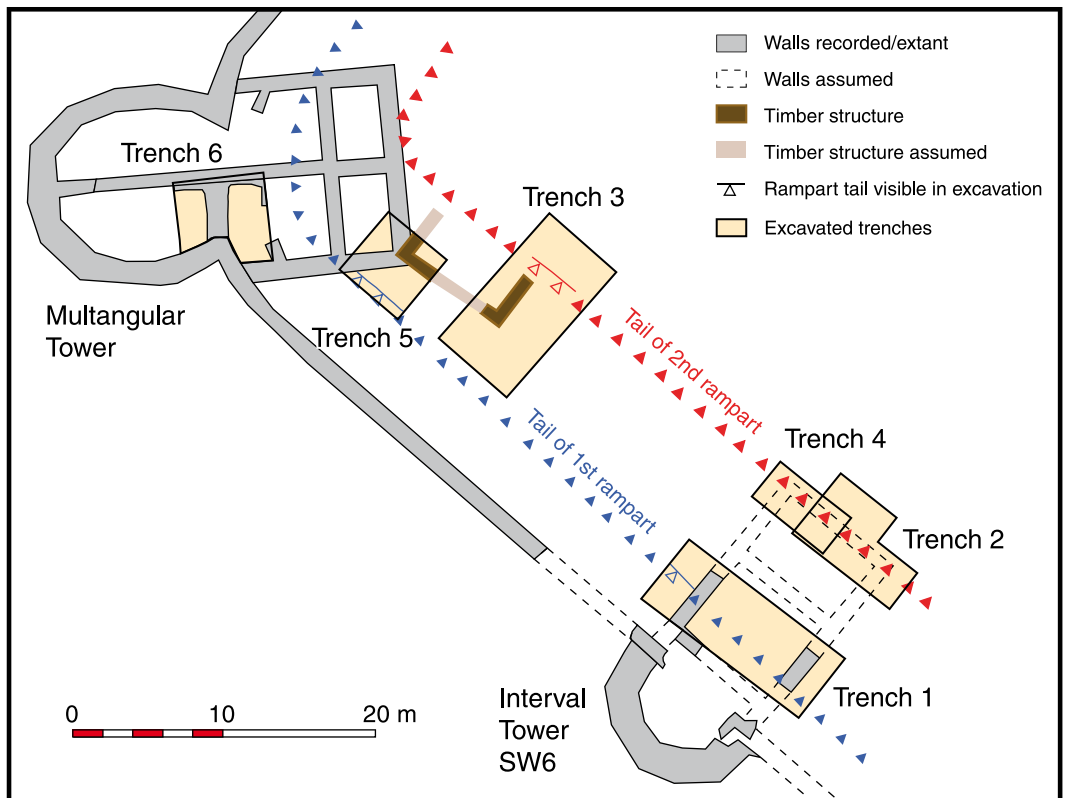
Plan of the defences and major roads of Roman York, superimposed on modern street plan (in grey).



rampart was encountered as expected. Of the later stone defences, structural details of the Multangular Tower and one of the south-west interval towers were identified, and the massive later rampart was investigated. Also of note was the absence of any evidence for an earlier phase of stone defences, which would

have been characterised by small internal corner and interval towers. Provisional dating of the finds recovered during the excavations suggests that the towers were built during the reign of Trajan (97-118) or later, whereas the extended rampart contained 3rd-century pottery.

St Leonard's Hospital excavation: trenches and main Roman features.



It was also hoped to retrieve some timber piles from beneath the Multangular Tower. These piles, which prevented the massive tower foundations from settling in the soft subsoil, had been observed by Professor Stuart Miller during his excavations in 1926. Such timber might be suitable for tree-ring dating, which in the right circumstances can provide a date (the felling date of the tree) to within a year or even a season. Three almost complete timber piles were indeed recovered, but unfortunately they proved to be alder, which unlike oak has inconsistent growth rings that are unsuitable for tree-ring dating.

Initially, this seemed to be the end of the line in terms of obtaining precise dates relating to the construction of the Multangular Tower. Radiocarbon dating of the timbers was considered, but due to a quirk in the technique it is normally very difficult to obtain dates accurate to within 200 years for the Roman period, making it almost useless for distinguishing between different building episodes. It was then discovered that the technique could be refined in two stages. Firstly, it was possible to obtain high-precision radiocarbon dates, in this case from the Scottish Universities Environmental Research Centre (SUERC) at Glasgow University, which could reduce the date range to around one century. Secondly, mathematical techniques for increasing the statistical reliability of multiple radiocarbon dates are also now available, narrowing the date range even further, and so YAT obtained the services of Peter Marshall, a specialist in this field. The use of these techniques greatly increased the cost of the radiocarbon dates, but it provided the best chance of obtaining meaningful results, and so two of the timbers were sent for dating.

The result of the exercise is that one timber is dated to AD5-85 and the other to AD25-130, at the statistically accepted level of 95% confidence. Some, but probably very little, of the outermost parts of the trees had been removed to shape the piles. This is indicated by the presence of knots from small branches, which occur close to the surface of the trees. Removing large amounts of wood

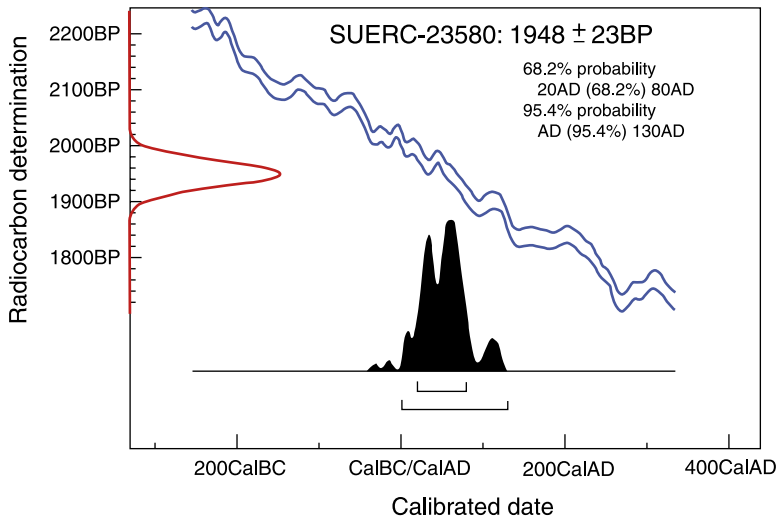


Wooden piles beneath the foundations of the Multangular Tower. (scale intervals: 100mm)

would also have meant much unnecessary work. Consequently, it is considered very likely that the first timber was felled before AD110. Assuming the fortress was indeed established around AD71 and the timbers were felled some time after that, an earliest felling date of around AD80 is suggested. There is no reason to believe that the timbers would have been left lying around after felling for any length of time before they were used as piles. It therefore seems that the construction of the Multangular Tower commenced at some point during AD80-110, fully two centuries earlier than the generally accepted date.

Does this dating evidence stand up to closer scrutiny? One point in its favour is the absence of an earlier phase of stone defences on the south-west side of the fortress. If the stone defences, Multangular Tower and all, were built in the 4th century, it means the army maintained a turf and timber rampart for over 200 years; a remarkably long time. And if the south-west defences, on the side of the fortress that was visible from the civilian settlement across the river Ouse, and to any traveller approaching the fortress from the south, were built on a massive scale partly in order to express Roman military might, as is often suggested, it could be argued that this motivation was at least as relevant early in the fortress's life as it may have been later on.

It should also be noted that the build on the south-west side of the fortress defences,



Above: Radiocarbon calibration plot of one of the samples taken from the piles. (SUERC)

complete with brick bonding courses, continues from the Multangular Tower along the north-west side, which has small internal towers. If the north-west defences were 4th century, the use of small internal towers would have seemed very old-fashioned at the time. It is more plausible that this build is early, with the massive projecting towers on the south-west side meant to create an impressive view from the beginning. There are examples of projecting towers elsewhere in the Roman Empire in the 2nd century; the fortress at York may even have been where the concept originated.

There is the possibility that the timber piles had been used elsewhere previously and were then re-used in the 4th century. However, there are no signs of deterioration evident in the wood, such as decay and woodworm activity. Nor is it likely that the alder had a structural use previously, as oak is preferred as structural timber; and there is no evidence of re-use on the timbers.

One body of evidence that apparently does not support an early date for the south-west defences is the occurrence of 3rd century finds in the extended rampart. However, the rampart would have been built after the wall had been constructed. There was evidence at St Leonard's Hospital that the rampart was

built up slowly, with cobble surfaces and structural features indicating that there were times when rampart construction had ceased and the rampart was occupied in some way. The volume of material required to form the later rampart is considerable, far more than would have been produced as upcast from the external defensive ditches. The procurement of soil and the construction of the 5m-high rampart would therefore have been increasingly difficult in its latter stages, and it may well have been the case that this was allowed to take much longer than the wall construction.

If the south-west defences were built in the early 2nd century, it would seem that the fortress defences had been rebuilt entirely in stone by the middle of that century. Bearing in mind that at least part of the legion based at York would have been engaged in building Hadrian's Wall during some of this time, could this massive undertaking have been achieved so quickly? Estimates of construction times are notoriously difficult to make, as there is very little data available on such factors as the size of the workforce and the amount of time spent on the project per year. However, assuming 500 men – about 10% of the legion – worked solely on procuring and preparing the building materials and undertaking the building work, it is possible that the work could have been completed in 10 to 15 years (in comparison, it is estimated that the less massive stone defences of the legionary fortress at Inchtuthil in Scotland could have been constructed in 2 to 3 years by 1,000 men). It therefore seems quite possible that the stone fortress defences at York could have been built in the first half of the 2nd century despite a break to help build Hadrian's Wall, especially if the extended rampart was not completed until later.

Further insights into the Roman legionary fortress will no doubt be made as the analysis of the St Leonard's Hospital excavation continues.

Kurt Hunter-Mann

Industrialisation in Hungate:

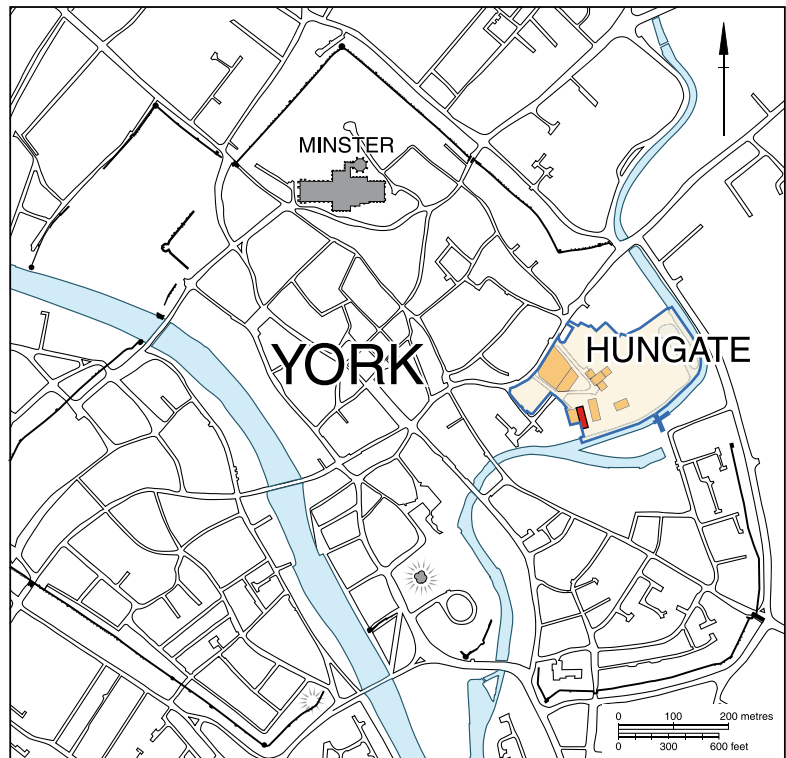
Leatham's Flour Mill and Bellerby's Sawmill

Between October 2007 and March 2008, York Archaeological Trust carried out an archaeological and documentary-based investigation of a piece of land in Hungate which abutted the northern bank of the river Foss, revealing the history and development of the York Union Gasworks Company (*Yorkshire Archaeology Today* 14). The excavations were financed by Hungate (York) Regeneration Ltd as part of the urban regeneration of the Hungate area. In February 2009, a further opportunity to explore the industrial history of this part of Hungate arose, exposing two manufacturing firms which had replaced the gasworks after its closure in the mid-19th century: Bellerby's Sawmill and Leatham's Flour Mill.

York's economy was transformed by industrial expansion across the second half of the 19th century. The confectionery works of Rowntree and Co. Ltd and Joseph Terry and Sons, and the railway with its associated engineering works, are renowned for their contribution to York's industrial heritage. Yet in addition to these firms there were many smaller and less well-known operations which were equally important to the city's, and the nation's, industrial development. Leatham's Flour Mill, in particular, is one of York's 'forgotten' contributors. By 1900, Leatham and Sons had expanded both within and beyond Hungate, with operations in Hull, Newcastle and Cardiff. Moreover, they were among the most influential firms at the heart of a national transformation of the British flour-milling industry across the second half of the 19th century.

From Gasworks to Saw Mill and Flour Mill

In May 1850, the York United Gasworks Company site in Hungate was divided into nine lots for sale by auction. William Bellerby purchased four of the nine lots, on which



he set up his sawmill business. His firm was a success, and within twelve years he had acquired a further two of the original lots, expanding his business across the site.

The excavation revealed evidence for the layout of the sawmill complex and its associated equipment. Part of the gasworks' Retort House building, which had been shortened by some 7.5m following the

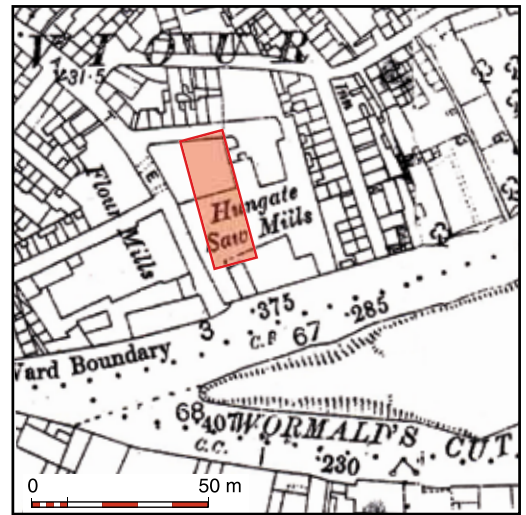
Above: Site location.
Below: To the left of this picture can be seen Bellerby's timber sheds on the bank of the river Foss. Leatham's mill can be seen in the background. 1904.
York City Archives: Image reproduced courtesy of City of York Council





Leatham's Flour Mill and Bellerby's Sawmill after excavation, looking south.

demolition of its northern end, was re-used in the complex. Incorporated into the newly built northern wall was a deep brick-lined chamber. This was cut through the former gasworks sub-floor and ground make-up deposits to create a chamber 1.4m deep from the sawmill floor level, provisionally interpreted as a possible sawpit. Further evidence for possible machine and engine settings were also identified. Some 2.7m south of the possible sawpit was a small, crudely dressed, sandstone base, and to the west of this was a much larger setting, which consisted of two rectangular sandstone bases with recesses, laid end-to-end, on a bed of mortar and timber planks. These bases are thought to have been re-used elements of gasworks settings, possibly the bases for retort ovens, and may have been re-set to form the base of a small vertical steam engine. The northern stone had an incised figure 12 on its upper surface, suggesting perhaps that it was originally the base of a retort oven of that number. An L-shaped pit immediately to the north of the bases may have been a stoking pit for this engine, but such was the degree of robbing and truncation in later phases that no further interpretation of these features was possible. That said, it is likely that the equipment formed part of the infrastructure for Bellerby's sawmill and it is possible that the engine operated a saw in the sawpit.



The excavation trench, superimposed on the 1892 Ordnance Survey map of Hungate. (Ian Milsted)

A large number of postholes and settings in the sawmill yard suggested a sequence of small buildings relating to the life of the sawmill. These were all robbed and severely truncated by later activity, making further interpretation difficult; however, it is possible that the yard was home to several sheds or lean-to structures, and also to a number of large machines or engines, at least two of which abutted the main building wall and seemed to be associated with breaks in that wall. No secure use-deposits or accumulations of debris were found to elucidate the activities undertaken here, although it is likely that the structures would have been altered several times over the decades that the sawmill was in operation. A photograph taken from the River Foss shows that Bellerby maximised the use of the river frontage by positioning a timber shed on the bank as a means of facilitating the efficient loading and unloading of timber.

'a costly and powerful steam engine, tubular boiler, force pump, three pairs of French and one pair of grey stones...'

A further lot within the former gasworks site, Lot 5, was re-developed as a flour mill. Thomas Pickersgill's architect's plan of the flour mill, drawn in 1851, proposed a factory arranged around a central courtyard, with

the mill building located in the north-east part of the site, a sale-room and potential domestic accommodation to the north-west, and stables and animal sheds to the south. Four large millstones were arranged within the mill building, along with an engine house and boiler, indicating that they were driven by steam power. The structures excavated in the northern part of the Block F1 trench generally reflect the outline designed by Pickersgill, although the wall-lines do not precisely match. The excavation also uncovered the remains of some of these early mill-stone bases, which were found to be in a position broadly comparable to that shown in the architect's plan.

The initial owner and developer of this flour mill are currently unknown, and they appear not to have operated the business for long. In 1854 it was advertised for sale in the *Yorkshire Gazette*. An entry in the *York Directory* for 1861 records that John Leetham was then running the flour milling business in Hungate with his son, Henry Leetham, and it is possible that he acquired the flour mill through the sale of 1854. John Leetham, a master mariner by trade, was seemingly new to the flour-milling industry; however, his experience as a master of at least two steam packets undoubtedly provided him with important background knowledge of York's river system and the trade routes in and out of the city.

Enterprise and Expansion

The Leetham family business in Hungate expanded considerably over the course of the late 19th century. John and Henry Leetham ran the flour milling business together in Hungate until John's death in 1862, when four of Henry Leetham's sons, Sidney, Henry Ernest, Alfred and Richard gradually joined him in the business. By the beginning of the 20th century the mill complex had extended beyond the small area contained within Lot 5, and several new mill buildings had been constructed to the west of Hungate. A grain warehouse had also been built on Foss Islands, which was connected to the mainland by an extensive four-storey bridge. The



complex was carefully arranged on the banks of the River Foss, maximising the use of this important transport link, and facilitating the efficient transfer of grain from water to warehouse and finally to the mill. Of these buildings, only the grain warehouse, known locally as Rowntree's Wharf, still stands.

The Leetham family were in touch with new developments in flour milling technology and, from the 1880s onwards, had transformed the mill from a small steam-driven millstone plant into a large roller mill. The advent of steel rollers, introduced into Britain in the 1860s, came with the adoption of eastern-

Leetham's Grain Warehouse on the River Foss, connecting to mill buildings in Hungate via the bridge. 1912.

*York City Archives:
Image reproduced
courtesy of City of York
Council*



Garden Place, Hungate. The massive grain silos of Leetham's Mill dominate the background. Early 1900s.

*York City Archives:
Image reproduced
courtesy of City of York
Council*

Excavating part of Leatham's Mill Engine House. This rectangular brick base would have supported a steam engine, secured in place by the large steel pins.



European techniques of 'high-grinding', where differently spaced and grooved pairs of rollers progressively broke the grain into a range of different grades and qualities. This technique greatly improved upon the quality and quantity of flour achieved through the older method of millstone grinding. In 1900, Leatham and Sons' flour mill had a total capacity of 112 sacks per hour, that is, 12 sacks more than the 100 sacks per hour that were considered to be an indicator of a very large business. By incorporating this machinery into their works, the family were at the forefront of milling technology, and the success and ambition of the Company was confirmed in the election of Sidney Leatham as president of the Incorporated National Association of British and Irish Millers in July 1900.

The Block F excavation revealed important information about the transformation of the early millstone building into the much larger automatic roller flour mill. The original mill building and yard were drastically altered and a new engine house was built on the site to house a massive power-plant, which is thought to have provided power for the new mill building to the west of Hungate.

The modified flour mill yard was then divided in two by a large brick wall, which joined the southern side of the original mill building to the southern yard wall. The space to the east of the new wall was now enclosed, at which point the internal fittings of an engine house were inserted. The most spectacular element of these were two rectangular brick and sandstone structures, which formed massive solid bases on to which a steam engine could be anchored. Each base held three pairs of large steel pins, arranged in line with their equivalent on the other base. Each pin was 0.05m thick, secured to the underside of the base by a steel plate measuring 0.23m x 0.23m x 0.07m thick, and fastened with a nut 0.11m wide and 0.07m deep. This fitting was accessed by a 0.40m square opening at the bottom of the engine base. We think that the entire setting may have held a beam engine turning a flywheel calculated at 9 metres in diameter from the surviving fragments. Given the few surviving engine parts, its make and exact type cannot be identified. Nevertheless, the potential power output, based on the scale of the engine bases and assuming a north-south alignment of the engine, has been estimated in excess of 3000hp. Power from the engine

is thought to have been transferred to the mill complex via a rope-drive. Major alterations were also made to the original mill building to provide a new engine base for a boiler.

The expansion of Leetham and Sons' flour mill business in Hungate was not without controversy. In the 1880s, the firm had considered re-locating the business to Hull unless they could secure new facilities in York. However, a move to Hull would have severely compromised the city's revenue, and the City Corporation entered into agreements with the firm in order to persuade them to stay. The Corporation agreed to make several alterations to the Ouse and Foss Navigations to allow Leetham's larger barges direct access to the mill. They also gave the Company fixed rates on river dues in return for the promise that they would remain in Hungate and develop their existing premises. Leetham and Sons accepted these offers and the business continued to thrive. However, the rate of expansion was well beyond the City Corporation's expectations, and the other traders on the Foss and Ouse argued that they were unfairly treated by the agreement, particularly in regards to the annual fixed payment on river dues. In 1899, flour-millers Mills and Fairweather, who were based on the river Ouse, issued legal proceeding against the Corporation on the grounds of unfair treatment. Disagreements over the river tolls

were never fully resolved and renegotiations continued into the 1920s.

"...Messrs. Leetham, whose wonderful enterprise and business qualification have raised up in our midst a commercial and manufacturing establishment to which any city in the kingdom would be proud to possess."

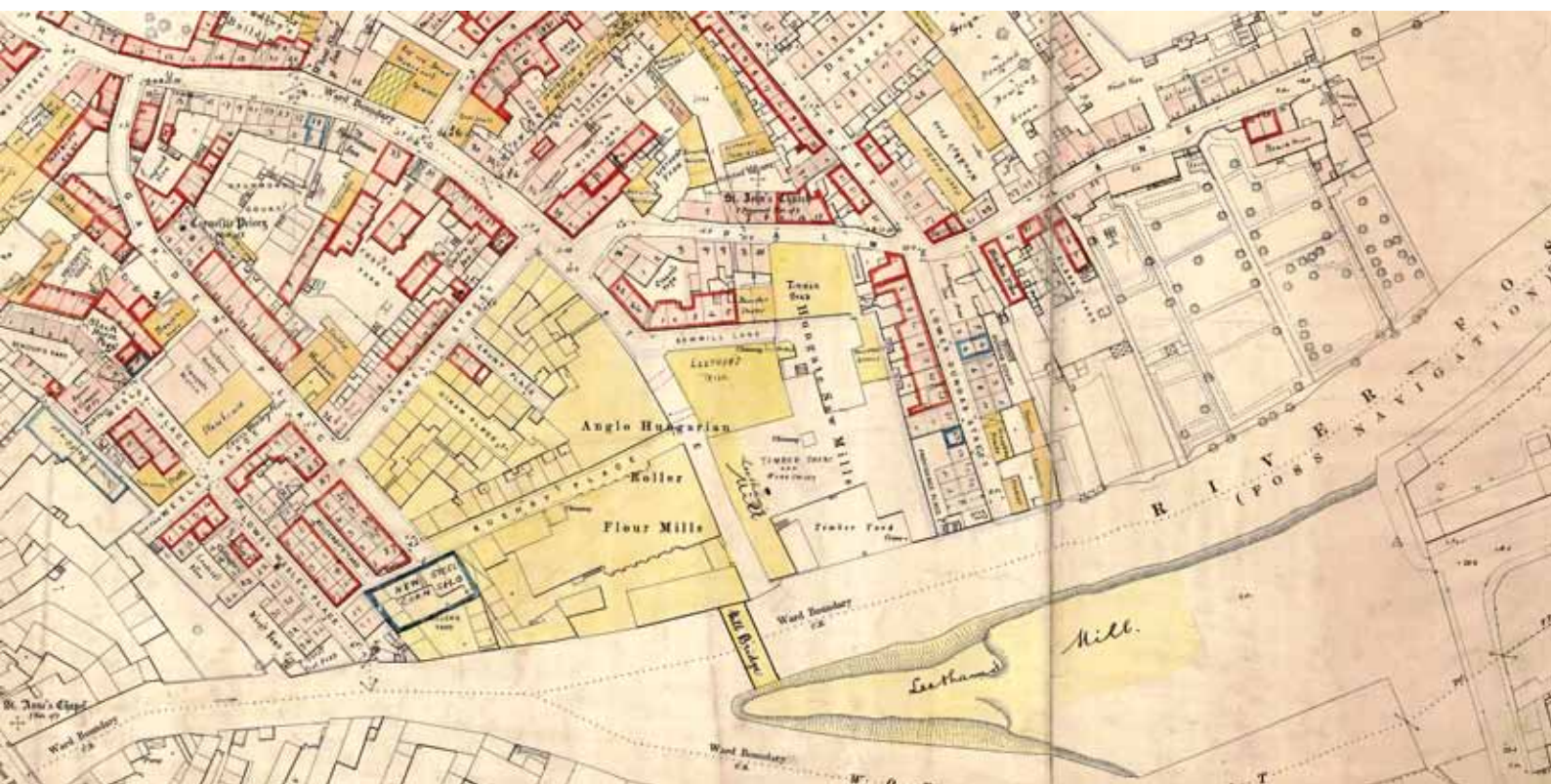
Yet despite this, Leetham and Sons were heralded as a model for the industrialisation of York. Whether those residents of Hungate and St Saviourgate, who were beleaguered by the smoke and dust that poured out of the factory on a daily basis shared the same opinion, is questionable. Nevertheless, York was proud to boast Leetham's nationwide success. When we think of the industrialisation of northern Britain, the achievements of Leeds, Manchester, Liverpool and Sheffield tend to be at the forefront, but it is clear that cities such as York, which is more well-known for its Roman and Medieval heritage, also played an important role in the industrialisation of the country.

Jayne Rimmer and Ian Milsted

Acknowledgements

Jayne Rimmer wishes to thank York City Archives and Mr Henry Mills for providing information about the flour-milling industry in York.

Below: Map of the Hungate area of York, 1907-8, showing the expansion of Leetham's Flour Mill along the bank of the River Foss.



NOT A 'NO-BRAINER'



Britain's Oldest Brain survives in good condition



Two days in June 2009 saw significant progress in the task of investigating Britain's oldest surviving brain material. As previously reported, in *Yorkshire Archaeology Today* No.16, a single, isolated skull, found in YAT's excavations on behalf of the University of York at their Campus 2 site at Heslington, contained the extremely rare survival of brain material. Having verified this, YAT appointed Dr Sonia O'Connor to be Principal Investigator, to define and oversee a programme of research into this remarkable discovery. A wide ranging programme of research was identified; and, thanks to funding from the University of York, it has been possible to bring together a group of eminent specialists, including many from the University of York, who will examine the brain material from their own particular scientific perspectives.

While all of this research planning was underway, the skull, still containing the brain material, was kept in appropriately cool conditions in the YAT Conservation Laboratory (1). Two questions continually exercised our minds. Firstly, having been removed from the soil conditions in which it had survived for the last two thousand or more years, was the brain material now deteriorating? And, secondly, could we successfully remove the brain material from the skull?

The assistance of York Hospital's mortuary was the initial key to answering these questions. Having finished their round of necessary hospital work for the day, the staff there undertook to trepan the skull in order to allow removal of the brain, just as they might have to do when conducting

a post-mortem examination. So, after extensive digital and other recording, the skull was put into expert hands and the top of the cranium was removed (2). Two millennia in the moist ground had softened the bone, and the cut was made 'as if through cheese'. At this point it was possible to see the brain residues for the first time; it was an enormous relief to see that there was no obvious sign of deterioration.

The next critical stage in the operation took place the following day at the University of York. Surrounded by many of the specialists who will work on the material, Sonia O'Connor began the extremely delicate task of removing the surviving brain residue (3). Fortunately, the residue was in the form of coherent but reasonably sized individual 'lumps' which could be removed from the skull and the soil matrix within it without too much difficulty. Soon a number of these muddy 'lumps' were free of the skull (4).

The next task was to attempt to remove the muddy covering from the brain residues (5). Careful cleaning and gentle washing combined then to reveal the truly exceptional condition of preservation, as neural folds on the surface of the brain became clearly recognisable (6). A certain quiet jubilation buzzed around the room, as it became obvious that future research options remained open thanks to this extraordinary preservation.

Since these operations took place, we have had the results of the radiocarbon dating of a sample from the accompanying lower jaw; this suggests that the individual whose brain we are studying probably lived in the sixth century BC, in the period traditionally thought of as the very end of the Bronze Age or the very beginning of the Iron Age. Two and a half thousand years after his head was detached from the rest of his body, we have the opportunity to learn much more about the conditions which led to this fascinating study.

Dr Richard Hall



“One of the bewties of this Realme”



The Ruins of St Mary's Abbey, York, c.1850, by Louis-Jules Arnout. (York Museums Trust: York Art Gallery)

A new volume in the *Archaeology of York Supplementary Series* is approaching completion.

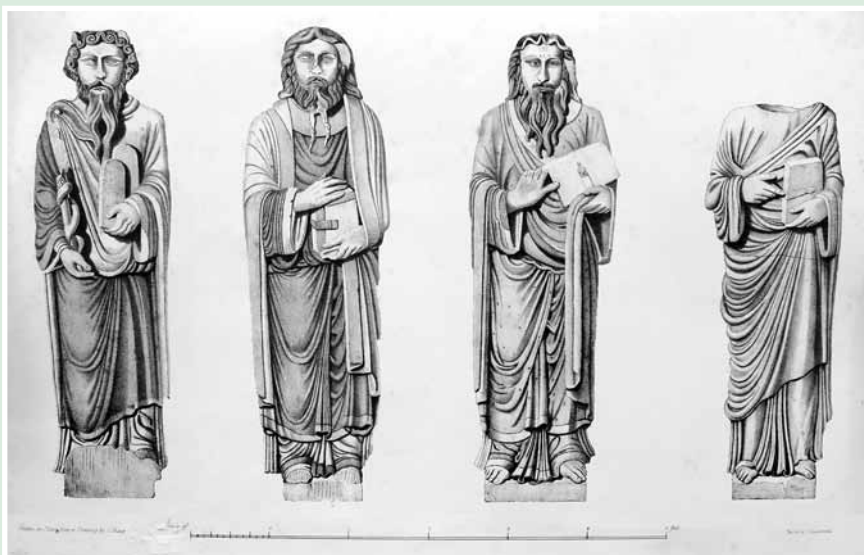
This fourth volume in the series on the Pictorial Evidence for the Medieval Buildings of York deals principally with two buildings, linked in origin but with very different histories. St Mary's Abbey church, its life effectively ended in 1539, is now little more than a dignified backdrop to the picnickers and pigeons enjoying the Yorkshire Philosophical Society's gardens. In contrast, the King's Manor, originally the Abbot's lodging, developed after the Dissolution of the Monasteries, becoming

successively headquarters of the King's Council in the North, residence of the city's military governor, the home of the Manor School and the Yorkshire School for the Blind, and is now a part of the University of York. Consequently, while the abbey remains slowly dwindled, the Manor has alterations and additions from every century, even incorporating stonework originally from the abbey. Thus the student might well complain that there is too little of the one and too much of the other.

St Mary's was once the richest and most powerful abbey in the North of England, and the remains reflect this. The church would have been one of the finest examples of 13th-century architecture; the series of statues discovered in 1829 and now in the Yorkshire Museum represent 12th-century art of the highest order. Antiquarian interest in these remains developed principally during the 17th century, and two artists, Francis Place (who lived in the Manor) and William Lodge, produced valuable sketches of parts of the abbey that were later dismantled.

There was, however, a lull in artistic interest until the end of the 18th century, when again York produced two topographical artists of note: Joseph Halfpenny and Henry Cave.

Below: Statues discovered in excavating a part of the south aisle of the nave of the church from Wellbeloved, 1829. Probably from the chapter house vestibule, all were carved c.1200 and were originally coloured. (York City Library)



Both expressed their intention of recording York's ancient and possibly endangered buildings, so they both aimed at accuracy, though each achieved it in a different way. Halfpenny's work is clear and crisp, if rather stiff, showing what the structure should look like. Cave, who taught art to the young ladies at the Manor School, preferred the quick impression, showing something a little more ruinous and romantic.

During this period the city was visited by artists of national repute. Turner made a rough sketch of the west end of the abbey church, but never worked it up into a watercolour. John Sell Cotman, visiting with Paul Sandby Munn in 1803, made use of the site to pursue his own ideas on composition and light. Thomas Rowlandson's view of the abbey gateway was carefully worked up from a sketchbook wash drawing and he skilfully combined relative accuracy with an indication of the run-down, bucolic nature of the site.



Above: St Mary's Abbey, Joseph Halfpenny, 1807. Engraving of the view from the south-east showing the inner sides of the north and west walls of the nave.

Below: St Mary's Abbey Gateway, T. Rowlandson, 1801. In this watercolour painting the gateway has lost all but the outer archway and its flanking walls.

(York Museums Trust: York Art Gallery)

Bottom: King's Manor: the eastern courtyard by Cave, c.1822.

(York Museums Trust: York Art Gallery)



Artists also continued to be fascinated by the King's Manor, where a complex mixture of additions and alterations had achieved a pleasingly picturesque and harmonious whole. For the most part they were drawn to the elaborate doorways, but there are useful sketches of areas now largely hidden by later buildings, and several views showing the spatial relationship between abbey and Manor. Storey's Bird's-eye View of the Gardens, c.1860, puts everything into context, and contains enough detail to keep the local historian happy for hours.



The aim of the volume is to provide the student with a further research tool in the form of a guide to existing pictorial evidence, including drawings, paintings, prints, maps and plans. After brief introductory essays, the main section is an annotated catalogue, giving date, title, artist, medium, location and reference number, with explanatory notes. There are also a select index of artists and a list of the principal sources.

St Mary's Abbey and the King's Manor York: A Pictorial History by Barbara Wilson and Frances Mee will be published by York Archaeological Trust in autumn 2009.

NEWCASTLE AND BUST

Last year saw a rather unusual conservation project arriving at the York Archaeological Trust Conservation Laboratory in the shape of four marble busts from Newcastle City Library in need of cleaning and repair. The busts, which are likenesses of four important figures of 19th-century Newcastle: Eneas MacKenzie (1777-1832), William Edwin Adams (1832-1906), Sir Henry William Newton (1842-1914) and Robert Spence Watson (1837-1911), were discovered in a store-room in the old Library building. These four busts, out of a total of about twenty found in the store-room, were chosen for cleaning and display in the new Library building because the people they commemorate were instrumental in establishing the original library. Information provided by Cath Cassidy, Service Manager for Heritage at the Newcastle library and information service, shows that Eneas MacKenzie was a founding member of the Newcastle Mechanics Institute, where he

also arranged and catalogued the library. Sir Henry Newton was City Mayor of Newcastle on two occasions and was also Chairman of the Public Libraries Committee and a member of the Free Library Movement. Robert Spence Watson was a local politician and also a pioneer of the Newcastle Free Public Library which was opened in 1880. William Adams, the long-standing editor of the Newcastle Weekly Chronicle and another supporter of the Newcastle Free Library, had his bust unveiled in 1906 on the first anniversary of his death. This same bust is now back in prominent position on the 6th floor of the new Library.

On arrival in the laboratory the four busts were in various states of soiling and disrepair, ranging from being heavily coated in dark accretions, as in the case of the bust of MacKenzie, to light soiling but with areas of loss to the actual stone work. As the MacKenzie bust was the worst affected it was

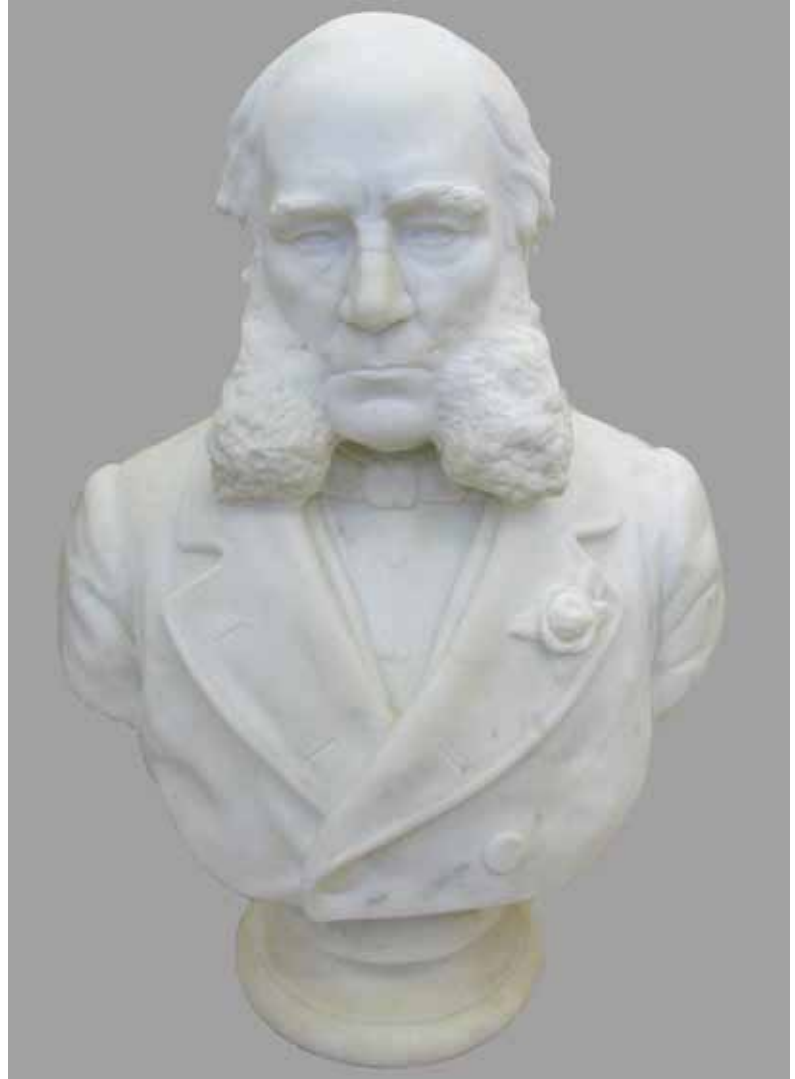
Alaina Schmisser uses steam power to clean off Victorian grime





given initial treatment priority, and tests were carried out using various treatment methods. Dry brushing and vacuuming, and tests using water and solvents, were minimally effective, succeeding only in removing the very loose outer layers of grime. Trials of steam cleaning proved much more effective, and an industrial strength steam cleaner was hired for a week to tackle the worst of the blackness. However, the surface of the bust was still very patchy, with areas of discolouration still to be seen. Alaina Schmisser, an MSc placement student from University College London, therefore undertook several poultice tests, the most effective being a methyl cellulose poultice containing a small proportion of ammonia. This type of poultice goes on as a gel which then dries to a white crust which can be peeled off. The results can be seen in the images below. Several applications of the poultice was required to remove all the staining.

In the case of MacKenzie the poultice cleaning had revealed areas of more ingrained staining within the structure of the marble itself. The air abrasive (similar to a small sand-blaster using powder in a stream of compressed air, usually employed to remove corrosion from iron objects) was utilised at this stage; set to air only, with no powder, the



machine helped to remove the inter-granular staining and improved the surface further.

Spruced up: Bust of Eneas MacKenzie before (left) and after cleaning

Although the other busts did not have such a heavy coating of dirt and grime, these too were cleaned using the methyl cellulose poultice, and the surfaces were visibly improved as a result. All four busts were rinsed extensively afterwards using both steam and solvents to remove all of the poultice residues.

Two of the busts required small areas of gap-filling to improve and minimise the impact of small breaks to the surface. These areas included breaks to the nose of both MacKenzie and Adams as well as the broken corner of the large plinth which had accompanied the bust of Adams. The smaller nose fills were done using marble filling powder in Paraloid B72 (methyl methacrylate



Placement students Penny Chambers and Lydia Kohlman supply a wash and brush-up.

Installing the cleaned busts in the new library building



co-polymer) 10% w/v in acetone, coloured with pure powder pigments to get the right shade. This was quite difficult, as marble has so many areas of natural colour differences. However, it was possible to achieve a shade which was near enough to disguise the breaks so that the eye would not immediately be drawn to them.

The corner of the plinth was shaped in plaster of Paris and finished with Polyfilla™ to give a smooth surface. Again, a suitable shade of white/grey was achieved to disguise the join.

Once the conservation treatment was complete, the busts were wrapped up ready for return to Newcastle. A specialist removal company was hired in to transport the heavy but fragile objects and to install them safely. Several different areas in the library had been selected for the installations, to show the busts in their best light, and for them to be in a place where they would not be a health and safety hazard. However, a last minute change of plan was executed in the case of the Adams bust, which had originally been ear-marked to stand next to the MacKenzie bust under the staircase. It was found that, as the Adams bust had a solid iron rod at the base which had originally been used to secure it to the plinth, it would not be possible to install it in that space without drilling a hole in the newly installed wooden desk. It was decided to move this bust to a position on its plinth in an appropriate area on the top floor of the library. The images below show the busts as installed; four proud Newcastle dignitaries suitably commemorated once more, and looking better than they have done for many years.

Mags Felter

Job done! Mags Felter with one of the busts in final position



Outreach and Education at Hungate

Education, community involvement and outreach have been at the core of York Archaeological Trust since it was founded in 1972. Some might say that if you cut YAT in half you would find the word 'Education' running through it like the lettering through a stick of rock. When the Hungate Project started at the end of 2006 YAT knew that as part of the brief set by City of York Council it had to deliver public participation and education as an integral part of the excavation. This was an opportunity that YAT grabbed with both hands. So, early in 2007, an extensive public access programme began alongside the commercial excavations at Hungate. To help facilitate and co-ordinate the public access programme the new post of

Outreach Co-ordinator was created, funded for the first year by a charitable grant from the Garfield Weston Foundation. I had been working as a Field Archaeologist at Hungate since November 2006 and was very pleased to be appointed to this new post in May 2007.

One of the main duties of the Hungate Outreach Co-ordinator has involved facilitating and getting involved with Community Archaeology and as part of this I have been working closely with the Hungate Community Trust Archaeology Group. The group began working on site at Hungate two days a week in March 2007, supervised by the Greater York Community Archaeologist, Jon Kenny. I now supervise the Community

Community Volunteers





Young Offenders at work last winter

team for their Wednesday sessions as well as ensuring that they are trained to do the work required and that the archaeological records are completed correctly. Over 60 people are now signed up to Hungate Community Archaeology and currently Jon and I enjoy working with a Community Team of fifteen regulars who enthusiastically attend in all weathers, either to dig and record on site or to process finds in the Hungate HQ.

Engaging with the disadvantaged or disenfranchised in the local community and beyond is an important part of the Hungate Outreach programme. Starting as a pilot scheme in the spring of 2007, the Youth Offending Team project is now established as an ongoing, weekly outreach activity. With the aim of reducing the risk of re-offending, court orders require young offenders to work unpaid for a certain number of hours within their local community. YAT welcomes a small number of young offenders to Hungate for two and a half hours per week to work towards their required hours. While the young people are with us we provide them with opportunities to learn about and engage more positively with their community, both that of the past and of the present. We also hope they will experience and learn about

the discipline required in the world of work. I've found working with these young people to be rewarding, although it can be quite challenging at times. In May this year the success of the project and our contribution to offender learning was acknowledged with a Highly Commended award at the Celebration of Learning and Skills (CoLaS) Awards 2009.

Visits, tours, talks and open days are the lifeblood of any long term excavation and Hungate is no different. Although various members of the Hungate team deliver site tours and talks throughout any given year the flexibility built into the Hungate Outreach Co-ordinators post allows me to invest a lot of time in enhancing this element of the Hungate project. When specific groups require it, I can enhance their site visits to Hungate. One such group consisted of disadvantaged teenagers who visited Hungate as part of The Prince's Trust self-development programme which requires the young people to take part in a community project. As well as a site tour there was finds washing, and a map-based activity looking for evidence of Victorian buildings in the local area. Researching part of Victorian Hungate allowed them to get an insight into one of the past communities that had occupied Hungate.

A core element of my job is to make sure that the Hungate Outreach Programme provides access to the archaeology and history of Hungate to the full range of educational institutions. This work takes up a large proportion of my time; here, there is space to mention just a few examples. One such project has been the development and teaching of history and archaeology master classes for able, gifted and talented students participating in the City of York Independent/State School Partnership Project (ISSP). After visiting the site and participating in the work, students also researched the history of the Hungate area using York City Archive resources, with assistance from the ISSP project history teachers, York Archives staff and the Hungate historian, Jayne Rimmer.

In 2008 YAT ran a 2 day INSET course for teachers, in association with the North Yorkshire Business and Education Partnership, on the use of archaeology and archives in the classroom. One of the days was based at Hungate where I provided ideas about how and where schools could utilize the historical and archaeological information being gathered from such sites. To help illustrate the myriad resources that archaeology and history can provide to teachers I then led a series of workshop activities in the Hungate HQ including finds sorting, environmental sample sorting and archaeological drawing. These workshops helped to demonstrate how archaeology can be used as a research and learning tool across a number of academic disciplines including history, geography, art and mathematics.

Furthering the opportunities of taking archaeology into the classroom, a group of PGCE Tutors and History Teacher students from the University of York visited Hungate to discover how archaeology can be a tool for learning about history, either in the classroom or by visiting sites. History and archaeology can be linked together to provide the basis for curriculum-related teaching or project work, and I demonstrated how hands-on artefact handling exercises could be used and provided information and advice about how to obtain such resources for use in schools



and where these resources may work. I have also hosted workshops for A-Level students studying Archaeology at York College and History undergraduate students from York University.

ISSP Master Class dry residue sorting

Off-site activities are also an important component of my work within the education

York College A Level Students





Taster Trainees,
June 2009

sector. For example, I have taught in a series of workshops on science and archaeology at the British Association for the Advancement of Science Festival of Science at York University, attended by primary and secondary school groups and included presentations and hands-on activities based on the Hungate excavations. Again, the 'High Potential York' event held at the National Science Learning Centre at York University was aimed at able, gifted and talented students, and their parents, and was in part a celebration of the ISSP master class programme referred to above. As part of the exhibition I took a stand to display artefacts from the Hungate site and talk to the delegates about Hungate educational and outreach work. More recently I attended Creative York's 'Create Your Future' event to promote volunteering and work experience opportunities at Barley Hall, DIG and Hungate to students looking at careers in the cultural heritage sector.

I also organise a Vocational Placement Programme at Hungate, and am responsible for the administration and management of Vocational Placements from the University of Bradford. Within YAT's annual Archaeology Live! training excavation I provide 'out of season' training for those people who can't come during the summer, and I have particular responsibility for the 'taster' courses. Participants on taster courses range from teenagers thinking of studying archaeology at university, to people looking for career changes or life-enhancing new experiences, to people who have an established interest in archaeology and are keen to get hands-on experience.

Looking to the future, I am expanding the Hungate Outreach programme to provide more 'off-site' opportunities. I am particularly keen to extend our work further into the North Yorkshire region. Linking with the overall outreach and education programmes offered by YAT, I am now offering off-site workshops based on the history and archaeology of Hungate. The workshops are designed to be flexible, so that they can be tailored to the needs of a wide range of groups from Key Stage 3, 4 and 5 school students, youth groups, adult learners, community groups, residential homes, social clubs, etc.

At YAT we would like to create even more opportunities to integrate volunteers across the organisation as a whole. I am currently exploring the options with colleagues; doubtless this will keep me busy well into 2010...

Pam White

For further details or to make an enquiry about Hungate Outreach please contact:

**Pam White
Dig Hungate Outreach Co-ordinator
47 Aldwark
York
YO1 7BX
Email pwhite@yorkat.co.uk, or telephone 07534 829401.**

Stonegate Voices

September 2009 sees the publication of the third volume in York Archaeological Trust's Oral History series, entitled *'Stonegate Voices'*. York writer and oral historian Van Wilson presents an intriguing and unusual view of Stonegate, Swinegate and adjacent streets, with Barley Hall at the centre, using interviews from over seventy people who lived or worked in the area from the 1920s to the present day. Dame Judi Dench, whose father GP Dr Reginald Dench had a practice in the area, and whose mother, Olave, attended St Helen's Church, provides the book's foreword.



Printer's Devil, Stonegate



Bullivant's Printing Works, Stonegate (courtesy John Bullivant)



Mrs Edith Clarke and friend at the Bible Depot, Stonegate (courtesy Martin Boyd)

Fascinating material has been gleaned from many people, including artists and craftsmen, booksellers and printers, those working in family businesses, hairdressers, musicians, church officials and residents. The development of Barley Hall, at the centre of the area, is examined in some detail.

And it is on some of the detail that the book's fascination partly depends. An important part of the book deals with crafts now long gone, and gives wonderful insights into some of the problems. One interviewee, for example, talks of printing with letters in old-style type-setting sticks, set left to right and upside down. Letters could become loose, as on one occasion when a notice for 'ladies gloves' became 'ladies loves' as the 'g' had popped out! York's Red Devil actually depicts the printer's apprentice who hasn't learnt to be careful and drops his first case of type, and must then re-sort the whole pile and put it back in the case. "We've all done this", the interviewee ruefully commented.

An idea of the poverty in the area, particularly in Swinegate, comes across very vividly. One interviewee recalls being sent there by his grandmother in the 1920s,

'to various poor dwellings, with gifts of groceries, cakes, or freshly baked bread. There used to be a family who lived where Barley Hall now stands. They



Stonegate in the 1920s
(York Oral History
Society)

were very poor. I'd go there quite often [...] although so young I was shocked and depressed by the evidence of deep poverty. In St. Helen's Square little boys were selling newspapers, barefooted in winter, on the corner where the Yorkshire Penny Bank was at the time. And you encountered soldiers from the war, very often badly disabled, selling matches.'

Clearly this has changed now, and one of the fascinating aspects of 'Stonegate Voices' is how it does trace changes in the area in living memory, whether in the environment, social conditions, church-going, entertainment or crafts and businesses. Many of the interviewees were clearly very passionate about their work, and this comes across very vividly. An interviewee who had worked in

Godfrey's Bookshop, for example, paints a wonderfully evocative picture of his workplace, talking of

'That unmistakable aroma, the smell of centuries-old leather, paper and ink, mixed with the dust of years, and an indescribable sense that each of the books carried part of the soul of the owners who treasured and loved their books.'

Many personal stories are recounted in the book, which is copiously illustrated and backed up with considerable historical research. A podcast based on some of the material from 'Stonegate Voices', narrated by Dan Snow and featuring a number of the interviewees, will be available as a download from the Barley Hall web site (www.barleyhall.org.uk). An exhibition, also based on the work, will be held at Barley Hall from January to December 2010.

We would like to thank the following organisations for helping to fund the 'Stonegate Voices' project: Heritage Lottery Fund, W.P. Brown Ltd, Council for British Archaeology, Friends of York Archaeological Trust, Heritage Lottery Fund, Robert Kiln Charitable Trust, Joseph Rowntree Foundation, Patricia and Donald Shepherd Charitable Trust, Yorkshire Architectural and York Archaeological Society, Yorkshire Philosophical Society.

Christine Kyriacou and Van Wilson

'Stonegate Voices' by Van Wilson (2009)
York Archaeological Trust Oral History Series: 3
£9.99 (£11.99 including postage and packing)
304 pages, 167 black and white photographs
ISBN 978 1 874454 441

Also available:

'Rations, Raids and Romance: York in the Second World War' by Van Wilson (2008)
York Archaeological Trust Oral History Series: 2
£9.99 (£11.99 including postage and packing)

'Rich in All but Money: Life in Hungate 1900-1938' by Van Wilson (2007)
York Archaeological Trust Oral History Series: 1
£9.99 (£11.99 including postage and packing)

Available from Christine Kyriacou, York Archaeological Trust, 47 Aldwark, York YO1 7BX
Tel: 01904 663006 Email: ckyriacou@yorkat.co.uk
Also available from JORVIK shop and local bookshops

'Oh Crikey!'

Coming soon – an Oral History of York's Secondary Schools



The fourth volume planned for York Archaeological Trust's Oral History Series will examine the changing experiences of secondary education in York in living memory. The aim of the project is to look at the educational and social history of secondary schools in York between the 1920s and 1985, when comprehensive education arrived, through oral history and background research.

The book and an accompanying exhibition will create an overview of secondary schools and the changes that have taken place, with examples from the different strands of secondary education, including grammar schools, secondary modern schools and private schools. We already have some material and contacts from a number of schools, as well as access to photographs not in the public domain.

Once again we plan to work with local writer and oral historian Van Wilson to explore what we are sure will prove another fascinating topic.

If you are interested in being interviewed for this project, which will culminate in a book and an exhibition, please contact:

**Christine Kyriacou, York Archaeological Trust, 47 Aldwark, York YO1 7BX
Tel: 01904 663006 Email: ckyriacou@yorkat.co.uk**

ANNUAL ARCHAEOLOGY and HISTORY FAIR

The York Archaeological Trust Annual Archaeology and History Fair takes place on Saturday 10th October this year at the Guildhall in central York.

This year you will be able to hear talks about archaeological projects that have taken place in and around York, carried out by both professionals and community groups.

There is also the opportunity to see stalls from many local community groups as well as buying books from many of the country's archaeological and historical book sellers.

FREE ADMISSION

10am - 4pm

THE GUILDHALL, YORK

SATURDAY 10th OCTOBER



JORVIK 25th Anniversary Conference

York Archaeological Trust will celebrate 25 years of JORVIK Viking Centre with a conference entitled, "A celebration of Iconic Collections and Excavations from the Viking World", which will take place 13th-14th February 2010, coinciding with the opening of the 2010 JORVIK Viking Festival.

The conference will celebrate some of the most important developments and iconic artefacts uncovered in the last quarter-century of research into the Viking era. Academics from around the Viking world will gather in York on Saturday 13th February for an entertaining and illuminating look at the past, present and future of Viking studies. A reception at JORVIK Viking Centre will be held on Saturday evening when delegates will be able to experience the newly renovated attraction as part of the conference ticket price. A Conference Coach Tour visiting some of Yorkshire's finest Viking-age artefacts and sites will also be on offer on Sunday 14th February, for an additional fee.



Sarah Maltby, Director of Attractions says, "It is fitting to celebrate the anniversary of one of the world's most astounding Viking-age discoveries with this conference here in York. We are honoured to have this collection of experts coming to speak for JORVIK's celebratory events and we are confident that the conference content will be fascinating for all those who have an interest in Viking history."

Speakers confirmed include Peter Addyman, Richard Hall (Director of Archaeology, York Archaeological Trust), Patrick Wallace (Director, National Museum of Ireland), Anne-Christine Larsen (Vikingeborgen Trelleborg, Sydvestsjællands Museum, Denmark), Ellen Marie Næss (Museum of Cultural History, University of Oslo) and Anne Brundle (The Orkney Museum).

This conference offers delegates a unique opportunity to benefit from the most up-to-date interpretation of the best known Viking-age collections of material and archaeological sites from around the world.



To book or for enquiries: call 01904 615505.

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The Friends, York Archaeological Trust, 47 Aldwark, York YO1 7BX

DIG HUNGATE

Specialist Weekend Courses **An Introduction to Fieldwork**

23rd - 25th October 2009

This course will give beginners and those with some basic knowledge the chance to find out and take part in fieldwork based at the unique Hungate site. Delegates will get the chance to excavate the site, and explore archaeological techniques with the experts from York Archaeological Trust, as well as see behind the scenes and find out more.

Cost per person: £120.00. (£110 for all those who have already taken part in the Training Dig at Hungate)

Email: trainingdig@yorkat.co.uk or
telephone 07908 210026 to enquire
or book a place.

CELEBRATING 25 YEARS OF JORVIK!

JORVIK Viking Centre is 25 years old!
Since opening in 1984, over 15 million visitors have enjoyed the JORVIK experience. To celebrate the history and success of this ground-breaking visitor experience, which was created on the site of one of the most famous and astounding discoveries of modern archaeology, a year of events has been organised as a thank you to all of its supporters over the years.



FORTHCOMING EVENTS

10th October 2009

'Celebrating JORVIK' Book Launch

A new book taking a fresh look at the unique objects discovered at Coppergate over 25 years ago.

February 2010

13th–14th February: 25th Anniversary Conference

15th–20th February: 25th JORVIK Viking Festival



Visit our website

www.jorvik-viking-centre.com

or see local press for details of events

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