Greater Manchester Archaeology Federation

Newsletter

Volume 1 Issue 6 September 2010

A new method for dating ancient ceramics

Margaret Carter follows-up her presentation to the Federation with a discussion of the discovery she and her colleague, Moira Wilson have made, rehydroxylation dating

Introduction and background

This short article describes a new method for dating fired clay ceramic materials (brick, tile, pottery). The dating method is an unexpected outcome of research work on structural brick masonry undertaken in the Construction Science Group of the School of Mechanical, Aerospace and Civil Engineering at the University of Manchester. For me the work is a constant reminder of the unpredictable and creative nature of research in yielding results that have major impact on an unrelated, and completely unimagined, subject area.

For many years our research group, including Prof Bill Hoff and in close association with Prof Chris Hall of the University of Edinburgh, have investigated durability issues related to the movement of moisture through porous inorganic materials. This is because most of the degradation processes in bricks, concrete and stone involve the absorption and transport of water. Many of these important reactions are extremely slow but buildings are constructed to last a long time, especially those of historic significance or those associated with national events.

After firing, clay bricks expand on exposure to moisture. Every good bricklayer knows this and will not use kiln-fresh bricks until they have been on site for at least two weeks. Conventional wisdom is that the reaction is over after this time but careful measurements have revealed that it carries on indefinitely, albeit at a very slow rate. Even after 2000 years there is potential for further expansion. Colleague Dr Moira Wilson and co-workers discovered this on autoclaving (heating in steam under pressure) Roman tile and, in 2003, published the rate law – a major discovery - which governs the reaction. Different ceramics expand at different rates – but they all obey this same rate law. The research work was aided by Ibstock Brick Ltd who allowed us to pick up kiln-fresh bricks and many are the journeys we have made to their Roughdales works near Warrington car-

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Councillor Roy Oldham, CBE, 1934-2010 – An Appreciation

The death of Councillor Roy Oldham in July brings to an end one the longest political careers in recent times within local government, and marks the loss of the lead local government supporter of heritage and archaeology within the region. He was the longest serving local government leader in early 21st century Britain, having been elected leader of Tameside (cont on back page)

Editorial

Volume 1 Issue 6

After the previous special *PPS5* issue, the Newsletter returns to normal service. My thanks to all who have sent in contributions, from explaining pioneering methods to analysis of bottle seals and good old-fashioned reports on excavations and surveys. Keep them coming!

Editor

Some Forthcoming Talks and Events

Bolton Archaeology and Egyptology Society (at Friends Meeting House, 50 Silverwell Street, Bolton BL1 1PP)

Karina Croucher 14/9/2010 7:30pm The Archaeology of Easter Island

George Hart 19/10/2010 7:30pm Ancient Egyptian Creation Myths

John Doughty 16/11/2010 7:30pm The Lancashire Witches

Glossop & Longdendale Archaeology Society (at Rose Green Working Men's Club, 4 Sheffield Rd, Glossop SK13 8QH)

Barry Lewis 05/10/2010 7:30pm Hunting in Britain from the Ice Age to the Present

Manchester Region Industrial Archaeology Society (at Room E0.05/05A, John Dalton Building, Chester Street, Manchester) - visitors £2

Ian Miller 08/10/2010 7:30 Excavations at Murray's Mill

Glenn Atkinson 12/11/2010 7:30 1920s Multi-Process Textile Mill, Eccles

Royton Local History Society

Ken Darwin 11/10/2010 7:30pm Townley Hall

Saddleworth Archaeological Trust

Lawrence Donnelly 25/10/2010 7:30 The Staffordshire Hoard: the largest hoard of Anglo-Saxon gold ever found' (at Masonic Hall, 138 High Street, Uppermill)

Ben Edwards 25/10/2010 2pm Vikings in the North West (at the Royal George Hotel, Greenfield)

South Trafford Archaeological Group (STAG HQ, Timperley Old Hall)

Brian Halliwell 24/9/2010 7:30pm The Life of Henry Morgan, Buccaneer

Pat Faulkner 22/10/2010 7:30pm Timperley Old Hall Project, finished at last.

Tameside Archaeological Society (Festival Hall, Peel Street, Denton, M34 3JX).

Mike Nevell 16/9/10. 7.30pm A practical session on Building Survey

Rossy McKenna (specialist in Archaeobotany): 20/10/10. 7.30pm On site sampling and how it is done, and post excavation processes

Peter Leeming: 17/11/10 7pm The Defence of Greater Manchester in World War II. Joint meeting with Tameside Local History Club, at Tameside Local Studies & Archives Centre, Central Library, Old Street, Ashton-under-Lyne OL6 7SG. Tel: 0161-342-4242 for booking (essential as space is limited). Free.

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Federation members

The following groups are members of the Federation:

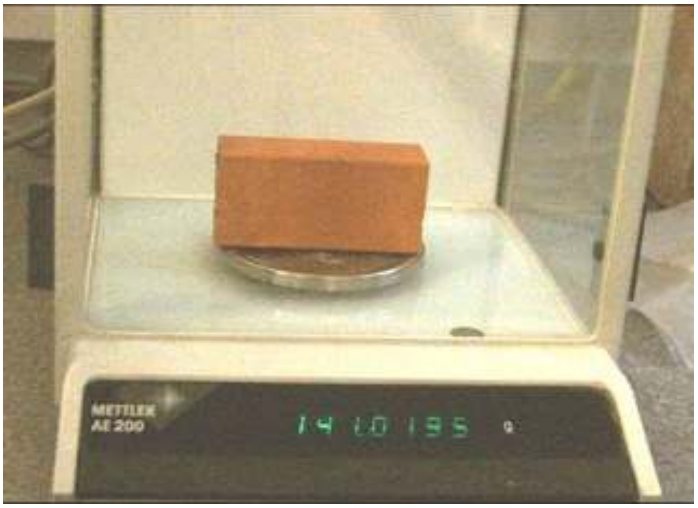
Bolton Archaeology and Egyptology Society, Bury Archaeological Group, Darwen Local History Society, Glossop and Longdendale Archaeological Society, Holcombe Moor Heritage Group, Littleborough Historical and Archaeological Society, Manchester Region Industrial Archaeology Society, Mellor Archaeological Trust, Moston And District Archaeological and Social History Society, Prestwich Heritage Society, Royton Lives Through the Ages, Saddleworth Archaeological Trust, South Manchester Archaeological Research Team, South Trafford Archaeological Group, Tameside Archaeological Society, Wigan Archaeological Society.

RHX Dating (cont)

(Continued from page 1)

rying an insulated biscuit tin for the hot bricks.

This newly discovered rate law is a "time to the power of ¼" relationship. The time$^{1/4}$ law means that equal amounts of expansion occur in the time intervals 1, 16, 81, 256 *etc* seconds / minutes/ years after firing, which correspond to 1^4, 2^4, 3^4, 4^4 *etc* seconds / minutes/ years. In Nature many rate laws are "time to the power of ½" so the brick expansion process is unusual but not unique. The theoretical interpretation is that this ceramic reaction is governed by an anomalous single - file diffusion process. The power of ¼ explains why the rate slows down so rapidly. Use of the rate law is one key factor in the new method. The other is that fired clay ceramics heated to about 500 ^oC lose the moisture with which they have chemically combined over time and return to their original size on firing. We did not discover this. It has been known since the 1920s. Thereafter the ceramic starts to react with moisture all over again. We have called the heating to 500 ^oC "reheating" to distinguish it from the initial "firing" which is done at higher temperatures.



On a top loading laboratory balance (this one reads to 0.0001 g) a 140 g sample of reheated brick will gain mass at a fast enough rate to see the last digit increase as you watch.

It has been known since the early 1960s that the moisture induced expansion of fired clay is accompanied by a proportional gain in mass (what in everyday language we call weight) but engineers were not particularly interested in this since a small gain in mass is irrelevant in masonry structures. We had however been investigating mass gain alongside expansion and shown that the same rate law applies. By now you have probably worked out how the new method works, at least in principle. Since the method relies on the slow progressive uptake of moisture we have named it rehydroxylation (RHX) dating. At first we were certain that we could employ RHX to date ceramics by measuring expansive strain but we had no funding for the work. The research was not within the remit of our normal

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Some Forthcoming Talks and Events (cont)

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Wigan Archaeological Society (at Upper Morris Street Working Men's Club (off Greenough Street), Wigan at 7:30pm)

Martin Charlesworth - 01/09/2010 "something from the East"

Carole Banks - 06/10/2010 "Haigh Hall & the people who lived there"

Phil Cox - 03/11/2010" The Caer Alyn Heritage Project"

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sources, the Research Councils, since it was neither wholly science nor archaeology nor engineering. The Leverhulme Trust came to our rescue in 2005 by awarding funds to allow us to employ a full time researcher for three years.

The RHX method

Let me first emphasise that the water demand for the RHX process is extremely small, so minute in fact that moisture in the atmosphere will satisfy this demand and any excess makes no difference to the reaction rate. The starting point for our measurements is a sample that has been cleaned then dried at just above 100 ^{o}C to remove any liquid water held in the fine capillary pore network.

For the first two years of the Leverhulme grant we concentrated on measurements of expansive strain. We discovered that the RHX reaction proceeds in two stages – an initial rapid stage and a longer slower second stage that continues indefinitely. As far as dating is concerned we only need the second stage data. The first stage we now know to be associated with the physical adsorption of water molecules (and rather a nuisance for the dating procedure) and the second stage with the chemical reaction of water molecules within the ceramic body. We have confirmed that the second stage is a chemically controlled reaction since it follows the typical dependence of reaction rate on temperature. This temperature dependence was to become the final crucial factor that was used in the dating method.

Ultimately we had to abandon measurements of expansion. They were not repeatable and we could not get sufficiently high accuracy. With only a few months left of Leverhulme funding and the final report looming we returned to the measurement of mass. In the meantime Moira had obtained Research Council funding for a microbalance and this allowed us to carry out the small (microgram) measurements of mass gain that we needed under controlled conditions of temperature and humidity.

Dating ceramics by the RHX method is thus: weigh dry sample; heat to 500 ^{o}C; reweigh; calculate mass of water lost; record mass gain in the microbalance over sufficient time to establish linear behaviour with time$^{1/4}$; extend line until it gives the mass lost on reheating; read off time$^{1/4}$ at this mass; converted to time. This is the age of the sample and does not depend on any external calibration. Although simple in principle the small increments in mass are extremely challenging to measure in practice.

RHX gives the time since a ceramic material was last heated to a high temperature and, unless it had been in a fire, is the age of manufacture. Interestingly we speculate that all the fired clay materials covered by the volcanic ash at Pompeii should date by the RHX method to 79 AD.

What could be easier than weighing a brick?

In the work described above we were also supported by the Museum of London who provided us with samples of known date. All the initial work was done on bricks, including the first dating trial. We had Ibstock bricks of known firing date and although this was not very distant in time it was known accurately. At the time we were still working with half bricks or pencils of brick and weighing on a top loading laboratory balance. I often heard Moira ask the above question: how difficult can it be to weigh a brick? Actually incredibly difficult on large samples over long time scales (weeks or months). Bits fall

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off. Dust settles. Balances drift. Also the ages of our samples, including the brick and tile samples from the Museum of London, were coming out too YOUNG. The good news was that they were all too young by the same factor. Eventually we realised the temperature effect. We were measuring the RHX reaction at room temperature and calculating the age on the basis of reaction rate at this temperature when in fact the samples had been buried for hundreds of years at much lower temperature than this. Repeating the entire dating trial at 11 ^{o}C (estimated mean temperature of the soil in Southern England) gave us the correct dates. We had been really lucky in being supplied with samples that had all originated from roughly the same geographical area, but by then we were due a bit of luck.

Having a microbalance greatly speeded up data acquisition and gave us much improved quality of data. The balance measures to a tenth of a millionth of a gram using only a small (5g) sample. The RHX reaction requires an extremely sensitive balance and meticulous experimental technique. However we did eventually gain some excellent results, were able to file a patent in May 2009 and publish the concept of RHX dating in the Proceedings of the Royal Society in August 2009.

Where RHX has taken us

Publication of the RHX method generated more interest than we could have imagined. We have been contacted from all over the world with requests to date samples. (Although we are completely unable to provide such a service and the method is yet to have a rigorous validation study). We have given presentations at several ceramics conferences. Moira gave a talk on the new method at the British Science Festival and to conservation staff at the British Museum, made the first Royal Society podcast and was invited to speak in June with Chris Hall at a workshop on dating by new scientific methods at the world heritage site of Megiddo in Israel.

The archaeological site Tel Megiddo is excavated for seven weeks only every other year. Young people apply from all over the world to take part, under the careful guidance of the Director and his team from the University of Tel Aviv. Since the 3rd millennium BCE Megiddo has been an important place standing at a narrow pass to the valley of Jezreel. The city was on the Via Maris, the route linking Egypt to Asia, was repeatedly destroyed and re-built and finally abandoned in about 450 BCE in the Persian period. Megiddo is mentioned several times in the Old Testament Book of Kings and is the Armageddon of the Book of Revelations. This name is derived from the Hebrew Har Megedo meaning the hill of Megiddo, and is referred to as the place where the final battle between good and evil will take place at the end of the world.

The Tel was first excavated in 1903 and later in 1925 – 1938 by a major expedition from the University of Chicago. This expedition was halted by the outbreak of war in 1939 and, by

The "stables of Solomon" at Tel Megiddo. The board shows a photo of the same area during the University of Chicago expedition in the 1920s.

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RHX Dating (cont)

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modern standards, treated the site roughly, destroying walls and constructing a railway to remove many tons of earth to a tip close to the mound. In recent times there was an important excavation by Yadin in 1960. Today's work continues with painstaking care and has revealed at least 20 successive settlements and a wealth of archaeological finds.

Current RHX dating

Having read this far you may now realise the greatest potential source of uncertainties in dates determined by RHX – the temperature history of the sample has to be known and experimental measurements must be made at this temperature. Because the power of a quarter condenses time so greatly a few years spent by a sample in a museum archive at a different temperature is unlikely to make much difference.

Our current work is focussed solely on the validation of RHX as a reliable and accurate method. In this we are grateful for the advice and support of English Heritage and for support from the Universities of Manchester and Edinburgh via Knowledge Transfer Awards. It is essential to extend the method to pottery but here lie several difficulties, although we have successfully dated Samian ware. Any food residues in the pottery interfere with the RHX procedure and some highly fired ceramic types such as kiln lining bricks and porcelain are just too un-reactive to measure until a next generation microbalance with several more decimal places of accuracy becomes available. However I am confident that RHX will become an accepted and valuable tool for archaeologists. For me it has been an immense privilege to have been involved in the research.

Margaret Carter

Typical conditions of the volunteer digging team on site at Tel Megiddo - ancient walls and tented areas being excavated. The black awnings are very effective heat and wind shields.

Freshly excavated pottery from area K at the south eastern edge of the Tel. In the 1996 – 2002 seasons a well established sequence of Iron Age strata was excavated.

Area H in the northern sector of Tel Megiddo. This area is characterised by complex stratigraphy with many architectural phases and gradual accumulation of floors. All but one date to the Iron Age (11th - 7th centuries BCE).

British Archaeological Awards 2010

Greater Manchester has again been represented in the annual British Archaeological Awards. The Manchester Museum's Curator of Archaeology, Bryan Sitch, reports on the Museum's success.

Lindow Man Exhibition wins British Archaeological Award

At a recent ceremony held at the British Museum, it was announced that the Manchester Museum exhibition *Lindow Man a Bog Body Mystery* had won a British Archaeological Award in the 'Best Innovation' category for its presentation of the issue of human remains to the general public.

It may seem strange that an exhibition that closed over a year ago has won an award but the British Archaeological Awards take place every two years, so to some extent they are a retrospective on work that has already taken place. Although it received quite scathing reviews in certain circles when it first opened in April 2008, the exhibition project succeeded in engaging some 190,000 people. Over 12,500 comments cards were filled in by visitors who responded to questions like 'Is it right to display human remains in museums?' and 'How do you think Lindow Man died?'.

Dismissed by some critics as 'political correctness gone mad' the issue of how human remains are treated by archaeologists and in museums has generated a lot of debate over the last few years. Historically human remains have been looked upon as any other kind of archaeological evidence with the capacity to tell us about aspects of life in the past but from the 1980s they became more and more contested. The Alder Hey scandal in which it was revealed that organs had been removed from children without the knowledge and permission the grieving families and the return of human remains to originating communities in Australia and New Zealand made the retention of human remains in institutions such as museums much more sensitive than it had been previously.

The Museum's Award

In displaying Lindow Man in an exhibition that gave voice to differing interpretations of the body the Manchester Museum was simply raising the question of the sensitivity of human remains for public debate. A range of different interpretative approaches were explored through contributions from a forensic archaeologist, a landscape archaeology, two museum curators, the peat digger who discovered the body, a member of the Lindow community and a pagan. The comments cards gave a ringing endorsement for continuing to display human remains. Sixty-seven per cent of visitors' comments cards said human remains should be displayed at the Museum.

Of course the Museum could have presented Lindow Man in the context of late Iron Age/Roman life. This approach was very successful in the earlier 1987 and 1991 exhibitions when a roundhouse was constructed in the Museum courtyard. This time round the Museum wanted to try something different and whilst it didn't please everyone, the exhibition generated considerable debate. The three exhibitions provide a unique sequence of different interpretative approaches to the same subject that reflects changing attitudes towards human remains amongst museum curators, archaeologists and the general public. (cont on next page)

British Archaeological Awards 2010 (cont)

Over a year after the exhibition closed, it is gratifying that the project continues to attract interest. Earlier in the summer I spoke about the unsuccessful Lindow Man repatriation campaign of the 1980s at the *Museums and Restitution* conference at the University of Manchester. In addition students at this and other universities continue to interview museum staff about the Lindow Man project for their dissertations. The exhibition won the Design Week 2009 Best Temporary Exhibition award. Images of the exhibition can be found in New Exhibition Design 02 (edited by Uwe Reinhardt and Philipp Teufel), where it features with many international examples of innovative design. A paper on the public consultation for the exhibition has just appeared in *Museums and Community* published by MuseumsEtc. As one of my colleagues said, Lindow Man is the gift that just keeps on giving.

Mellor 'Highly Commended'—Twice!

Also in the running at the awards was the Mellor Heritage Project 2007-9, which was competing in the categories 'Best Archaeological Project' and 'Best Community Archaeology Project'. In both categories Mellor was rated 'Highly Commended', being beaten to the Best Archaeological Project prize by the Tarbat Discovery Programme and to the Best Community Archaeology Project by Fin Cop—Solving a Derbyshire Mystery. GMAF extends its congratulations to the Mellor Archaeological Trust for the not inconsiderable feat of being amongst the elite of archaeological projects in Britain.

Mellor's BAA certificates

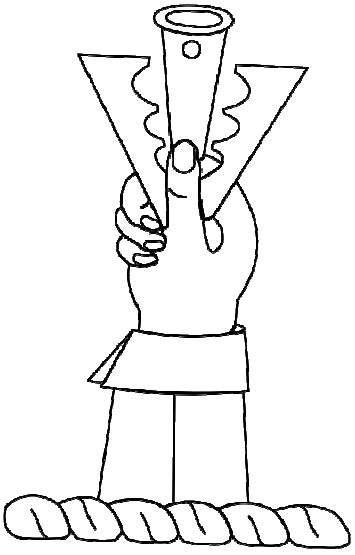
Early Glass Bottle Seals from the Excavations at Gristlehurst Farm

Two glass bottle seals were found by Bury Archaeological Group during the 2008 excavation at Gristlehurst Farm, Birtle, Greater Manchester. (Trench 6 Context number 180). The seals were part of a deposit containing the remains of at least 7 glass bottles and sherds of 17th century pottery and clay pipes.

An Act of Parliament of 1636 prohibited the sale of wine by the bottle. This was to regulate the sale of wine into standardised measures. Wine bottles of the time were variable in size. As a consequence wine bottles were in private ownership and delivered to the vintners in sufficient numbers to enable a standard measure, such as a barrel, to be filled. Bottles were expensive and therefore usually marked with the owners seal. Frequently this would be an Inn or Tavern or a wealthy individual.

Bottle Seal with the initials "TH"

This seal is made from dark green glass and is 4 cm in diameter. It has the initials "TH" and a motif which we have interpreted as a stylised representation of the Holt family crest (below left) "An arm erect, coupled at the elbow, habited per pale Azure and Gules, in the hand Argent, a pheon Sable". It seems likely that the seal represents that it was the property of Thomas Posthumus Holt (1628-1679).Thomas was the last of the Gristlehurst Holts and seems to have resided at Gristlehurst from about 1651 until some time before his death in 1679. Thomas died in poverty at Newton, Tattenhall. The estate had devolved to another branch of the Holt family and was let to tenants. The seal is likely to date from the earlier years of his occupancy of Gristlehurst and probably no later than the early 1660s.



Bottle Seal depicting a Ship and Ensign

The seal with some fragments of the bottle still attached is of clear green glass. The impression is 3 cm in diameter and depicts a 3 masted war-ship at sea. 8 gun ports are visible along the starboard side. At the stern seems to be the head and shoulders of a sailor. An anchor is visible at the bow. The foremast and main mast both carry single sails and small flags with a St. George cross. In addition the main mast has a pennant. On the stern mast is a large ensign, quartered with Saint George's crosses in the top left and lower right quadrants and Saint Andrews crosses in the top right and lower left quadrants.

From the attached remains of the bottle it is thought that the bottle was probably of the "shaft an globe" type dating from about 1650 – 1665.

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The vessel depicted on the seal was identified by the Royal Naval Museum, Portsmouth as "an early 8 gun frigate, a single deck vessel, she has no foc'sle indicating this was built between (1646-48). The frigate was initially developed by Parliamentary forces as a small fast vessel to intercept Royalist gun-runners and privateers. "

The ensign is that of the Commonwealth used between 1651 and 1653. In 1653 the harp of Ireland was introduced into the lower left quadrant.

In this case it seems unlikely that the seal represents an Inn or Tavern. The execution of the design is unusually detailed and specific in its rendition of both the vessel and the ensign. The purpose of the seal is not known but It has been suggested that it might signify ownership by the Commonwealth Navy. Alternatively it might have been used to certify authenticity or even be a commemorative seal (perhaps to a battle during the First Dutch War of 1652-1654). The ensign gives a date for this seal of1651-1653, which would make it the earliest known 17th century glass bottle seal with a Lancashire provenance. An earlier seal dated 1650 and was found in London a second seal also from London is dated 1652 (Museum of London, acc. No. 80.70/14*and acc. No. A15319).

Robert Huddard

Acknowledgements:

John Moore and Steve Butler, National Museums Liverpool

Heather Johnson, Royal Naval Museum, Portsmouth

Lance R. Mytton, ABC Magazine

David Burton

Dr Hugh Willmott, Department of Archaeology, University of Sheffield

Digging at Dunham
20 - 29 July 2010

Trench 1

Following our HLF sponsored community dig SMART and Oxford Archaeology North, the chosen contractors, can report that the event was a phenomenal success. We had full days' participation every day of the dig, during the two weeks of the Festival of Archaeology.

We were fortunate enough to escape any inclement weather, which may have brought a stop to a days' digging. This was down, of course, to perfect timing. Many Federation members were involved and got a chance to partake of the digging, finds processing, brewing up and indeed the inevitable recording. I suspect, as many returned requesting additional days, that all participants enjoyed the experience. Although not all numbers are yet available, initial reports indicate there were, at least, 2,500 visitors came over to see what was going on and take part in the activities arranged by the National Trust education team, lead ably by Sarah Talbot, and many of the volunteers working with the finds specialist Dave Marin from Oxford Archaeology.

As is always the case we answered many questions we had posed for ourselves, we certainly added to the records and information available relating to the C17-C18 stable/dairy block currently held. However we also managed to pose many more that we unfortunately did not have time to fathom out.

Above is Trench 1. We found a wall…yes, it was 3 courses wide…yes, we suspect an C18 rebuild ..yes, now could we tie it in to the gable wall excavated during the evaluation in 2009…read on.

Trench 5

In trench 5 (left) we have the gable wall return…yes, it is part of the C18 rebuild…yes it is three courses wide…yes, but the return we hoped would link to the wall in trench 1 was only two courses wide and was probably part of the original C17 building. Oh NO!!

These are two examples of the archaeology we uncovered at Dunham, and also a fine example of how things do not turn out as you had planned. But this did help us demonstrate how the building had changed, how it stood on several different surfaces, and matched the contours of the land on which it stood, and not as depicted in the paintings of Van Diest 1697 and Harris 1751, which show it on a level platform.

We will be reporting back to all volunteers and Federation members at a presentation currently arranged to be held in the Dunham village hall 3rd November 2010 at 7.00pm. We will be sending out invitations and confirmation of venue closer to the time

Andy Coutts

GETTING TO THE BOTTOM(S) OF IT

You don't quite know where it was or where the remains may still lie. You don't know what it was for. You don't know who built it and when.

But you do know it was water powered and you know it was in existence in about 1780. From documentary evidence you know it was still standing in 1905.

And you've searched for it many times.

That was the mystery of Bottoms Mill.

The very hard and exceptionally dry winter provided a key to start unlocking the puzzle of Bottoms Mill, for the unusual amount of vegetation die back allowed a glimpse of a distinct platform by the side of Red Brook in the Holcombe Valley. The photo (below right) clearly shows it, but believe us when we say that it is the first time it has appeared like this in living memory. The pond had been noted before but put down as one of the many ponds used in the extensive hydraulic engineering in the valley, probably for the later Cinderhills Factory downstream.

Once we had stumbled across Bottoms Mill we organised a day for examining the site and recording it, followed by a later date by geophysics (Resistivity - thanks to Andy Coutts for this). During the initial examination many interesting things were discovered amongst them was stonework and geological features that suggested a sluice, possible walls and a rather puzzling area of the pond that had been dug out on the stream side. The Mill is where the two hawthorn trees are and the pond is covered in scrub willow, all the trees providing a home for voracious midges. The 'sluice' was still draining water from the old pond into the brook, and opposite was found what we thought could be another pond. This made us think that the wheel was situated in the brook. Examination of the platform edge by the brook showed erosion had occurred, but what appeared to be the edge of a flag floor had been exposed as a result. In the brook lay some large slabs of stone, but whether for paving or some other purpose is still not known.

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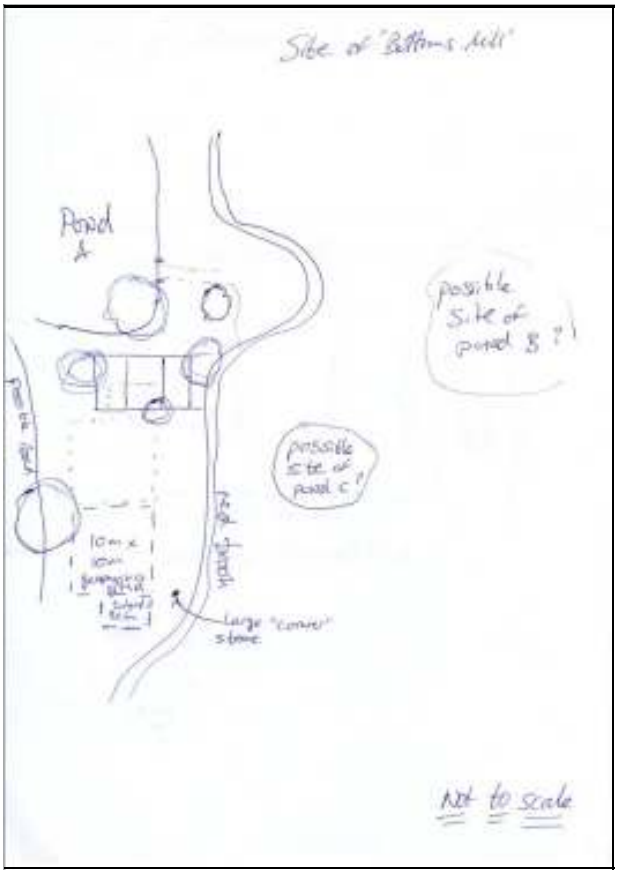
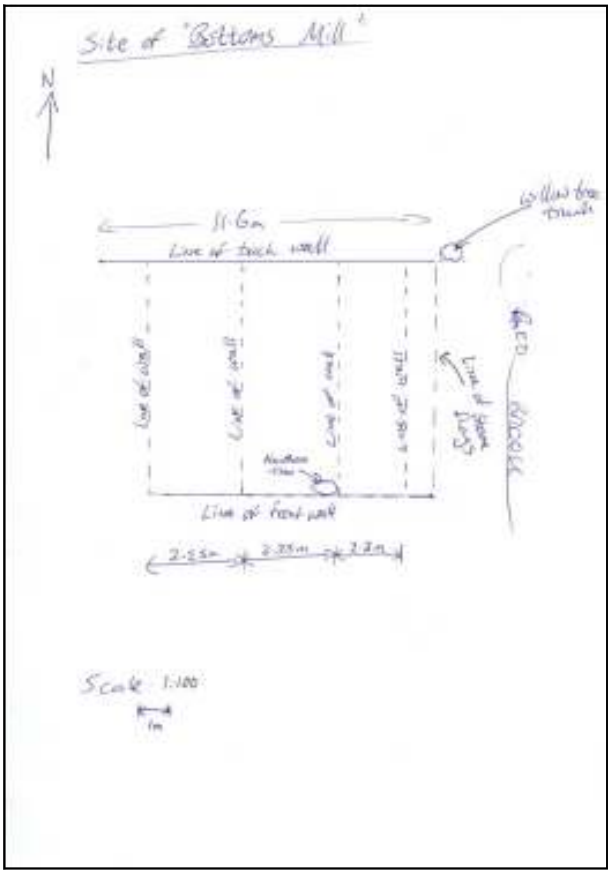
On the day of the geophys the party split into two sections. One conducted the geophys across the only area that the vegetation allowed. The other, deep in the nettles and hawthorns, measuring and recording the site of what we believe is the mill building that is situated at the Northern end of the platform.

This was all done in the usual meticulous fashion as shown underneath!





Subsequently we sent the sketches to our tame Army archaeologist (we work on Army land) who then visited the site and pointed out that there may be a filled in channel in the pond that could mean the wheel was at the opposite end of the building to that which we thought. However, he is making arrangements for removal of the willows and the two hawthorns growing in the middle of the mill. We can then apply herbicide and start doing some work by means of trenches, test pits and sondages.

The dark arts that is geophysics, showed a possible entrance across the east-west running bank on the southern end of the platform. This, as well as a possible trackway, will be pinpointed along with the platform itself and the mill building.

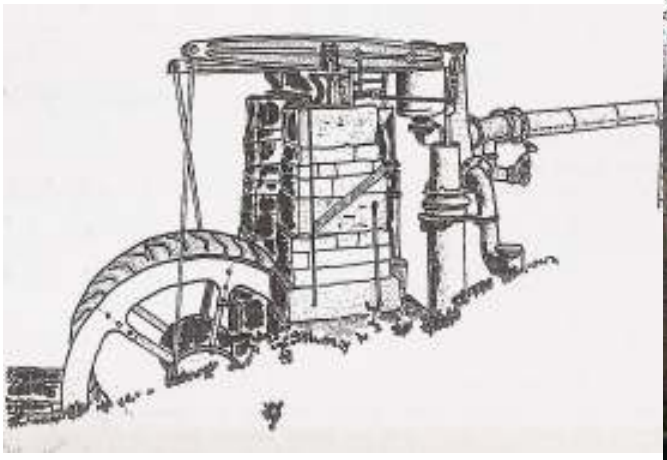
From the measurements sketch our Army archaeologist suggested it may be a carding mill but if it was it would be quite early.

We still don't know what the mill did, who built it and when exactly, but we believe we have at least found it, and that's a start. Hopefully there will be more news to report before the end of the year.

Holcombe Moor Heritage Group

MRIAS Survey of Mount Sion Water Wheel

Mount Sion Printworks near Radcliffe was opened in 1828 and the site still operates manufacturing food grade papers. Although the majority of the original buildings were rebuilt after a fire in 1913, a water wheel which drove two reciprocating pump chambers via beams survives from the original early 19C works. MRIAS carried out the survey of the wheel in early April 2010. A total of fourteen people took part with between five and seven people being present each day. We had excellent cooperation from the site management and there are now a good series of dimensioned sketches which will be converted to a series of drawings.



Above left-drawing of the water wheel from *Industrial Archaeology* vol 11 (1974) and right, the water wheel today

Our conclusions on the current condition of the wheel and its associated features are;

- The main masonry structure is sound but is in danger from tree roots,
- The wheel rims, mounts, connecting rods and beams are in fair/good condition and could be restored,
- The pump chambers and original riveted pipework are beyond repair, they could be replaced in mild steel,
- The leet is in good condition but needs clearing,
- The sluices at the weir have been damaged due to vandalism and theft but could be restored,
- The weir is generally in good condition but needs maintenance.

A full report will be prepared as a MRIAS publication as time allows.

Peter Bone - MRIAS Project Officer

Postscript

The interest generated in this monument has not only resulted in the MRIAS survey, but English Heritage has Listed the water wheel at Grade II. *Editor*

The anomaly revealed - but what is it?

Magnetometer proves its value in TAS park project

TAS have been involved in supporting a municipal Park in Tameside over 4 years to engage our volunteers and public events for a Park-led lottery bid which has recently been successful. Initially this has involved basic survey of the park, resistivity surveys of open areas of the parkland. From these surveys selective evaluations have been utilised for the National Festival of archaeology for public participation on 3 occasions. A professional Desk-Based Assessment by Dr Peter Arrowsmith, (then of UMAU) was also produced on behalf of the Park which also utilised material collated by TAS.

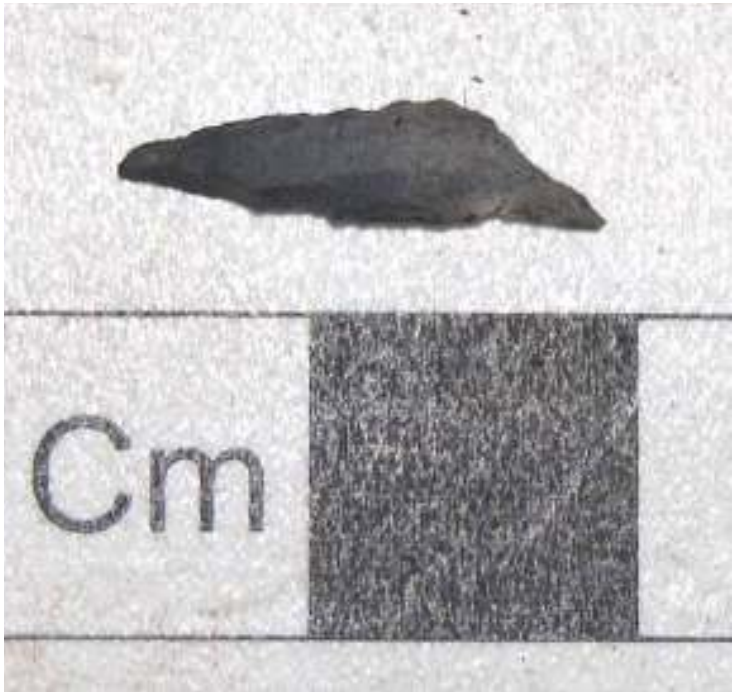
In 2008 one area of the park was utilised to assess resistivity anomalies, the public event turned confirmed one of the anomalies as a geological when excavated but also some fire cracked pebbles were found by children. In 2009 following this discovery further evaluation by FM256 Fluxgate Gradiometer to assess for enhanced magnetic susceptibility to look for sources for the fire cracked pebbles. This indicated a series of anomalies which TAS decided to incorporate into this year's public event.

Over the weekend of the 17th July TAS opened a trench next to the 2008 trench including sieving of contexts with new discoveries of flint material. Further evaluation of these finds is required. Two of the magnetometer anomalies were evaluated by a test pit and a sondage. These produced consolidated possibly pad like features of bonded (not cement) small stone with some iron inclusions. Interestingly these structures (0.75m^2 x 0.75m^2) were not detected by the resistivity (1m assessments) nor surface metal detecting. A further smaller more intense resistivity survey (0.5m assessments) was undertaken following the small excavation to re-evaluate these anomalies.

Irontongue Hill project update

TAS would also like to thank the help from other federation members who came up to the moors in terrible weather this winter to complete the successful Mesolithic project excavation stage. The project is now into the post excavation and analysis phase, with digitising of drawings, AutoCad document production, finds cleaning, and producing classification of the assemblages - all with the support of Dr Ron Cowell, National Museums, Liverpool. Support has also been given by Dr Peter Geoff Blackford an expert in peats. This stage to publication is expected to take 2 to 3 years with further specialised assessment of environmental samples taken on site. If anyone needs support with a similar project please do not hesitate to contact us...

Kevin Wright



Chert scalene triangle from Irontongue Hill

Letter to the Editor

This stone was found in an Urmston garden after being rescued 9 years previously from a rockery. It is now resident in STAG HQ where we have come to a dead end. Can anyone from GMAF help please? We believe it originally came from Urmston Hall before being taken for the rockery.

We have been told that the coat of arms although interesting heraldically is unlikely to reveal the families involved - the lion rampant for the man and the two bars for the woman.

I attach an original photograph and an edited black and white version which may be clearer.

Regards

Derek Pierce.

Finds Liaison Officer News

The Portable Antiquities Scheme's regional Finds Liaison Officer, Vanessa Oakden, covers Greater Manchester as well as Cheshire and Merseyside. She is based at the National Museums, Liverpool and comes over to Manchester for a day a month to the Manchester Museum, where she is happy to see finds for identification. Vanessa can help with finds up to the post-medieval period (1700s).

She will be at the Manchester Museum between 10.00—16.00 on:

17th September

15th October

19th November

All of the above are Fridays.

To make an appointment for these sessions, or to ask her advice, she can be contacted on

Tel 0151 478 4259

Portable Antiquities Scheme

www.finds.org.uk

Bill Aldridge updates on progress at the current excavation.

Our work at the Rectory (Wigan Hall) site is progressing quite well and is now beginning to produce some interesting results. Norman Redhead and Ian Miller of Oxford Archaeology North came to visit last month and both were impressed by our efforts. Ian was able to confirm that, much of the pottery we have uncovered dates from the 17th and 18th century – a few even dating back to the 14th.

Our excavations have uncovered a well made dirt track but we have not been confident that this is the old Frog Lane we have been looking for. We expected the road to be paved and to be much wider (on the 1849 map it is shown as 7 metres wide). Ian however was quite happy for this to be the old lane as paving with stone sets apparently only came in the late 1860's. Norman suggested that the reason for the narrowness of the road at this point could be because of the insertion of the water feature on the north side (far right in this photo) and suggested we cut a section right across the site to prove it.

We are still not sure what this water feature is (see photo, left). It isn't deep enough to be a well and with no culvert at the bottom it doesn't work as a drain. One theory is that it's an ornamental feature – maybe a fountain, as there seems to be a cast iron pipe feeding it from the right and a field drain inserted to take the overspill.

We are now well on with the section that Norman suggested and it seems he was right (well partially). The road has been truncated on the north side, not however by the water feature, but by a trench cut into it for a drain (and maybe something else as we have yet to reach the bottom).

As can been seen in this section (photograph, right) the dirt track continues beyond the trench and underneath the sets around the water feature (unfortunately we aren't able to determine how far it goes because of the trees). The section has also reveals that the dirt track is constructed on a bed of compacted sand (also seen in the section under the water feature). However on this side it lies on top of a soft dark brown sedimentary layer – could this be the fill of the moat which appears in 16th century reports? (the illustrated piece of pottery from this layer was confirmed by Ian as being most likely late 16th century—see photograph on next page).

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Right: Late 16th century pottery from the sedimentary layer—from the fill of the moat?

Left:

This piece of Midland yellow ware, probably 17th century, is a second (it has a graze from another pot during firing on the rim). Ian thinks this is evidence that this type of pottery was being produced in the area, as seconds are not normally sold beyond the area where it was produced. If this is true it's the first evidence of the pottery being manufactured in Wigan from this date.

Last month a group from our Society visited the Hungate excavations in York. Here is a team photo taken in front of the enigmatic Anglian Tower in the grounds of St Mary's Abbey.

Mellor Archaeological Trust

Don Reid discusses what the Mellor Archaeological Trust have done following the end of their funded programme.

The Trust finished its 2009 activities in September with an excavation over a geophysics anomaly identified in a field at Knowle Farm. This turned out to be the almost complete remains of a field lime kiln, probably dating from about 1750 to 1850 and used to provide lime for improving acidic soil on land "taken in" from previous peaty moorland. During this period the effect of the Napoleonic Wars increased the demand for grain and the subsequent increase in its price encouraged farmers to put more land under cultivation.

The Knowle Farm Limekiln

The Trust commenced its 2010 outdoor activities in April with a one day field-walking exercise on a field (SJ 9785 8890) which was to be ploughed and re-seeded with grass at Knowle Farm, below the west slope of the Mellor ridge. It had been harrowed the previous day and was rolled during the morning session.

An area of 2340 sq.m. was examined and a total of 12 lithic artefacts were recovered and passed to Andy Myers for examination. He concluded that it contained blade fragments, some complete flakes and a core platform rejuvenation flake. They may be early Mesolithic, rather than the later Mesolithic material found at the Old Vicarage site, some 400 metres above. A second small group of lithics sent to Andy subsequently also appears to mirror the above findings.

In May a very cold day was spent tramping up and down the slope at the eastern end of the Mellor ridge with a magnetometer in an attempt to identify if, and where, the two outer Iron Age boundary ditches met. These have previously been identified running roughly parallel along the north and south faces of the ridge. The results were taken by Brian Grimsditch for analysis at the Centre for Applied Archaeology at the University of Salford. Unfortunately they failed to reveal any clue to the existence of a joining ditch, and it now seems likely that if there is a join, this may well be across the top of the ridge at the eastern end.

In July it was agreed that guided tours would be offered to the public over the site of Samuel Oldknow's water powered Mellor Mill, built in 1790 and totally destroyed by fire in 1892, although two huge wheel pits still remain. The Trust excavated in 2009 and revealed sections of the east end of the mill and some weaving sheds. This time a five-day excavation exposed brick foundations of a structure at the west end of the site, possibly a coal store or weighing machine. The tours were a great success and the Trust hopes that a full scale excavation of the mill site may be possible if funding can be obtained.

A three week excavation has just been completed in the small triangular field at the Old Vicarage. More possible Iron Age round house gulleys and post holes were found and large quantities of clay pipe fragments appeared dating from about 1640 to

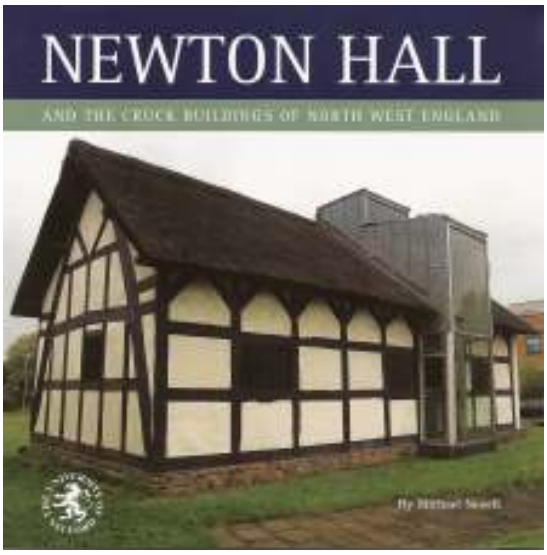
1750, probably corresponding to the time when the Old Vicarage was the Church Inn. **Don Reid**

Mellor Mill—coal bunker or weighing machine?

Another Mellor NVQ!

Congratulations to Don Reid, who has recently completed his NVQ in Archaeology, joining Andy Coutts and Steve Milne.

New Publication



The Centre for Applied Archaeology have produced their first monograph. Entitled *Newton Hall and the Cruck Buildings of North West England*, this is at the same time CfAA Archaeological Monographs 1 and (if you look at the small print near the ISBN) *The Archaeology of Tameside Volume 8*. This series, of course, is the second series of Tameside books, where the investigations centred on a building or site are used to reappraise and reassess the archaeology of that kind of site/building within the wider framework of the North West, or further afield.

The current volume is about a class of buildings, those made with a frame created by splitting a trunk of a tree, creating the distinctive A-shaped truss. Nevell's book focuses on Newton Hall, rightly described as 'one of the most surprising buildings in Tameside'. The Hall itself has a great story of rescue from destruction and restoration by the owners, Kenyons (told in detail in the book and a rescue project before the Rescue Archaeological Trust was formed) and recent fieldwork by the now closed University of Manchester Archaeological Unit on the site adds to the story.

The main structural element of these buildings lends itself to dendrochronological analysis and Nevell provides an appendix listing dated wooden structures across the North West. These results are collated from a host of short notes in the journal *Vernacular Architecture* and from the mass of 'Grey Literature' reports that lurk, iceberg-like below the surface of the archaeological world, especially those relating to the UMAU project on the village of Warburton, Trafford. In one sense this volume is a coda to the work of UMAU as well as looking forwards with CfAA.

The book is produced in a different format to the previous Tameside volumes and has been laid out with a liberal splash of colour and a cruck frame device used at intervals. The illustrations are mostly at a good scale (with the exception of one or two line drawings) and the collection of photographs relating to the rescue and restoration of the Hall are astonishing and illuminating.

A small quibble is that the typeface is too small. Apart from that, this is attractively presented, informative and a handy reference guide to an attractive class of monument. The book costs £8.95 and is available from Tameside Local Studies and Archives. There will be a facility to buy direct from CfAA via their website shortly.

CFAA Besthorpe Community Excavation (2nd – 6th August 2010)

In July 2010 the Centre for Applied Archaeology were contracted to continue the excavations at Besthorpe in Nottinghamshire. This was a commercial contract started ten years ago and conducted by UMAU up until its closure in 2009. Work stopped on the site until the contract was transferred to CfAA.

The site is on the flood plains of the River Trent between the villages of Besthorpe and Collingham with geology of sands and gravels. The geology is the key to the excavation as Lafarge Ltd. Gained permission to extract the sands and gravels. As part of the planning permission an extensive series of excavations were to be carried out over what was to be two areas, Ferry Lane Farm (work now completed) and the present site Mons Pool. A great deal of archaeology in the form of ditches and pits were revealed at Ferry Lane Farm and thousands of artefacts were recovered. The site was primarily a Romano-British rural settlement. The Mons Pool site covers an area of around 10 hectares and similar to Ferry Lane Farm previous work there uncovered a further Romano-British settlement. In the case of Mans Pool the settlement was more agrarian as opposed to Ferry Lane Farm where several 'industrial' features were revealed.

Over the three previous seasons at Mons Pool archaeological features excavated ranged from boundary ditches that showed evidence of re-cutting on several occasions, pits, ephemeral structures, possible pottery kilns and over 10,000 sherds of Romano-British pottery. Evidence for several burials was also found and the controlled and systematic use of metal detection was instrumental in the recovery of many metal artefacts including broaches, rings and coins.

In the previous weeks late Iron Age and some Bronze Age Pottery was also recovered from a ditch feature along with several flint tools and waste flakes.

Adam Thompson supervising work

One of the main aims of the CfAA is community involvement and although Mons Pool is a commercial archaeological project where community volunteers are rarely allowed Adam and Brian were determined to conduct a period of excavation involving volunteers working alongside the 'professionals' and were successful in persuading the contactors of the benefits to them us and the community.

Although there was very little time between the signing of the contract and the window when excavation was possible (three weeks) and the fact that it was in the middle of the ;holiday' period the week of 2nd – 6th August was chosen and twelve people volunteered to attend the excavations. The excavation and training was all free and only the accommodation and food had to be paid for.

Everyone met on site around 10.00 am on Monday morning and following the usual site induction (often boring but necessary) the volunteers were let loose. Even though the volunteers were itching to get their trowels out and the trenches were only some 100 metres away from the site cabins it took a considerable time to get to the trenches as everyone was stopping ever two or three metres to pick up some artefact. This is a feature of the site in that due to the wind and rain washing the sands over the site, fresh artefacts are revealed on the surface every day.

However, we finally reached the trench devoted to the volunteers. The trench measured some 50m by 20m that had been previously stripped of its top and subsoil revealing the natural sands. Due to the nature of the sands which dry out within 5 minutes of the sun coming out any features were very difficult to discern as the sands dried out to a uniform colour. Consequently the system adopted was to choose a 10m square, hoe and trowel to remove the top dry sand and mark where the features were revealed. Even though the features 'disappeared' marking them enabled us to come back and exca-

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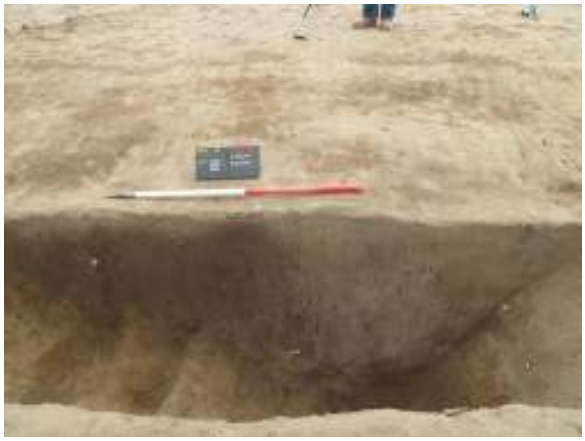
vated them. This method revealed several curvilinear ditches some pits and post holes and a substantial amount of pottery.

All features produced dateable evidence and some lucky people recovered flints and metal artefacts in the form of a Romano-British strap broach. Everyone was also given the opportunity to 'excavate' and recover targets found by the metal detector. Everyone found something of importance ranging from brooches to Roman coins with a particularly nice Roman ring



Archaeology which disappears before your eyes. A cut feature at Besthorpe

At the end of Monday working we all toddled off to Southwell where the Student accommodation of Brakenhurst was situated. They were all very newly built en-suite flats in block of six with a communal kitchen and lounge. On the first night people went there way to Southwell to try out the local restaurants and hostelries. On the second evening everyone came to our flat (the 'professionals') and with the aid of a lap top projector and a few drinks we had a convivial evening with entertainment projected onto the wall.

During the rest of the week work continued on site with features being excavated and recorded and the artefacts continuing to jump out. However, as we all know every site waits until the last moment to throw a spanner in the works. Mons Pool spanner came in the form of two creamy coloured curving 'pots'. One had its top curve slightly damaged showing white edges. As you have probably guessed they were not pottery but two skulls. With only one and half days left the human remains would not be fully excavated until after the volunteers had finished on the Friday and had to wait until the following week. However, it was possible for the volunteers to partially excavate the remains exposing long bones on one of them. The next week revealed that one of the skulls proved difficult to excavate and work out it orientation due to the fact that the head had been placed between the knees. We cannot at this stage speculate why.

I have spoken to several of the volunteers since returning from Mons Pool and the 'buzz' has only increased from that felt before the dig. I believe that this was a truly exceptional experience for the volunteers and if they feel half of the excitement I have about the sight I am sure they will want to return and be letting others know.

It is intended to repeat the experience next year, all thing being well, and having more time to organise we should be able to advertise it much earlier and hopefully more people would be able to take advantage.

For more information and photos of the site try our new website www.cfaa.co.uk .

One of the burials discovered at Mons Pool. This type of burial is called 'deviant' as it differs from known practice. It is similar to 30 burials from York recently discussed as part of the rebellion of Caracala in 211AD, where he executed all who opposed him.

Brian Grimsditch

Senior Archaeologist, CfAA

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will look fantastic when it is finished and fitted out again.

One of the most interesting recent investigations was at the former High Street Chapel site in Stockport. The Presbyterian Chapel was erected in 1722 on high ground close to the town centre. It was frequented by some of new wealthy class of industrialists including Samuel Oldknow, the Marslands and the Orrells, members of the latter two families being buried in the small graveyard. The chapel was demolished in 1860 and the graveyard became disused and overgrown. Recently, Matrix Archaeology have carried out an evaluation of the graveyard which will form a landscaped garden within a new housing scheme. As well as uncovering grave slabs previously recorded by Owen in the late 19th century, they have found the remains of other slabs at a lower level, the chapel foundations and a row of graves down the central aisle. A bonus discovery was a medieval pit surviving between grave cuts.

GMAU have offered advice on several major regeneration projects in recent weeks, including schemes in Salford which have excellent community archaeology potential, and at Kirkholt estate near Rochdale, where a detailed archaeological desk based assessment by Rob Isherwood and Pete Arrowsmith has demonstrated considerable archaeological interest and potential community engagement. The community archaeology highlight of the summer has been the Dunham Massey dig which engaged with an estimated 2,500 people over a 9 day excavation period. Congratulations to SMART and the National Trust for organising such a successful event.

Norman Redhead

Clockwise from top right: Traffod Pllanners being shown the Digging at Dunham site; the High Street Chapel Graveyard site, Stockport, the Worsley Lime Kiln and the splendour of the restored Ordsall Hall begins to emerge following its restoration.

News from GMAU

Greater Manchester Archaeology Federation

c/o Greater Manchester Archaeological Unit
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Oxford Road
Manchester
M13 9PL

Phone: 0161 275 2321
Fax: 0161 306 1714
E-mail: gmau@manchester.ac.uk

New publications and reports

Does your society have a new publication or report which you would like to be included in the newsletter? If so contact Peter at GMAU.

Excavations at Woodbine Street, Rochdale

Planning Policy Statement 5 – Planning and the Historic Environment was the subject of a special edition of the last newsletter (quite appropriately issue no.5). It looms very large in the day to day work of GMAU's planning archaeologists. Andy Myers and I are holding a best practice workshop on PPS5, in partnership with our local authority Conservation Officer colleagues, at each of the ten Greater Manchester Planning offices. We have done 3 so far with another 4 lined up in September. As well as spreading the word on the change in philosophy and terminology for the historic environment brought about by PPS5, these workshops also give us an opportunity to let planners know about the work of GMAU and the process of archaeology in relation to development.

Archaeological investigations have been quite varied in the last couple of months. Evaluations have uncovered remains of textile related industrial buildings at Woodbine Street, Rochdale, and Dew Way in Oldham, whilst a late 18th century pot kiln has been revealed at Worsley Lime Kiln, Salford, and will form part of the landscaped heritage display of this impressive monument beside the Bridgewater Canal. At Ordsall Hall, Oxford Archaeology North have continued to record the building fabric exposed during the refurbishment process, and took the opportunity to investigate the floor within the 16th century hall in the hope of finding evidence of a medieval antecedent. Sadly, the 19th century alterations had removed any earlier levels with only the oxidised red clay to indicate where an early hearth had been located at a higher level in the middle of the hall. As the refurbishment enters its final phase, parts of the building are emerging from the protective cover. The quality of Lambert Walker's restoration work is very high and the building

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(cont from pg 1) MBC in 1980 and only stepping down shortly before his death. His commitment to public service and his strong and clear vision as to how to make Tameside better have been extensively commented upon elsewhere in the media. What I would like to offer is a short personal appreciation of his role as a heritage champion.

I first met him in 1990 at the University of Manchester where he had come to discuss a small project with the then director of GMAU, Phil Mayes. I was asked to join the meeting as someone, with an academic background, who could help write a three volume history of the borough. This was Roy's idea and his aim was clearly stated from the outset: to improve the identity of Tameside, a product of the 1974 local government reorganisation that brought together nine competing towns that were formed under a title that many people in the south thought related to the river Thames! This turned into 18 books, 31 sites excavations, 111 buildings surveys, over 4000 volunteer archaeology places, over 5000 school archaeology places and more than 12000 family history visitors over the 20 year life of the project. Throughout the 20 years I knew him I found him unfailingly kind and generous in spirit, with an enthusiasm to communicate the importance of the past for future generations. Archaeology and heritage in the region owe him a great debt of thanks for his belief in the importance of the past and his support of primary research during this period.

His legacy as a heritage champion is, of course, far greater that the outputs and triumphs of the Tameside Archaeological Survey. It can be seen in the establishment, growth and success of Portland Basin Museum, the Setantii family history and visitor centre and the rescue and renovation of listed buildings such as Ashton library, Ashton market hall and Stalybridge market. Thousands of children and tens of thousands of adults will continue to enjoy this legacy for years to come.

Mike Nevell