

Reports from the Environmental Archaeology Unit, York 96/47, 8 pp.

Assessment of plant and invertebrate remains from excavations associated with renovations at All Saints Church, Pavement, York (site code 95.47)

by John Carrott, Allan Hall, Michael Issitt, Harry Kenward and Frances Large

Summary

Samples collected during excavation and piling consequent upon renovation of All Saints Church, Pavement, York, have been submitted to assessment for their bioarchaeological value. Three samples of deposits thought to date to before the construction of the earliest known church and probably to the Anglo-Scandinavian period yielded plant and invertebrate assemblages of considerable interpretative value. The remaining samples, from grave/coffin fills from within the church, were almost barren except for the presence of some ?human bone in some instances.

A programme of recommended further analysis is presented, together with resource implications.

Keywords: ALL SAINTS CHURCH; YORK; ENGLAND (NE); ANGLO-SCANDINAVIAN; MEDIEVAL; ?POST-MEDIEVAL; GRAVE FILLS; OCCUPATION DEPOSITS; PLANT REMAINS; MICROFOSSILS; INSECT REMAINS

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7 November 1996

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Introduction and methods

Excavations were undertaken by Malton Archaeological Projects Ltd. during 1995 within and to the south of All Saints Church, Pavement, York, during renovation and underpinning operations carried out with financial support from English Heritage. A series of small samples from test boreholes was submitted to the Environmental Archaeology Unit, University of York, in 1995 for assessment of their bioarchaeological value and an informal report compiled (included here as Appendix 1). A number of deposits from grave or coffin fills (from trenches) or from deposits apparently pre-dating the earliest church on the site (from pile-borings) were sampled by means of 'GBAs' (*sensu* Dobney *et al.* 1992) and these have been examined latterly.

The GBAs have been examined by means of 'test' subsamples (Kenward *et al.* 1986), using either a 'flot' from paraffin flotation or a 'washover' to provide fractions for assessment of insect remains; in addition, one tubful of one of the samples (21) was 'bulk-sieved' to 0.5 mm. Two samples were described but not subjected to further analysis since they appeared very unlikely to contain interpretatively useful biological remains and it was necessary to constrain costs. Plant remains and other components were examined in the residues, flots and washovers; flots and washovers were checked for insect remains. 'Squashes' (*sensu* Dainton 1992) were made on selected samples to check for the presence of microfossils, especially parasite eggs.

Results

The results of the assessment of GBA samples are presented in context number order, with comments from the excavator in square brackets.

Context 2054 [fill of grave cut around articulated skeleton 2055; ?post-medieval; routine sampling of burial]

Sample 23: Mid grey-brown, unconsolidated sand with stones 2-60 mm present, together with some brick/tile fragments. 1 kg 'test' subsample and 10 kg BS sample processed.

There was a large residue of sand, with some brick/tile and mortar and a trace of charcoal to 10 mm, and a little (?human) bone. The tiny washover (a few cubic centimetres at most) included traces of charcoal (<5 mm), bone and an elderberry (*Sambucus nigra*) seed, together with a few traces of invertebrate cuticle. The squash consisted of inorganic particles with a trace of organic detritus. No microfossils were observed.

Context 4133 [grave fill of complete articulated ?medieval skeleton 4138; routine sampling of fill]

Sample 20: Mid golden-grey-brown, unconsolidated, stony sand with stones 2-60+ mm and mortar/plaster present. 1 kg 'test' subsample processed.

There was a large residue of sand and mortar with traces of gravel, brick/tile and charcoal (<10 mm); the very small flot contained a few fragments of very decayed wood (<5 mm) and charcoal (<10 mm) and a single sedge (*Carex*) nutlet. There were no more than traces of invertebrate remains. The squash consisted mostly of inorganic particles, with a little organic detritus. Some silica bodies resembling phytoliths were noted, but the identification was not certain.

Context 4139 [clean sand bedding at base of grave on which nearly complete skeleton 4137]

rested; only burial of this kind; routine sampling of grave fill]

Sample 22: Mid golden-brown, unconsolidated coarse sand with stones 6-60+ mm present, together with some large chunks of mortar/plaster. This had the appearance of sand used to backfill a grave or for the seating of a stone floor. Not investigated further.

Context 4143 [fill of coffin around complete articulated ?medieval skeleton 4146; routine sampling of burial]

Sample 21: Mid grey, crumbly, unconsolidated sand with mortar/plaster and human bone present (a second tubful mid golden-brown, unconsolidated sand with stones 20-60 mm, mortar/plaster, brick/tile, coal and large mammal bone present). 1 kg 'test' subsample processed.

The large residue was of sand and mortar with some ?human bone, a trace of charcoal (<10 mm) and brick/tile; the tiny washover (a few cubic centimetres only) contained some charcoal and very decayed wood <5 mm. There were a few fragments of a ?modern millipede but no other invertebrate remains were observed. The squash consisted primarily of inorganic particles, although there was some organic material. A few phytoliths were noted.

Context 4164 [material cut by earliest structure encountered; quite unlike other deposits recorded from within church, ?pre-church and Anglo-Scandinavian in date; is dating by radiocarbon assay recommended?]

Sample 24: Dark grey-brown, crumbly, humic slightly sandy silt with patches of matted herbaceous detritus locally, iron-rich concretions (perhaps an iron object), charcoal, large mammal bone and oyster shell fragments. 1 kg 'test' subsample processed.

The small residue (of about 0.2 litres) consisted of about half its volume of organic material, mainly charcoal to 15 mm, with some very decayed wood to 15 mm; there was some bone and a few rather poorly preserved weed seeds. There was also a single charred fragment of a woody stem which may have been dyer's greenweed (*Genista tinctoria*), a plant recorded

from some of the other pre-church deposits (see below). The tiny flot yielded a few seeds and invertebrate remains of no interpretative value. The lack of 'waterlogged' plant and insect remains is rather surprising given the presence of 'matted herbaceous detritus' observed in the raw sediment.

Dating by radiocarbon assay, and in particular by AMS, would be feasible and probably also desirable for this material.

Context 4171 [thin lens beneath 4164 (see above); material cut by earliest structure encountered; ?pre-church and Anglo-Scandinavian in date; ?ash]

Sample 25: Light grey ash with darker patches of charcoal. Not investigated further.

Context 4172 [slightly laminated organic deposit sealed by 4171 (see above); material cut by earliest structure encountered; quite unlike other deposits recorded from within church, ?pre-church and Anglo-Scandinavian in date; is dating by radiocarbon assay recommended?]

Sample 26: Dark grey (speckled light grey at mm scale), crumbly, soft, working just plastic, humic sandy silt with inclusions of herbaceous detritus, a slab of flaggy sandstone (with pale grey ash or mortar associated with it), charcoal, well decayed wood, large mammal bone and oyster shell fragments. 1 kg 'test' subsample processed.

The residue consisted of about 0.5 litres of material of which about two-thirds by volume was organic—mainly decayed wood (to 30 mm) with some charcoal to 20 mm. There was good evidence for a suite of plants associated with textile dyeing which were common in Anglo-Scandinavian deposits at 16-22 Coppergate, a few tens of metres from the present site: moderate numbers of twig fragments of dyer's greenweed, plus traces of stem fragments of the clubmoss *Diphasium complanatum* and root fragments of madder (*Rubia tinctorum*). The tiny flot yielded several *Diphasium* fragments and some well preserved achenes of hop (*Humulus lupulus*); there were also small numbers of beetles and fly puparia and pupae, whose preservation was rather poor. A larger subsample would probably permit meaningful

analysis of the invertebrate remains.

Other material presumably from occupation recorded in the residue included charcoal, apple (*Malus*) endocarp (core fragments), mammal bone, mortar, oyster shell fragments, and pottery.

Again, dating of this material is feasible and probably desirable.

Context 5012 [from pile-hole 5, 12.25 m OD; organic silt from under first church, ?Anglo-Scandinavian]

Sample 28: Dark grey, crumbly (working just plastic), humic, slightly sandy clay silt with mortar/plaster and large mammal bone present. 1 kg 'test' subsample processed.

There was a moderately large residue (of about 0.4 litres) of which about two-thirds by volume was organic: charcoal and decayed wood fragments to 20 mm and bark to 15 mm; the wood included some ?modern pale conifer wood. Small numbers of generally well preserved seeds were present, mostly probably from weed taxa; however, there were also some achenes of hop, a capsule fragment of flax/linseed (*Linum usitatissimum*), and tentatively identified fragments of *Diphasium* stem and *Rubia* root. There was a single charred ?wheat (*Triticum*) grain and one well-preserved oat (*Avena*) grain. The residue also contained some charcoal fragments, some (unusually) bearing a blue residue (presumably vivianite); the rest of the residue comprised sand with some mortar, brick/tile, mammal bone, gravel and pottery. The tiny flot contained a few rather poorly preserved seeds, including more hop achenes, and further rare fragments of ?*Diphasium*.

There were moderate quantities of insect remains in the flot, both adults and immatures. Most were of species associated with decomposing matter, and this component was subjectively very similar to many groups recorded from Anglo-Scandinavian deposits at 16-22 Coppergate (Kenward and Hall 1995). There was also a single *Helophorus* water beetle, doubtless a 'background fauna' element. The observed remains would undoubtedly produce useful information on detailed analysis, although it would be preferable to process a

larger subsample so as to obtain more definite results from a larger assemblage.

Context 5015 [from pile-hole 6; 12.25 m OD; dark organic deposit under foundations of first church, ?Anglo-Scandinavian date]

Sample 27: Dark grey, crumbly, humic, slightly sandy silt with patches of fine herbaceous detritus locally, and charcoal, wood and large mammal bone all present. 1 kg 'test' subsample processed.

Of the moderately large residue (of about 0.4 litres), about three-quarters was decayed wood, including chips, to 35 mm; other debris included *Diphasium complanatum* and *Genista tinctoria* stem fragments and perhaps also *Rubia* root. There was only a low concentration of rather poorly preserved seeds. The remainder comprised sand and gravel with a little bone, pot and mortar.

The squash showed approximately equal quantities of inorganic and organic particles; there were a few phytoliths and fungal spores. The tiny flot (a few cubic centimetres at most) was mainly of fine herbaceous detritus. Invertebrate remains were present in modest numbers and, although the species composition was different from that seen in Sample 28, they, too, constituted an assemblage typical of Anglo-Scandinavian deposits. Slightly foul conditions were indicated. A ?honey bee (?*Apis mellifera*) tarsal segment was noted.

As for Sample 28, the recovered remains have some interpretative potential but processing of a larger subsample would be desirable.

Context 5116 [from pile-hole 36, material of a kind not encountered in other holes or in excavations, ?pre-church, ?domestic]

Sample 29: Mid grey-brown, soft silty clay sand with stones 6-60 mm, ?human bone, and a lump of tufa making up about one-third of the sample. 1 kg 'test' subsample processed.

The moderately large residue (about 0.5 litres) was essentially of sand with some gravel, mortar, brick/tile, ?human bone, charcoal (<10 mm). Some of the tufa was dissolved in dilute

hydrochloric acid to check for the presence of identifiable remains trapped within its matrix but it was not productive. The small washover (a few cubic centimetres only) was of charcoal to 5 mm and very decayed wood to 5 mm, with a few rather poorly preserved seeds of no interpretative value. There were no more than traces of invertebrates.

Tufa of the kind observed from this pile-hole was recorded as 'spot' finds on several occasions during excavation of Anglo-Scandinavian deposits at 16-22 Coppergate. Its origin is unknown, though formation within the built-up town is suspected, perhaps in association with limestone buildings.

Discussion and recommendations

Three of the samples examined (from Contexts 4172, 5012 and 5105) clearly have potential for worthwhile bioarchaeological analysis. They will provide information concerning conditions at the site prior to the construction of the earliest known phase of the church and, perhaps more importantly, the data they will produce can be tied in with results from several other nearby sites. Comparison with Anglo-Scandinavian 16-22 Coppergate will clearly be valuable, but consideration of the data from 6-8 Pavement and 5-7 Coppergate (Hall *et al.* 1983) and some other sites will also be useful. Results from the present site will, additionally, be of use in proposed studies of changes through time in the Coppergate area. *It is recommended that three samples are studied in detail using the largest possible subsamples.* It should be noted that, although these samples are from cores, the method used in obtaining them was such that there is no reason to suppose that more than minor external contamination occurred.

The grave/coffin fills examined were not productive of plant and invertebrate remains but, in view of the presence of human bone, should be sieved in their entirety to 1 mm and sorted to recover bone and teeth. Further examination of any human remains should then be undertaken to add to the existing archive.

It is further recommended that *AMS dating should be undertaken on selected plant or invertebrate material from one or two of the pre-church samples* to confirm the date inferred from pottery, stratigraphic position and the biological remains.

The material from an earlier set of (smaller diameter) boreholes (described under Appendix 1) is probably not suitable for further analysis; clear cross-contamination was noted in most cases.

Resource requirements

Resources required to carry out further analysis are detailed in Appendix 2.

Retention

All material should be retained for the present.

Archive

All paper and electronic archive material pertaining to the work described here is stored, together with the remaining unprocessed sediment and any residues, flots or washovers, at the Environmental Archaeology Unit, University of York.

References

- Dainton, M. (1992). A quick, semi-quantitative method for recording nematode gut parasite eggs from archaeological deposits. *Circaea, the Journal of the Association for Environmental Archaeology* **9**, 58-63.
- Dobney, K., Hall, A. R., Kenward, H. K. and Milles, A. (1992). A working classification of sample types for environmental archaeology. *Circaea, the Journal of the Association for Environmental Archaeology* **9** (for 1991), 24-6.
- Hall, A. R., Kenward, H. K., Williams, D. and Greig, J. R. A. (1983). Environment and living conditions at two Anglo-Scandinavian sites. *The Archaeology of York* **14** (4), 157-240 plus Plate I and Fiche 1. London: Council for British Archaeology.
- Kenward, H. K., Engleman, C., Robertson, A., and Large, F. (1986). Rapid scanning of urban archaeological deposits for insect remains. *Circaea* **3** (for 1985), 163-72.
- Kenward, H. K. and Hall, A. R. (1995). Biological evidence from Anglo-Scandinavian deposits at 16-22 Coppergate. *The Archaeology*

of York 14 (7), 435-797 + xxii + loose figures.
York: Council for British Archaeology.

large branch or trunk, to judge from the curvature of the annual rings

Appendix 1

Notes on borehole samples from All Saints Church, York, examined 22.8.95 (all depths in metres below surface)

Borehole 1

- 1.4-2.2 Humic, rather granular silt with woody debris, including willow (*Salix*) roundwood
- (~1.6 Willow roundwood in wet humic silt matrix)
- 2.2-2.8 Very woody detritus with patches of charcoal, wood chips, moss, straw/grass culm and dyer's greenweed (*Genista tinctoria*) twig fragments
- 2.8-3.4 Crumbly and ±granular detritus, including wood chips, a leafy shoot of the moss *Polytrichum* sp., a stem fragment of greater stitchwort (*Stellaria holostea*), tree leaf fragments, fly puparia and beetle sclerites
- 3.4-3.8 Similar to last; perhaps less coarsely woody
- 3.8-4.0 Granular to strawy detritus, in places compressed herbaceous detritus with yellow to green colour; the latter material rich in wheat/rye bran with many whipworm (*Trichuris*) eggs and some ?leek (*Allium* cf. *porrum*) leaf epidermis; clearly faecal material (though not necessarily human)

Borehole 2

- 2.2-3.4 Very humic dark brown silty detritus with birch (*Betula*) and oak (*Quercus*) roundwood; a small ?lens of grey ?ash; at least one level with cereal bran, *Trichuris*, round worm (*Ascaris*) and sloe (*Prunus spinosa*) stones: faecal material (some incipient mineralisation/concretion apparent)
- 3.4-3.6 Very dark, soft, moist, highly humic silt with a small localised concentration of bright red woody fragments identified as madder (*Rubia tinctorum*) root
- 3.6-3.85 Most of sample consisted of a fragment of birch wood, firm and very well preserved; probably from a

- 3.85-4.0 Very humic silt; abundant herbaceous detritus; reduced to black (sulphide-rich) internally; fish scale and grass/cereal straw culm fragments noted

Borehole 3

- 0-1.0 Silty sand with mortar
- 1.0-1.5 Humic silt with charcoal, wood fragments; some parts more sandy, another area consisting of grey silty clay
- 1.5-2.0 Mixture of very calcareous grey ?ash and humic silt with wood fragments and a (?partly charred) oat (*Avena*) spikelet fragment
- 2.2-2.8 Humic silt with herbaceous detritus including ?grass straw
- 2.8-3.3 Humic silt with woody and herbaceous detritus; a patch of very calcareous grey ?ashy material and a patch of pinkish natural clay
- 3.3-3.4 Humic silt and pinkish natural clay; some wood fragments
- 3.4-4.0 As last (?contaminated natural)
- 4.0-4.2 Granular humic material mixed with pinkish clay [?mixed by coring]

Borehole 4

(the sediment in the lower part of this borehole was much firmer and better consolidated than the humic sediments seen in the other sequences)

- 0.0-1.0 Material as at top of Borehole 3
- 1.0-1.6 Grey clay sand; a little charcoal
- 1.6-2.2 Grey clay sand with black patches (charcoal) and red-orange oxidised areas
- 2.2-3.0 Humic silt with wood, patches of calcareous sand (?rotted mortar), and a lump of ash (*Fraxinus*) roundwood
- 3.0-3.4 Dark humic silt with patches of ?lime/mortar
- 3.6-4.55 As last, with charcoal, and flecks of vivianite and pinkish clay

Appendix 2. Resources required for further analysis

(a) Staff

Task	Personnel	Time (hrs)
A. Project administration, liaison with MAP	RFp	2
	RFi	2
	RAi	2
B. Sample movement, repackaging, etc.	Tech	2
C. Sample processing	Tech	14
D. Recording biota (including data entry)	RFp	8
	RFi	1
	RAi	10
	RAmi	1
E. Sorting residues for bone; return of material to human bones specialist	Tech	14
F. Preparation of material for AMS dating	RFp	1
	Tech	3
G. Report preparation (including background research concerning history of All Saints Church)	RFp	16
	RFi	16
	RAi	8
	RAmi	4
Totals*	RFp	26
	RFi	19
	RAi	20
	RAami	5
	Tech	30

* Note that additional time for recording any human remains recovered via task E may need to be added to this.

(b) Consumables, etc.

Materials required for sample processing, computer recording, report preparation, and other costs not covered by overheads (nominal).	
Radiocarbon dates	