

**An evaluation of biological remains from
excavations at 104-112 Walmgate, York
(YAT site code 1991.21)**

[92/3]

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Methods

A series of nine samples for biological analysis and a modest collection of animal bone and a single human burial from excavations of medieval deposits at 104-112 Walmgate were submitted. The samples of sediment were all inspected and described in the laboratory and six of them selected for further analysis. From each of these, 1 kg subsamples were taken and submitted to disaggregation and paraffin flotation following methods described by Kenward *et al.* (1980). The resulting flots were examined for plant and invertebrate remains and washovers were obtained from the residues to provide further assemblages of plant remains. The residues were also examined for their content of other components.

Results

The samples are considered in context number order, with relevant archaeological information or excavator's queries in brackets.

Context 1038, sample 003 [C15th dump/levelling; high degree of burning; industrial waste including copper, slag, broken moulds]: mid grey-brown, just moist, dense, brittle silt with mm-scale mottles of black and reddish-orange common.

A 1 kg subsample was processed. The tiny flot contained a very few plant remains, almost all of which might have originated in wetland habitats; there were also a few tiny charcoal fragments and some ?modern root fragments. The only invertebrate fossil was a single poorly preserved head of an ant, perhaps *Myrmica* sp.; ants burrow freely so this could be intrusive. The residue consisted largely of burnt clay with sand and gravel up to 30 mm, some of the larger clasts exhibiting reddened and blackened faces. There was a little mortar up to 15 mm, mammal bone to 20 mm and a little fine charcoal, apparently not wood charcoal *sensu stricto*. Some of the baked clay showed impressions of plant stem/leaf fragments whilst some of the black clasts consisted almost entirely of compressed charred plant remains. Although plant material like grass or straw may have been deliberately used in the making of this fictile material, some may simply have been in contact with the clay when it was baked or during its useful life.

Context 1079, sample 007 [mid C10-mid C11 pit fill; particularly well structured peat, cess]: mid-dark brown, almost dry, crumbly to layered (with some lumps of fissile material), humic silt to amorphous organic sediment with compressed herbaceous detritus; this had the appearance of stable manure rather than human excrement, but the presence of abundant gut parasite (trichurid) eggs points towards an origin for at least part of the material in human waste.

The rather large flot and residue from a 1 kg subsample gave quite a rich assemblage of

identifiable plant macrofossils, of which the most abundant were seeds of blackberry (*Rubus fruticosus* agg.), opium poppy (*Papaver somniferum*), and the goosefoot *Chenopodium* Section *Pseudoblitum*; there were also quite a few endocarp ('core') fragments of apple (*Malus*), and traces of other food/flavouring plants such as summer savory (*Satureja hortensis*) and linseed (*Linum usitatissimum*). With these was a range of weeds (including arable and ruderal taxa) and some indicators of damp or waterside habitats. But the largest components of the residue were wheat/rye 'bran' and concretions similar to those recorded widely from urban archaeological deposits where human faeces are indicated.

Invertebrates were not very numerous, although there were modest numbers of fly puparia. The small group of beetles were typical of urban medieval deposits and included several taxa typical of cess pit fills. This evidence is compatible with that from the plants but adds little to it.

Context 1089, sample 008 [mid C10-mid C11 backfill deposit]: mid-dark grey, moist, low density, crumbly (slimy and sticky when wet) clay with lumps of light grey clay.

The 1 kg subsample yielded a tiny flot with only a few tiny fragments of charcoal and single seeds of toad-rush and an unidentified Campanulaceae. No arthropods were noted. The very small residue consisted of about 50% by volume of charcoal and other charred material, the remainder being very pale sand and a little gravel to 15 mm. The charcoal, which was up to 10 mm in maximum dimension included ?ash (*Fraxinus*) wood. Charred cereal chaff, probably all of oats (*Avena*), made up the greatest part of the washover, and there were a few grains or spikelets of oats, including at least one whole spikelet of cultivated oat, *Avena sativa*. The other plant remains were mostly uncharred and were a somewhat unusual mixture of plants from habitats including disturbed land and wet meadow/fen/waterside. It is not easy to determine how this deposit accumulated unless the 'clay' fraction was mostly fire ash.

Context 1092, sample 009 [mid C10-mid C11 pit fill; well preserved ?cess in situ]: dark grey-brown, low density, dry to just moist, crumbly to fissile and layered ash with layers of paler sandy material, but perhaps mineralised or reduced organic material.

The large assemblage of plant remains from the flot and residue point to an accumulation of human faecal material and ash. Wheat/rye 'bran' was abundant, especially in the finer fractions of the washover, and there were moderate amounts of apple endocarp and sloe (*Prunus spinosa*) fruitstones, though a range of weed taxa was also represented. There were indications of the early stages of mineralisation, consistent with a deposit rich in faecal material, but there was also some charred oat chaff (as in sample 008) and some lumps of charred material with a 'flaky' texture, reminiscent of burnt bran-rich food or food waste. Fly puparia were abundant in this sample - indeed, the rather large flot consisted of about 50% puparia. There was a small group of beetles typical of urban medieval deposits and subjectively indicative of rather foul conditions. A single fragment of the puparium of the sheep ked *Melophagus ovinus* was noted, perhaps pointing to wool processing or cleaning. There were a small number of charred fragments of insects including a probable fly larva.

Context 3017, sample 001 [undated dump; what process produced this deposit?]: bright orange, just moist, crumbly sand with some darker patches and inclusions of coarse orange baked clay; no further analysis undertaken. It appears that this material originated in the deliberate firing of clay or incidentally in a hearth of some kind.

Context 3024, sample 002 [later C14-15 backfill deposit; specific analysis of cess]: mid-dark grey-brown, just moist, crumbly (becoming plastic if moister), rather heterogeneous silty clay with components of buffish silt and whitish patches (?rotted mortar), contrasts of colour perhaps being related to humic content; there were a few stones 20-60 mm, a little charcoal, rotted mortar and brick/tile. No further analysis was undertaken.

Borehole samples

Borehole 3, sample 004 [depth 1.5-1.6 m; occupation layer? N.B. the samples from this borehole were all given context no. 9003 in the laboratory]: mid grey-brown, but somewhat varicoloured, moist, crumbly to plastic, somewhat heterogeneous, slightly sandy clay with some more sandy parts and perhaps some more humic parts. Probably 'natural' drift contaminated by occupation material.

A 1 kg subsample was processed. The tiny flot contained a small assemblage of plant macrofossils, mostly of weeds typical of urban occupation deposits and some of these were also represented in the plant remains - again mostly weed taxa - from the small washover (which otherwise consisted mainly of charcoal and very decayed wood fragments, including pine, *Pinus*). There were also traces of hazel (*Corylus avellana*) nutshell and a tentatively identified charred oat (*Avena* sp.) grain and a fragment of fish scale. There was thus certainly some slight evidence that occupation material was incorporated into this deposit, although this could have course have occurred during sampling; there were certainly a few small fragments of strawy plant material in the flot. There were no more than traces of poorly preserved insect cuticle.

Borehole 3, sample 005 [depth 1.7-2.0 m]: dark grey-brown, moist to wet, plastic, sticky, humic silty clay with some patches of organic detritus and some ?contaminant paler patches.

The tiny flot yielded a modest assemblage of plant remains and, together with the rather richer assemblage from the residue, quite a wide range of weeds of disturbed and cultivated land was represented, all in small amounts. There were a few aquatic and waterside taxa, but perhaps no more than are frequently recorded from otherwise clearly terrestrial urban archaeological deposits - these included toad-rush (*Juncus bufonius*) seeds in modest numbers, perhaps indicating the presence of wet tracks in the vicinity. A few taxa were plants of possible economic value: apple, hemp, barley (the single grain had begun to sprout). Again, occupation material is suggested, perhaps in an area with impeded drainage. A small group of insects was recovered, including beetles typical of urban medieval deposits; there were hints of foul matter.

Borehole 3, sample 006 [depth 3.1-3.4 m; to establish nature of natural]: mid brown, alternating with greenish grey-brown, moist, layered clay and fine sand in mm-scale laminations, and appearing gleyed in places, with some reduction to a black coloration.

The 1 kg subsample gave no discernible flint and the tiny residue of about 10 cm³ was mostly coal with some probable root trace casts, a tiny (?fish) bone fragment and a little sand and gravel. There were traces of charcoal and burnt bone, perhaps from occupation material, but otherwise the sediment appeared to have been a natural silt, perhaps a fluvial deposit.

Bone

Samples of bone were recovered from 66 contexts. Of these, 47 are considered in this report, the remainder being of questionable date and/or comprising no more than one or two unidentifiable fragments. By far the largest component (32 contexts) were of 12th-15th century date, most of these being of 14th-15th century date; there were nine Anglo-Scandinavian contexts and six post-medieval.

Preservation was generally good for all contexts, with little evidence of post-depositional fragmentation. The bone surfaces were free of evidence for gnawing, root/insect damage, or chemical or physical erosion. Bone from all periods in Trench 1 showed excellent preservation with the majority exhibiting green/blue staining, this being heavy in several contexts. In addition, many fragments had small globules of 'slag-like' material adhering to them, with brown staining at the points of contact. It would appear that the presence of bronze and iron staining, presumably the results of metal working in the immediate vicinity, had inhibited the activity of decay organisms and accounts for the excellent preservation.

From all periods, cattle bones were the most frequent, followed by sheep and pig. Equid fragments were present in small numbers only in 13th-15th century contexts. Goose and fowl were present in a few of the late medieval and post-medieval contexts and a single rabbit tibia also recorded from a post-medieval deposit. In addition, a single large fish bone and a crab claw fragment were found in separate 14th-15th century deposits.

A total of 72 measurable fragments was recovered from the assemblage, the majority (54) from cattle. Of these, 21 were from Anglo-Scandinavian deposits, 43 from later medieval and eight from post-medieval. There was a contrast in the number of measurable bones from the Anglo-Scandinavian deposits in Trenches 1 and 2, with 19 from five contexts in the former and two from the latter, whereas in the later medieval material there were 17 from 17 contexts in Trench 1 and 26 from 15 contexts in Trench 2.

A large proportion of the recovered bone showed evidence of extensive butchery. In addition, two fragments from 13th-15th century deposits may well indicate bone-working: a proximal cow metatarsal cut through the shaft and a cow-sized shaft fragment with knife marks present within the medullary cavity.

The human burial

A single incomplete human skeleton was recovered from 14th century deposits in Trench 1.

It consisted of skull, thorax, upper limbs and pelvis. All elements of the lower limbs were missing. These represent the remains of a fairly robust adult male aged approximately 30-40 years, based on tooth wear and appearance of the pubic symphysis. Preservation was good for all elements, with the skull showing similar green staining to that seen on some of the animal bone from Trench 1.

The dentition showed evidence of oral pathology which included severe calculus deposits, more prevalent on the right-hand side. In this case, the calculus deposit occurred on the occlusal surface of all the mandibular molars. The maxillary first and third molars were absent, the former almost certainly lost ante-mortem. In addition, the left dentition was more heavily worn, making age determination difficult. Moderate to severe periodontal disease had affected the whole dentition and enamel hypoplasias were present on incisors and canines.

The left clavicle appears to have suffered a fracture which had partly healed and the vertebral column showed extensive evidence of arthropathy in the form of mild to moderate bony exostoses present on all lumbar, and most thoracic and lower cervical vertebrae. In addition, some proximal rib fragments showed similar exostoses.

Implications

An opportunity to examine more material of early medieval date from this part of York should not be missed. At least two of the samples from the trenches indicated that quite good preservation is possible, although generally rather small amounts of identifiable organic material survived. By contrast, the excellent preservation of bone, especially in the area of Trench 1, means that any future excavations will produce valuable Anglo-Scandinavian and medieval material which should be collected systematically using appropriate recovery procedures. This would provide an important dataset for comparison with the large body of material of this date from the city centre. Obviously, the collection of information from further human burials in this area should be a high priority.

Reference

Kenward, H. K., Hall, A. R. and Jones, A. K. G. (1980). A tested set of techniques for the extraction of plant and animal macrofossils from waterlogged archaeological deposits. *Science and Archaeology* 22, 3-15.