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An evaluation of environmental evidence from excavations at 38 Piccadilly, York (YAT/Yorkshire Museum site code: 1992.4)

by

J. B. Carrott, K. Dobney, A. R. Hall,
H. K. Kenward and A. Milles

Summary

Nine of a series of 32 samples from excavations at 38 Piccadilly were processed for plant and invertebrate remains (with a further two being examined in some detail). Several of the samples proved to contain biological remains of considerable archaeological significance. Further work is essential. Bone, too, from this site has considerable potential and further excavation would provide an important group from an area of the city and from archaeological periods otherwise poorly represented. The deposits should be conserved or, if destruction is unavoidable, fully excavated and a substantial programme of environmental archaeology carried out.

Authors' address:

Environmental Archaeology Unit
University of York
Heslington
York YO1 5DD

Tel: 0904 433843-51

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Introduction

This report discusses the results of analyses of eleven of a series of 32 samples for invertebrate animal and plant remains and of hand-collected bone from deposits excavated from trial excavations at 38 Piccadilly, York (YAT/Yorkshire Museum site code: 1992.4)

Methods

Subsamples of raw sediment were examined in the laboratory for plant and invertebrate animal remains. A `rapid assessment' was carried out on nine of the samples. A `test' subsample (Kenward *et al.* 1986) of 1 kg was taken and processed by paraffin flotation (Kenward *et al.* 1980) to extract insect remains. Plant remains were recorded from the flot from paraffin flotation and from the residue. The remaining samples were described and their sedimentary characteristics recorded, but no further analysis was performed, except for a `spot' sample (for which a small subsample was processed) and one of the basal samples were bulk-sieving to 1 mm was undertaken.

The samples and results of the analyses

The analyses carried out on each sample, and the remains recovered, are described below, together with a laboratory description of the sediment. A brief archaeological description and/or interpretation of the context is given in brackets where available. The samples are presented in context order.

Context 1018 [C18/20th]

Sample 6: A spot find of a late 20th century latex prophylactic. No further analysis undertaken.

Context 1020 [dump above wicker and timber revetment; C16/17th]

Sample 1: dark grey-brown, moist, brittle to crumbly (working to just plastic), very humic, slightly sandy clay silt with patches/lenses of herbaceous detritus, traces of stones 2-6 mm, rotted limestone, shellfish (cockle, *Cerastoderma edule*), and brick/tile, and small (<1 cm) lumps of grey clay. Twig fragments were rather frequent, seen especially in the residue after processing.

A 1 kg subsample was processed. The flot was rich in insect and plant material. Insect preservation was very good. Subjectively, the material had a character seen (although more

clearly developed) in a number of assemblages from other sites which were interpreted as indicating stable manure. There were several specimens of the grain weevil *Sitophilus granarius*; this subsample was unusual in having *S. granarius* well represented in the absence of the other common stored grain pests.

The majority of the `seeds' from the flot and from the large residue were from plants of cultivated and waste ground, especially the cornfield taxa shepherd's needle (*Scandix pecten-veneris*) and corn marigold (*Chrysanthemum segetum*), but with grassland taxa such as buttercups (*Ranunculus* Section *Ranunculus*), self-heal (*Prunella vulgaris*) and bladder campion (*Silene vulgaris*) also rather frequent. There was a component of woodland plants represented by frequent buds and bud-scales of oak (*Quercus* sp.), with which the few dicotyledonous leaf fragments may also be counted. Such material is sometimes seen with grass/straw debris and may be part of a stable floor accumulation, although it may also be brushwood originating as a separate component. Most abundant, however, were fragments of grass culm, concurring with an origin in stable manure containing hay and/or straw. There were also unusual records for small-flowered catchfly (*Silene gallica*) and dwarf spurge (*Euphorbia exigua*). Cultivated plants were restricted to a single fragment of hemp, *Cannabis sativa*, and two seeds of fig, *Ficus carica.* Wetland taxa were few, but seeds of the toad-rush, *Juncus bufonius*, were abundant; this plant is typical of wet tracks and paths and is not therefore necessarily part of a riverside component. It is perhaps significant that aquatic insects were absent.

This material is clearly of substantial importance for archaeological interpretation of the context and the site, but even more so in providing a characteristic assemblage of plants and insects of late date. The authors know of no comparable C16/17th material and, as with some other samples from this site, it is essential that further work be carried out.

Context 1027 [for species identification of wicker; C16/17th]

Sample 2: the sample comprised wattle/wicker stems in the range 8-23 mm diameter; most were flattened to some extent and there was usually some bark remaining. In a few cases, unusually for material seen from excavations in York, there was evidence that the stems were not originally long and straight, since there were signs of side branches.Ten specimens were selected to represent a range of size and the results were as follows:

Willow (*Salix*): specimens with mean diameters of 8, 9, 12, and 19 mm (one each) and 21 mm (four specimens)

Hazel (*Corylus*): one specimen with a mean diameter of 18 mm

Oak (*Quercus*): one specimen with a mean diameter of 12 mm.

Context 1031 [wicker work and matrix; C16/17th]

Sample 3: dark grey-brown, moist, crumbly (working plastic), very humic, slightly sandy clay

silt, with coarse and fine herbaceous detritus, traces of bone, oyster shell, brick/tile and freshwater molluscs (*Pisidium* sp(p).); wicker in the diameter range 8-35 mm present, including willow (*Salix*).

The residue from the 1 kg subsample examined was rich in plant remains, especially twig and wood fragments, buds and bud-scales (oak and alder were both identified) and stem fragments and spines (modified leaves) of gorse (*Ulex* sp., probably common gorse, *U. europaeus*). A few of these were charred, as was a fragment of cotton-grass, *Eriophorum vaginatum*, stem, bearing its characteristic sclerenchyma `spindles' in the leaf sheath. The gorse was perhaps material originally intended as fuel, although there is ethnographic evidence for a wide range of uses.

As in the subsample from sample 1, there was a mixture of plants of weedy and grassland vegetation - especially stinging nettle, *Urtica dioica*, bent grasses, *Agrostis* sp(p)., oraches, *Atriplex* spp., and dyer's rocket or weld, *Reseda luteola*, and notably several fruits of the field scabious, *Knautia arvensis*, a species of rather dry grassland. Wetland taxa were rare, though toad-rush was again rather frequent. There were very few traces of human occupation debris, other than oyster shell, brick/tile and cinder; the only cultivated plant was barley, of which a single, sprouting charred caryopsis was recorded.

The insects from this subsample included a rich decomposer group with elements likely to have originated within a building and hints of `hay' and stable manure. As in the subsample from sample 1, context **1020**, there were several *Sitophilus granarius*, but no other grain pests.

A characteristic pronotum of a ground beetle which could not be matched with any in the British fauna was recorded. Almost certainly a *Pterostichus* of the subgenus *Melanius*, it had something of the appearance of a double-sized *P. gracilis*, but was clearly not *P. athracinus* or *P. niger* on several characters. The pronotal foveae were large, punctured, single, and delimited externally by parallel sharp ridges, not diverging anteriorly. The basal angles were distinctly toothed, with the margins in front of them plainly crenellate. No obviously similar species could be found by reference to the Scandinavian and Central European literature.

A single shell of the freshwater snail *Bathymophalus contortus* was also recorded from this subsample.

Clearly further investigation of this unusual material is required.

Context 1039 [hearth/fire residues? C16/17th]

Sample 5: varicoloured, but with a ground colour of dark grey-brown with streaks and patches of bright red and dark grey, moist to wet, silty clay sand with lumps of ?burnt mineral material with red/dark grey colour; ?much fine charcoal present.

A 100 g subsample was washed to 300 microns. The residue was rich in spines of gorse, as in the subsample from sample 3, together with a diversity of weeds of waste and cultivated ground, mostly preserved by `waterlogging', but with a small component of charred material, including charcoal and cinders (some of the gorse being charred, too). The brightly coloured material

appeared to have a fibrous structure and was evidently rich in iron (tested by simple qualitative methods), but could not be identified further. It is possible that salts had been precipitated onto some other kind of material. It seems very unlikely that this was an ore or pigment, as such.

Context 1040 [wicker and matrix; C16/17th]

Sample 4: dark grey-brown, moist, crumbly (plastic when worked), slightly sandy silty clay with abundant wicker fragments in the diameter range 8-50 mm, and traces of bone, *Pisidium* (a small freshwater bivalve) and fly puparia. No further analysis undertaken.

Context 1045 [pond silt; C14/16th]

Sample 7: mid/dark grey-brown (internally black), moist, cheesy-brittle, humic, silty clay with herbaceous detritus, and traces of land and freshwater molluscs and of vivianite.

Deposition of biota in an aquatic environment was evident from a proportion of the plant and invertebrate remains seen in the 1 kg subsample processed: there were considerable numbers of ostracods and water-flea (*Daphnia*) resting eggs, a variety of aquatic beetles and bugs (including several water-boatmen, Corixidae) and waterside and aquatic plants including water-plantain (*Alisma* sp., of which there was a whole fruiting head, in addition to isolated carpels), hornwort (*Ceratophyllum demersum*) and yellow water-lily (*Nuphar lutea*).

Terrestrial insects included a small group of assorted, typically urban, decomposers, a grain beetle (*Oryzaephilus* sp.) and some ground beetles. Terrestrial plants were abundant and included cornfield weeds, waste ground plants, with a few *Sphagnum* leaves (?from peat), and traces of `useful' plants - apple endocarp (`core'), flax capsule fragments and wheat/rye `bran', no doubt part of the occupation debris which also included brick/tile, slag, ?daub and charcoal. Snails from this sample were all freshwater forms: *Anisus vortex*, *Planorbis planorbis*, *Lymnaea peregra* and *Bithynia leachii*.

The flot included a very large number of fragments of insect larvae and pupae, probably of aquatic taxa.

Sample 8: essentially the same lithology as sample 7, but a somewhat firmer and more compressed slightly silty clay. No further analysis undertaken.

Context 1047 [pond silt; C14-16th]

Sample 9: mid/dark grey-brown (with red-brown coloration in places), moist, cheesy-brittle, almost crumbly (but working plastic), humic, silty clay with herbaceous detritus and traces of molluscs and brick/tile. No further analysis undertaken.

Sample 10: same lithology as sample 9, but includes lumps of red-brown iron-r-rich ?slag; the ground colour was perhaps slightly paler. No further analysis undertaken.

Context 1048 [pond silt; C14-16th]

Sample 11: mid grey-brown (black internally), moist, cheesy-brittle (working plastic and slightly sticky), more or less humic, silty clay with a little herbaceous and woody detritus and traces of twig fragments.

The residue from the 1 kg subsample examined was rich in wood fragments up to 15 mm. The smaller plant material included rather abundant small fragments of flax (*Linum usitatissimum*) capsule (with whole and fragmentary seeds of the same plant), and a variety of plants of waste and cultivated land, mostly in small numbers. There were *Sphagnum* leaves in modest numbers, some of them *S. imbricatum*, a taxon of raised bog peat, and the list of cultivated taxa also included apple (endocarp), `cherry' (*Prunus* Section *Cerasus*) and fig, all in trace amounts.

The flot consisted almost entirely of insect remains, mostly fragments of larvae and pupae. The recorded beetles may all have arrived randomly (`background fauna'), but the decomposers and some other elements offered hints that there had been dumping of organic debris.

There were a few aquatic organisms but no clear evidence for the nature of the environment of deposition. The lithology, however, was undoubtedly that of a well-sorted waterlain deposit.

Sample 12: same lithology as sample 11, but ?charcoal present, and occasional sandy partings of irregular conformation. No further analysis undertaken.

Context 1051 [pond silt; C14-16th]

Sample 13: mid/dark grey-brown (internally dark grey), moist, soft, cheesy, kneading to plastic and slightly sticky, humic clay (having the appearance of a deposit formed in deep, still water). No further analysis undertaken.

Sample 14: same lithology as sample 13. No further analysis undertaken.

Context 1053 [pond silt; C14-16th]

Sample 15: mid/dark grey-brown, moist, slightly humic, slightly silty clay with a texture very like solid barm (yeast), being somewhat crumbly on first working (with a kind of conchoidal fracture), then becoming more or less plastic.

There were only a few traces of arthropod remains in the flot and plants were rare in the small (approximately 50 cm^3) residue; they cannot reasonably be interpreted, though the presence of traces of brick/tile, mortar, charcoal, eggshell and pot indicate that some occupation debris

were being incorporated. It seems most likely that deposition of this sediment was taking place in deep water, far from the edge of the Foss; the lithology showed clearly that deposition was in slowly-moving or still water.

Samples 16-18 (inclusive): same lithology as sample 15. No further analysis undertaken.

Context 1054 [pond silt; C14-16th]

Sample 19: lithology essentially similar to that for **context 1053**, perhaps rather more brittle when first handled and a slightly humic clay silt. No further analysis undertaken.

Samples 20-21: lithology as for sample 19. No further analysis undertaken.

Context 1055 [pond silt; lowest layer sampled; C14-16th]

Sample 22: mid/dark grey-brown, moist, soft, plastic, humic silty clay with very small numbers of snails and root traces, and a few tiny fragments of brick/tile.

There was, again, a small flot and residue (the latter about 20 cm^3), this time with more evidence for aquatic deposition, for *Daphnia* ephippia were abundant, together with some other cladoceran resting eggs, numerous ostracods and large numbers of cladoceran valves. Statoblasts of *Crystatella*, another aquatic organism were also present.

Aquatic insects, however, were extremely rare, only a single *Helophorus* sp. being recorded, and aquatic plants were very limited in number and variety. Terrestrial insects, too, were sparse and may well have been transported. This deposit seems to have formed in rather deep water, well away from the banks. Evidence for snails from this subsample comprised opercula from two *Bithynia* sp. and a shell of a *Valvata* sp., probably *V. macrostoma*; these are freshwater forms.

Sample 23: lithology as for sample 22 but with patches of darker (reduced) sediment; freshwater bivalves present. No further analysis undertaken.

Sample 24: lithology essentially as for sample 22, but slightly more brittle. No further analysis undertaken.

Context 1056 [sandy build-up over cobbled surface; C10/11th]

Sample 25: mid grey-brown, waterlogged, unconsolidated clay sand with traces of stones 2-20 mm, limestone fragments, twig fragments, bone, oyster shell and waterworn charcoal.

The most abundant plant taxa in the flot and residue from the 1 kg subsample examined were stinging nettle, water-pepper (*Polygonum hydropiper*) and swine-cress (*Coronopus squamatus*) which together suggest disturbed land with some nitrification, perhaps with seasonal flooding in places. There were traces of aquatic and waterside taxa and a modest range of terrestrial kinds.

Insects were not very abundant and included both aquatic and terrestrial forms. The terrestrial species constituted a very typical `urban' group, and included decomposers from a wide range of habitats. They offered no evidence for dumping. A considerably larger subsample would have to be processed to give an interpretable group, but this assemblage may have been rich in `background fauna' and deposited in or by water.
Molluscs from this subsample included many shells of *Pisidium* sp(p). and single shells of *Valvata* sp. (probably *V. macrostoma*), *Lymnaea truncatula* and *L. peregra*, all indicative of freshwater habitats but offering no specific interpretative detail.

A further assemblage of molluscs was obtained from a bulk-sieved subsample of context 1056. It comprised *Sphaerium* and *Pisidium* valves, *Valvata piscinalis*, *Planorbis planorbis*, *Anisus vortex*, *Lymnaea peregra* and *L. truncatula*, all taxa of freshwater habitats. This bulk-sieved subsample also yielded some wood fragments to about 40 mm maximum dimension and a small assemblage of hazel (*Corylus*) nutshell fragments.

Samples 26-28 (inclusive): similar lithology to sample 25, with *Pisidium* and waterworn brick/tile in sample 26, a larger number of inclusions (and some lumps of rather drier sediment within matrix) in sample 27, and some large fragments of stone (to 100 mm) and oyster shell (to 40 mm) in sample 28. No further analysis undertaken.

Context 1057 [build-up over cobbled surface; C10/11th]

Sample 29: mid grey, moist, silty sand with traces of bone fragments and tiny brick/tile fragments, very worn oyster shell and metallic slag to 30 mm (with locally more silt/clay or more sand).

Arthropods were rare in the 1 kg subsample processed, only a few beetles and a single corixid bug being noted in the flot. There was a limited range of plant remains from taxa of waste ground and waterside habitats, with traces of some `useful' plants - hazel nutshell, apple endocarp and linseed.

A bulk-sieved subsample of this context yielded a small assemblage of freshwater molluscs: *Pisidium/Sphaerium* spp., *Lymnaea peregra*, *L. truncatula*, *Valvata piscinalis* and *Planorbis planorbis*. This subsample also gave a modest amount of wood fragments up to about 60 mm and some hazel nutshell fragments.

context 1060, interpreted as a `cobble surface', and a pig distal radius fragment from an Anglo-Scandinavian context, 1058.

Examination of the additional bulk-sieved samples indicated that, in certain contexts, more fragmentation had occurred. This was particularly true of the Anglo-Scandinavian deposits, which contained numerous unidentified bone fragments of less than 2 cm in length.

A small degree of gnawing was apparent, almost exclusively from 16th-17th century sheep bones, and the damage done was characteristic of cat. A single sheep tibia from 10th-11th century deposits showed the characteristic damage of dog gnawing to the distal end, as did a horse humerus fragment from the possible 3rd century deposit 1062. It would appear that most of the bones from all contexts had been incorporated into their respective deposits relatively quickly, with limited exposure to the range of pre-depositional destructive processes. However, evidence of butchery was very evident on most elements, mainly from Roman and Anglo-Scandinavian deposits. The presence of jaws, many fragments of rib and vertebrae, and distal limb elements, may indicate the presence of primary butchery waste from these periods. Some show evidence of both chops and knife marks and several cattle metacarpals appear to have been split longitudinally. The single horse humerus from context 1062 showed evidence of multiple knife marks indicating the possible consumption of horse flesh during the 3rd century.

Evidence of worked bone is wholly absent from the hand collected assemblage, but a complete cow metacarpal from 10th-11th century 1058 showed evidence of unnatural wear along the cranial aspect of the shaft, perhaps the beginnings of a bone skate or some other utilitarian object.

The hand-collected assemblage from Roman and Anglo-Scandinavian deposits is dominated by the remains of cattle, followed by sheep and pig. Sheep appear somewhat more common in later deposits, but any conclusions regarding the relative frequency of species is difficult to draw from such a small assemblage. Horse is represented by only a few fragments in Roman and 18th-20th century contexts. Fowl appear in all but 11th-12th century deposits and are most common in 16th-17th century contexts. Remains of chicken from Roman deposits show evidence of cut marks and there was one bone which may have borne evidence of an infection. Goose (*Anser anser*) is represented only in post-medieval deposits. Other species include a single red deer (*Cervus elaphus*) mandible fragment from a 16th-17th century context, dog bones of a large size from two Anglo-Scandinavian contexts, a single cat metatarsal from a 16th-17th century context and a small number of fish bones, comprising four large gadid vertebrae, all from post-medieval deposits.

Systematic screening of some of the Roman and Anglo-Scandinavian deposits indicated that few of the deposits contained unusually large amounts of fish and no small mammals or birds. Additional fish material recovered from bulk-sieving included 14 herring (*Clupea harengus*) vertebrae and a further 19 unidentified remains. The representation of major domestic species was slightly different; sheep appeared to be better represented in these earlier deposits.

From the total hand-collected assemblage, 57 bones for which useful measurements could be taken were recovered (11 from Roman levels, 16 from Anglo-Scandinavian, 17 from 16th-17th

century and 13 from 18th-20th century). In addition, 12 mandibles with teeth still present were recovered (4 from Roman deposits, 5 from Anglo-Scandinavian, 2 from 16th-17th century and one from 18th-20th century deposits). This is a relatively high proportion from such a modest collection and certainly reflects the excellent preservation of this material, particularly in the 3rd and 10th-11th century deposits.

Implications of the bone assemblage

The quite superb preservation of the animal bone assemblage from Roman through to the early post-medieval period, coupled with the potentially large quantity of bone which could be both measured and assigned to an age-at-death category, renders a larger assemblage from this site of great importance.

A large, well preserved, post-medieval assemblage would prove valuable since little emphasis has been placed on assemblages of this late date. In York to date, the only post-medieval material to have been recorded in detail is that from sites in The Bedern, Aldwark and Walmgate. A similarly large Roman assemblage would also provide important and basic information to compare with the few others of this date so far recovered, i.e. those from General Accident/Tanner Row (published) and Stakis (unrecorded). Anglo-Scandinavian material from this site, practically adjacent to the area of the Coppergate excavations, would significantly broaden our perspectives of animal exploitation during this period and provide additional information concerning changes in use of the area through time.

The lack of significant numbers of small mammal, fish and bird remains, particularly from the bulk-sieved residues, is disappointing but interesting.

Recommendations for retention of samples and bones

It is essential that all samples of unprocessed sediment, flots and residues from processed subsamples, plant and animal remains extracted from samples, and all bone be retained for the foreseeable future.

References

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