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**An evaluation of environmental evidence from
excavations at 50 Piccadilly, York
(YAT/Yorkshire Museum site code: 1992.10)**

by

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Summary

Ten of a series of 27 sediment samples submitted were examined for plant and invertebrate remains. Some of the deposits were rich in fossils and had a very great potential as sources of archaeological information. The bone assemblage, although not large, was interesting and also potentially informative. These deposits require careful conservation or, if threatened, full excavation.

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Introduction

This report discusses the results of analyses of invertebrate animal and plant remains and of hand-collected bone from deposits excavated from trial excavations at 50 Piccadilly, York (YAT/Yorkshire Museum site code: 1992.10).

Methods

Each of the 27 samples of raw sediment submitted was examined in the laboratory and their lithology recorded using a standard pro forma. A 'rapid assessment' was carried out on subsamples of ten of the samples: for these, 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.

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 2035 [build-up around revetment timbers; C14/15th]

Sample 1: dark grey-brown, moist, crumbly to slightly brittle (working to just plastic), highly humic sandy silt with traces of limestone, wood, bone, oyster shell and coal fragments, gastropods, and abundant brick/tile. No further analysis undertaken.

Context 2036 [dump below horizontal timbers 2014; C14th]

Sample 2: dark, slightly brownish-grey (locally dark pinkish-brown where clay more highly concentrated), moist, plastic to crumbly, humic, sandy silty clay, with traces of limestone fragments, wood fragments, bone and brick/tile and patches of mid brown clay. No further analysis undertaken.

Context 2037 [build-up around revetment timbers; C14th]

Sample 3: dark grey-brown (with slight orange-yellow cast from sand content), moist, crumbly to brittle (to just plastic when worked), sandy clay silt with frequent limestone fragments and traces of bone, brick/tile and pot.

A 1 kg subsample was processed. It gave a modest flot (consisting mostly of insect remains) and residue (mostly grey sand with some plant detritus). Beetles and bugs were not very abundant and included aquatic and terrestrial species, with a mixed group of typical urban decomposers and some phytophages likely to have been associated with weedy vegetation. Most of the plant taxa identified were weeds of waste and cultivated ground, notably stinging nettle and purple dead-nettle (*Lamium* Section *Lamiopsis*), but with fragments of the submerged aquatic *Ceratophyllum*. There was a single seed of greater celandine, *Chelidonium majus*, a plant typical of terrestrial habitats around buildings.

The biota thus gives no clear evidence for the origin of this deposit but it seems most likely to be a mixture of dumped material (perhaps scraped from a ground surface) with waterborne sediment, an aquatic environment perhaps being indicated by a single operculum of a water-snail, *Bithynia* sp.

Context 2042 [wicker/dumping over collapsed timbers; C14th]

Sample 7: mid/dark, slightly orange grey-brown, moist, plastic to just crumbly, somewhat heterogeneous, humic slightly sandy silty clay with coarse herbaceous detritus, traces of stones 6-20 mm, limestone fragments, wood fragments, oyster shell, and abundant brick/tile; locally very plastic brown sandy clay, elsewhere more crumbly. No further analysis undertaken.

Context 2043 [peaty build-up/wattle; C14th]

Sample 4: mid/dark yellow-brown, moist, layered, fibrous, compressed herbaceous detritus (looking very much like compressed straw) with silty material between the organic debris.

Not surprisingly, there was a huge residue from the 1 kg subsample processed. The bulk of it consisted of grass/straw culm (stem) fragments, with a suite of 'seeds' almost exclusively of cornfield taxa, suggesting the material was wholly or mostly cereal straw. 'Heads' and involucral bracts of knapweed/cornflower (*Centaurea* spp.) were frequent and some of the whole specimens were close to cornflower, *C. cyanus*; most if not all of the achenes of *Centaurea* present also seemed to be this taxon. Another component of the sample was legume pod fragments, the largest about 15 x 8 mm; these could be from a large *Vicia* (vetch, tare) species (but not field bean, *V. faba*) or perhaps from field pea (*Pisum sativum*); considerable further work would be involved in making a secure determination.

Insects were extremely rare, but very well preserved. They included some individuals which may have been imported with the plant material (*Apion* sp., including a freshly-emerged specimen, and a *Phyllotreta* sp.) and some decomposers likely to represent rapid colonisers.

Sample 5: same lithology as sample 4, but more wattle included; some humic sand and mid-brown clay in small patches. No further analysis undertaken.

Context 2044 [build-up around revetment timbers; C14th]

Sample 6: mid grey, moist, plastic to just crumbly, humic, slightly sandy silty clay with traces of stones 6-20 mm, limestone fragments, non-marine gastropods and bivalves (including *Pisidium*, *Lymnaea*, *Sphaerium*), and small fragments of brick/tile; the sediment has the appearance of having been formed in still/slow-moving water.

The modest-sized flot from the 1 kg subsample examined consisted mostly of fragments of immature insects. There was a small group of decomposers typical of urban deposits and a modest aquatic component. This material would probably give an interpretable group if a 3 kg subsample were processed.

Plant remains represented a variety of taxa of weedy habitats, especially places with nitrification and impeded drainage, but no clear group predominated.

Possibly most of the biological remains were redeposited from material dumped elsewhere; some fragments of freshwater mussel shell (to 25 mm maximum dimension) doubtless represent animals living in the sediment, as would shells of the freshwater snails *Bithynia tentaculata* and *Lymnaea truncatula*. A further snail, *Cochlicopa* sp., however, is a terrestrial form.

Context 2058 [riverside dump; C13th]

Sample 8: dark brown to grey-brown to grey (with paler yellow-brown patches), moist, brittle, layered, fibrous herbaceous detritus in a matrix of (?sandy) clay silt, with traces of charcoal, shellfish (freshwater mussel); looks like compressed 'grass' haulms.

The residue from the 1 kg subsample processed was rich in grass/straw material with a suite of plant remains including many taxa repeatedly recorded from this kind of detritus and likely to represent cut grassland vegetation - presumably hay. Some of the insects are likely to have been imported with such material, for there were newly-emerged individuals of *Apion* sp. and *Hypera* sp. There were also modest numbers of decomposers likely to invade hay, and hints of an origin within a building. There were a few grain beetles and a single *Tipnus unicolor*. There were traces of aquatic crustaceans and molluscs - including *Bithynia tentaculata*, *Gyraulus albus* and *Valvata* sp. - but no prominent aquatic component of animals and plants.

Sample 9: same lithology as sample 8. No further analysis undertaken.

Context 2087 [build-up; mid C13th/early C14th]

Sample 10: mid grey-brown (with some black reduced patches internally), moist, stiff (more crumbly where sandy and more plastic where more clayey), somewhat heterogeneous silty clay to sand with traces of small fragments of brick/tile and freshwater mussel shell.

The modest flot and residue from the 1 kg subsample examined were rather rich in plant remains, notably weeds of ground with nitrification, such as

Coronopus squamatus, *Solanum nigrum* and *Urtica dioica*; other weeds present in modest or large numbers were henbane (*Hyoscyamus niger*), annual nettle (*Urtica urens*) and weld (*Reseda luteola*), but there was a diversity of weeds present in small numbers and a few taxa more typical of grassland habitats and rare aquatics, such as a single pyrene of the pondweed *Potamogeton pectinatus*.

Aquatic insects were rare, but ostracods were rather common. There were assorted decomposer beetles, all typical of urban sites, a single flea, a grain weevil (*Sitophilus granarius*), and a specimen of the spider beetle *Tipnus unicolor*. Larvae of two click beetles, *Athous* sp. and *Melanotus* sp. were noted. Processing a larger subsample would probably provide an interpretable assemblage.

Context 2091 [dumping; C14th; ?land reclamation]

Sample 11: mid/dark grey-brown, moist, plastic to sticky, humic, very slightly sandy silty clay with traces of stones 6-20 mm and wood fragments.

The very small flots and small residue from the 1 kg subsample examined were both characterised by an abundance of pods and seeds of swine-cress, *Coronopus squamatus*, a plant of waste places, especially trampled areas; there were also frequent seeds of the goosefoot *Chenopodium* Section *Pseudoblitum*, nutlets of water-pepper and achenes of stinging nettle. They suggest deposition in an area of nitrification, perhaps by water and the restricted nature of the plant assemblage perhaps points to *in situ* accumulation rather than dumping, unless the dumped material was very clean. The few insects recorded were insufficient for interpretation.

Context 2104 [build-up; C11/12th]

Sample 12: mid/dark grey-brown, moist, crumbly to brittle, (?slightly humic), slightly sandy clay silt with traces of stones 2-20 mm and brick/tile, small patches of paler sand and some vivianite. No further analysis undertaken.

Context 2110 [small dump beside cobble surface 2111; C3rd]

Sample 13: dark grey-brown, waterlogged, plastic to sticky, slightly sandy, silty clay with traces of stones 60-200 mm and limestone fragments (including rotted limestone). No further analysis undertaken.

Context 2111 [cobbled surface; mid C3rd]

Sample 14: dark grey, moist, crumbly, sticky, plastic (especially when worked), sandy clay silt with traces of stones 2-20 mm, bivalve shell, brick/tile and pot. No further analysis undertaken.

Context 2112 [build-up under cobbles 2111; C3rd]

Sample 15: same lithology as sample 14 with large fragment of flaggy micaceous, fine-grained sandstone. No further analysis undertaken.

Context 2114 [dumps with ashy residues; C3rd]

Sample 16: dark brown (with slight yellowish cast), wet to waterlogged, sticky, soft (plastic when worked), sandy silty clay with traces of stones 6-20 mm and charcoal and a distinctly 'earthy' feel.

Context 2119 [backfill of linear feature 2123; C2nd]

Sample 17: dark grey-brown, plastic to crumbly to sticky, sandy silty clay with traces of stones 2-6 mm and limestone fragments; this sediment appears to have a low density and is gritty when rubbed between the fingers. No further analysis undertaken.

Context 2120 [backfill of linear feature 2123; C2nd]

Sample 18: lithology more or less the same as for sample 17 but slightly more brown in colour, and slightly crumblier, but still working plastic; sticky, as in 17; this has perhaps been a soil *sensu stricto* at some stage. No further analysis undertaken.

Sample 19: same lithology as sample 18. No further analysis undertaken.

Context 2121 [backfill of linear feature 2123; C2nd]

Sample 20: dark grey-brown, wet, soft, sticky, crumbly to plastic, sandy silty clay with traces of stones 20-60 mm and brick/tile. No further analysis undertaken.

Context 2122 [backfill of linear feature 2123; C2nd]

Sample 21: mid/dark grey-brown, waterlogged, plastic, sticky, sandy silty clay with frequent stones 2-6 mm.

There were hardly any insect or plant remains in the 1 kg subsample examined; most of the plant remains were types rather resistant to decay and give no useful interpretative information, though single charred grains of barley and a hexaploid wheat were present.

Context 2124 [dump of burnt residues]

Sample 26: mid/dark grey-brown, wet, plastic, sticky, sandy, silty, clay, with traces of stones 20-60 mm, bone fragments, and patches of paler orange material and ?burnt/rotted fine-grained sandstone.

The residue from the 1 kg subsample processed included some amorphous lumps of ?compressed ash to 35 mm maximum dimension, with traces of charcoal, ?burnt peat, brick/tile, coal, and pot. Plant and insect remains were effectively absent.

Context 2127 [build-up and dump; ?C2nd]

Sample 22: mid brown, moist, crumbly (working plastic) and slightly sticky, sandy silty clay with traces of stones 2-20 mm; feels slightly gritty between the fingers but this grittiness disperses on rubbing (?ash). No further analysis undertaken.

Context 2131 [backfill of ditch 2132, cut into natural]

Sample 23: dark grey, moist, very stiff, rather heterogeneous, silty clay with some herbaceous detritus, traces of stones 2-6 mm and wood fragments, and with paler yellow-brown sand patches and some darker humic material and blue-grey clay.

Aquatic deposition was attested by the extremely abundant *Daphnia* ephippia in the flot and residue from the 1 kg subsample examined; aquatic insects were rare but there were several bionid flies, some species of which are much given to drowning on water surfaces. There were small numbers of decomposer insects representing dry to foul habitats and various phytophages (two of them nettle-feeders) and other plant-associated taxa likely to have occurred in an area of weedy waste ground. There were also a few grain beetles.

The plants likely to have formed the local vegetation included stinging nettle (achenes abundant in the residue), hemlock (*Conium maculatum*), fat-hen (*Chenopodium album*), goosefoots in *C. Section Pseudoblitum*, chickweed (*Stellaria media*) and buttercups (*Ranunculus* Section *Ranunculus*). 'Useful' plants were represented by traces of fig, opium poppy (*Papaver somniferum*) and box (*Buxus sempervirens*, leaf fragment).

Context 2133 [backfill of ditch 2134, cut into natural]

Sample 24: mid grey-brown (with mid brown patches), moist, slightly brittle to crumbly to plastic, sandy silty clay, with traces of stones 2-20 mm and wood fragments.

The flot from the 1 kg subsample processed consisted mainly of insect remains, including many adult beetles and a few bugs. There were a few aquatics and the remaining fauna appeared to be extremely mixed but to consist predominantly of species likely to have lived in an area of rough grazing. A head of a shieldbug was recovered and is discussed further under sample 27 (below). Plant remains from this subsample were essentially similar to those from sample 27 (q.v.).

Sample 27: mid/dark grey-brown, moist, brittle to crumbly to plastic, humic slightly sandy silty clay, with traces of stones 2-20 mm, bone fragments and brick/tile; a sediment with rather a low-density.

The rich plant assemblage from flot and residue included numerous annual weed taxa, most notably chenopods (*Chenopodium ficifolium* and *C. polyspermum*), annual nettle, chickweed, purple dead-nettles, and oraches, with the perennial stinging nettle, docks (*Rumex* spp.), burdock, elder and self-heal - altogether a flora of disturbed places but with some semi-permanent vegetation. Opium

poppy, celery seed, fig, wheat (a single charred grain of a hexaploid species) and barley (a single charred grain of hulled six-row barley) represent traces of 'economic' plants.

The insects had broadly similar implications to those from the subsample from sample 24.

A part-pronotum of a characteristic shieldbug was recovered. It is likely that this was of the same species as the head recovered from sample 24, but the remains could not confidently be matched with any British species or any descriptions appertaining to the central European fauna. It was perhaps a *Sehirus* species.

This context deserves considerable further investigation; it stands as the only well-preserved *in situ* deposition of early Roman date so far recorded from the area S.E. of the Foss.

Context 2136 [natural]

Sample 25: light brown (more greyish in parts), moist, plastic to stiff to sticky, somewhat heterogeneous, slightly sandy silty clay with small orange patches; there is no reason to suppose that this is not a natural clay derived from the local drift.

Implications of the sediment samples

Roman deposits examined were mostly clearly waterlain silts, containing few plant or invertebrate fossils.

The Roman ditches carried water, although whether they were permanently wet is uncertain. They also appear to have received plants and insects from the nearby vegetation, which was probably weedy waste ground. Grain beetles were found, but there was no strong component indicating buildings nearby.

It is remarkable that at several sites in York and elsewhere the earliest phase of Roman occupation is represented by the cutting of a series of ditches. The biota of the present one was similar to those from many other such ditch deposits in York, London and Carlisle. It will be interesting to discover whether this represents continuation of a native tradition or a Roman innovation, perhaps prescribed by the military 'rulebook'.

A deposit of 13th century date gave clear evidence of hay, presumably deposited from animal litter. Grain pests were present in 13th-14th century material, conforming to the pattern observed elsewhere.

In the 14th-15th century deposits, various material were dumped, into water, at the site. There was evidence of weeds and associated insects, perhaps from ground clearance, and of straw.

If the shieldbug remains from context 2133 are truly of an exotic species, and not simply an aberrant specimen of a British one, they may be of considerable importance as evidence of climatic change, or of long-distance trade.

These deposits will provide useful information for the planned YAT 'Roman' and 'rivers' projects. It is important that more work should be carried out on the material already recovered. Some of these deposits are of exceptional importance and they should be conserved or, if in danger from development, fully excavated with adequate provision for research in environmental archaeology.

The animal bone assemblage

A small assemblage of animal bones was recovered from the site, amounting to no more than two standard-sized (30 cm-cubed) boxes. As for the bone from excavations at 38 Piccadilly (code 1992.4), material ranged in date from mid Roman (late 2nd-mid 3rd century) to late post-medieval (18th-19th century). The majority of remains, however, were recovered from Roman and late medieval deposits. All material represented hand-collected fragments with very limited numbers originating in GBA samples.

Preservation ranged from fair to good with only some material showing the dark staining characteristic of many waterlogged deposits. There was often a range of preservational states present within single contexts, which may indicate mixing of material or changing ground conditions through time. Vivianite flecks were present on bone fragments from all periods and perhaps indicated a high water content in the majority of contexts at some time after accumulation. However, differences in preservational state may suggest fluctuations in water content with time.

Cattle were the most commonly represented domestic animal in terms of total number of fragments, followed by sheep and then pig. A single horse atlas fragment was recovered from a mid 3rd century deposit. However, with such small numbers of bones, any estimation of relative frequencies of species is fraught with problems. Fowl and goose (*Anser anser*) remains were represented by a total of four fragments each, all from 14th-15th and mid 3rd century deposits. A large chicken tibiotarsus from 14th-15th century levels showed pathological changes to the distal end, indicative of infection.

Other species present in the assemblage included four fragments of domestic dog present from 16th-17th, 14th-15th and late 2nd-mid 3rd century deposits, an articulated immature cat skeleton and additional skull from two 13th century contexts, a single fallow deer (*Dama dama*) metatarsal fragment from 14th-15th century contexts and a hare (*Lepus cf. timidus*) metatarsus from late post-medieval deposits.

The GBA samples contained a few additional species: from 2044 (14th century) a complete black rat (*Rattus rattus*) mandible and five fish fragments (one vertebra identified as herring, *Clupea harengus*), and from 2058 (13th century) a complete grey partridge (*Perdix perdix*) carpometacarpus.

From the total assemblage, 25 measurable fragments were recovered, the majority (14) deriving from late medieval (7) and Roman (7) deposits. Only five mandibles with intact teeth were recovered.

The human remains

A number of human bone fragments were recovered from the uppermost (18th-19th century) deposits from the site. On more detailed inspection they were found to represent a very mixed and poorly preserved assemblage constituting the remains of a number of individuals.

Context 2004 contained the disarticulated remains of at least seven individuals represented by two occipital, two innominate fragments, five tibiae, seven femur, a single humerus and a complete mandible. All derived from mature adults with the exception of a proximal femur fragment which was unfused. On the basis of tooth wear, the mandible appears to represent an individual of around 25 years of age. The pelvis had narrow sciatic notches, indicating the sex of both as male.

Context 2006 again contained the sparse and disarticulated remains of at least two individuals. These were represented by three proximal tibiae fragments, a right innominate, a single humerus shaft, five metacarpals (all from the same individual), a single radius, a single lumbar vertebra, and a proximal phalanx. One proximal tibia fragment remained unfused, indicating a juvenile, whilst a small Schmorl's node was evident on the vertebral body of the lumbar vertebrae.

Context 2002 contained only six broken long bone fragments, a single ulna, clavicle and thoracic vertebral body.

Context 2001 contained a single femur and humerus, tibia, clavicle some mixed small fragments of metacarpals and a single isolated mandibular canine tooth.

Implications of the bone assemblages

The animal bone assemblage from this site is too small for any firm conclusions to be drawn. Most of the material was obtained from Roman and late medieval deposits and only a modest bone assemblage might be recovered from these periods if further excavation were carried out. However, preservation is variable and evidence of variability within contexts suggests that differential preservation might present problems. It is important to consider both the possible occurrence of well-preserved Roman material, and the lack of substantial Anglo-Scandinavian material. Although only metres apart, the bone assemblages from the excavations at 38 and 50 Piccadilly reveal some interesting differences in terms of quantity and quality and therefore further work in this area is to be encouraged.

It is obvious from the disarticulated and fragmented nature of the human remains that these have been redeposited. Since preservation is so poor and no whole individuals are represented, little useful information would be forthcoming from a larger assemblage.

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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