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*Report on investigations of biological samples from boreholes
and trenches at Garden Place, York
(YAT/Yorkshire Museum code 1989.6)*

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[90/8]

A series of samples from boreholes undertaken by Solmek Ltd. of Middlesbrough, together with three from trial trenches, were submitted to the Environmental Archaeology Unit by York Archaeological Trust for examination of their content of biological remains and to observe their lithology in more detail.

The boreholes

The deeper boreholes all proved 'bedrock' of till, a stiff brown 'boulder clay' below (contexts 1010 and 2008), and a stiff red/brown 'boulder clay' (context 1009) above this in a single hole (no. 2):

1010 - samples 206, 207, 304, 404, 606, 704,
2008 - samples 807, 1005, 1105, 1305, 1504,
1009 - sample 205.

Above the 'boulder clay' was a layer of gravel (contexts 1008 and 2007):

1008 - samples 204, 303, 403, 605, 703,
2007 - samples 806, 1004, 1104, 1304, 1503.

A deposit of stiff, laminated clay with sand lenses (contexts 1007, 2006) lay over the gravel:

1007 - samples 203, 302, 402, 604, 702,
2006 - samples 805, 1003, 1103, 1303, 1502.

Above the laminated clay was a substantial layer of organic silty clay or clay silt (contexts 1005, 2002), though separated in places from it by a thin band of sandy silty 'boulder clay' (contexts 2004, seen in holes 8, 9, 10, and 2005, seen in hole 13) or a thin bed of gravel (context 1006, seen in hole 2):

1006 - sample 202,
2004 - samples 804, 1002,
2005 - sample 1302;

1005 - samples 201, 301, 401, 501, 601, 603, 701,
2002 - samples 802, 803, 1001, 1301, 1501.

Within 2002 was a body of gravel, 2003, proved only in hole 11:

2003 - sample 1102;

and 2001 was a bed of silty organic clay with brick fragments on top of 2002, seen only in hole 11:

2001 - sample 1101.

In addition, sample 801 was taken from unstratified deposits described as 'modern', from the upper part of hole 8.

All the samples have been examined in the laboratory and a standard lithological description made. Decisions were then made about subsequent analyses. In some cases, subsamples of 1, 2 or 3kg were disaggregated and washed to 300µm. (These subsamples were given a subsample suffix /T and are described below as 'test' samples). Standard paraffin flotation procedures were then used to extract any insect cuticle from these test subsamples and the residues were stored wet in sealed polyethylene bags. Subsequently, those residues containing obvious organic matter were sieved into fractions of 300µm, 1mm, 2mm and 4mm, and a little of each fraction checked quickly for plant remains and other

components. Those residues with little or no obvious organic material were air dried and examined briefly for their constituents. In addition, the dried weights of these residues were recorded to assess crudely the proportion of the sample larger than 300µm as a rough guide to the coarseness of the sediment.

Other samples - usually those where there seemed little likelihood of organic remains being present - were 'bulk-sieved' to 1mm, the residues dried and then examined briefly.

In the following account, the samples have been grouped by context, following the scheme outlined above.

Context 1010/2008:

Sample 206: mid-dark brown, stiff, slightly sandy clay with abundant stones 2-6mm, and traces of stones 6-20mm and 60-200mm. A 2kg subsample was tested. The residue was small and consisted mainly of sand and gravel with stones to 30mm, including dark grey shelly limestone, sandstone and quartzite.

Sample 304: mid brown, plastic to stiff, slightly sandy clay with some faint reddish mottles and lumps of rotted sandstone, and modest numbers of stones 2-20mm. A 1kg subsample was tested. The residue was small and comprised sand and gravel to 20mm.

Sample 404: red-brown, stiff, slightly sandy silty clay, with modest numbers of stones 2-20mm. A 1kg subsample was tested. There was a small residue mainly of quartz sand, with some gravel to 30mm, including limestone and sandstone.

Sample 606: mid grey-brown, plastic to sticky, sandy clay with traces of stones 2-6mm. A 1kg subsample was tested. The small residue of sand and gravel included stones of micaceous sandstone and gritstone to 30mm.

Sample 704: mid-dark brown, plastic, humic, slightly sandy clay with mottles on 10mm and 50mm scales, modest numbers of stones 2-6mm and traces of stones 6-20mm. A 1kg subsample was tested. There was a small residue of sand and gravel with stones to 40mm, including subangular limestone and micaceous sandstone. The paraffin flot contained a few fine coal fragments and scraps of unidentifiable plant detritus.

Sample 807: light-mid purplish-brown, very stiff, sandy silty clay, with modest numbers of stones 2-20mm. A 1kg subsample was tested. The small residue was of sand and gravel, with stones to 20mm.

Sample 1005: mid purplish-brown, stiff and sticky, sandy silty clay, with abundant stones 2-6mm. A 1kg subsample was tested. The small residue comprised sand and gravel to 20mm.

Sample 1105: mid purplish-brown, plastic, sandy silty clay with silty partings, and traces of stones 2-20mm. A 13kg subsample was bulk-sieved. The small residue consisted almost entirely of sand and gravel in the range 2-10mm, with a few pebbles to 50mm. There was evidence of modern contamination in the form of wood fragments.

Sample 1305: purple-brown, oxidising to mid-brown, stiff, sticky, sandy silty clay with abundant stones 2-20mm and traces of stones 20-60mm. A 1kg subsample was tested. The small residue of sand and gravel included stones to 30mm.

Sample 1504: mid purplish-brown, plastic to stiff and sticky, slightly sandy clay with modest numbers of stones 2-6mm and some darker patches of ?unoxidised clay. Modern contamination by algae. A 1kg subsample was tested. There was a small residue of sand and gravel to 20mm.

Context 1009:

Sample 205: mid grey-brown, plastic to stiff, slightly heterogeneous, slightly sandy clay, with some variation in particle size and state of oxidation; traces of stones 2-20mm, including some reddish ?rotted sandstone. A 1kg subsample was tested; it gave a small residue of sand and gravel to 30mm, with a little coal.

Summary of contexts 1010/2008/1009

These basal deposits have all the characteristics of a till ('boulder clay') typical of the kind seen in many parts of central York. The percentage retention of sediment after sieving to 300µm is consistently in the range 14-30% (rather smaller for the single sample bulk-sieved to 1mm), indicating how much of the fabric was fine-grained, argillaceous material. There were no insect remains from any of the samples from these contexts.

Context 1008/2007:

Sample 204: light-mid brown coarse sand and gravel with abundant stones 2-60mm. The whole sample of approximately 15kg was bulk-sieved. Only sand and gravel to 50mm were present in the residue.

Sample 303: mid brown coarse sand and gravel 2-60mm. The whole sample of approximately 15kg was bulk-sieved; the residue comprised sand and gravel to 50mm.

Sample 403: mid brown coarse sand and gravel 2-60mm. The whole sample of approximately 15kg was bulk-sieved. The residue comprised sand and gravel to 30mm, with a few cobbles to 100mm.

Sample 605: mid brown coarse sand and gravel 2-20mm in a sandy clay matrix. Apart from a 1kg subsample which was tested, the remainder of the sample (approximately 15kg) was bulk-sieved. The rather large residue (about 80% of the original weight) from the test subsample consisted of sand and gravel with pebbles to 40mm, including angular to rounded micaceous sandstone with small amounts of chalk, flint, and gritstone, with a trace of (?contaminant) metallic slag. The residue from the bulk-sieved sample was mostly gravel in the range 5-10mm with a few stones to 30mm and a trace of coal and brick/tile.

Sample 703: mid brown coarse sand and gravel 2-60mm. The whole sample of approximately 15kg was bulk-sieved. The residue comprised sand and gravel with a few stones 30-100mm.

Sample 806: a varicoloured coarse sand and gravel 2-60mm. The whole sample of approximately 15kg was bulk-sieved. The residue comprised sand and gravel mostly in the range 2-10mm, with quite a few cobbles 100-150mm, and a single lump of overfired brick (?contaminant).

Sample 1004: varicoloured (the individual clasts were very varied in their colour) unconsolidated coarse sand and gravel 2-60mm with angular to rounded pebbles of dark grey reef (Carboniferous) limestone, sandstone and ?magnesian limestone. The whole sample of approximately 20kg was bulk-sieved; the residue was mostly coarse sand and gravel 5-15mm, with some stones to 50mm, much iron staining, and some clasts of poorly cemented ?ferruginous sandstone.

Sample 1104: mid yellow-brown sandy gravel 2-60mm. The whole sample of approximately 20kg was bulk-sieved. The residue comprised sand and gravel, mostly in the range 2-10mm, but with a few stones 50-100mm.

Sample 1304: mid brown, unconsolidated (thixotropic) sand with abundant stones 2-60mm and perhaps a little silt. The whole sample of approximately 19kg was bulk-sieved. The residue comprised a large 2-10mm fraction with a few stones to 100mm.

Sample 1503: mid yellow-brown, unconsolidated sandy gravel, with abundant stones 2-20mm and moderate numbers of stones 20-60mm. The whole sample of approximately 19kg was bulk-sieved. The residue was predominantly gravel with stones to 100mm but a higher proportion of 'pea gravel' (clasts about 10mm) than samples from context 1008.

Summary of contexts 1008/2007:

This gravel is likely to be outwash from till and other glacial deposit in the area as the area was deglaciated. The percentage of material retained on a 1mm mesh by bulk-sieving was much higher than for the till below - values were in the range 40-90%. There were no insect remains.

Context 1007/2006:

Sample 203: light-mid brown, plastic to sticky, silty clay, with abundant stones 2-6mm and moderate numbers of stones 6-20mm. A 1kg subsample was tested; there was a small residue of sand and gravel to 30mm, the stones mostly rather rounded sandstone.

Sample 302: mid orange-brown, plastic to crumbly, rather heterogeneous clay layered with bands of fine sand, clay and bluish clay. A 3kg subsample was tested; the residue was very small, and rich in fine-grained ?root/burrow concretions, with traces of brick/tile, charcoal, shell and a little plant detritus including seeds of fig (*Ficus carica*) and pods of swine-cress (*Coronopus squamatus*). The paraffin flot contained a few tiny scraps of *Triticum/Secale* 'bran', and a very small number of insects.

Sample 402: mid-dark orange-brown, plastic to brittle, laminated fine sand and clay, the laminations at a scale of a few mm thickness; some bluish clay. From the 3kg test subsample, a small residue of sand and gravel was obtained which comprised sand and gravel with some stones to 25mm; there were quite a lot of small brick/tile fragments, with fine-grained ?root/burrow concretions, traces of glassy slag and charcoal. The flot contained various aquatic crustaceans - ostracods, *Daphnia*, and other cladocerans, as well as a few poorly preserved insect remains, both aquatic and terrestrial. There was a single fruit of the aquatic plant *Zannichellia* and propagules of two probable weed taxa.

Sample 604: mid orange-brown, plastic to crumbly, laminations of fine sand and clay, with bluish-grey clay. The 3kg test subsample gave a very small residue, mostly of calcareous ?root/burrow concretions, with traces of brick/tile, coal

and charcoal.

Sample 702: mid orange-brown, plastic to brittle laminated fine sand and clay. A small residue was obtained from the 3kg subsample tested; it was mostly ?root/burrow concretions with a modest component of brick/tile to 30mm. There was also a little plant detritus, including *Coronopus* pods and a *Scirpus lacustris/maritimus* nutlet, and traces of mollusc shell.

Sample 805: varicoloured (but basically gingery-brown with some grey partings), laminated silty clay with abundant sandy partings, and laminations of silt, clay and fine sand. Only a tiny residue of sand and angular gravel to 20mm was left from the 1kg test subsample.

Sample 1003: light-mid gingery-brown, layered silty clay with a few stones 20-60mm, and sandy partings. The 1kg test subsample left a tiny residue of sand and gravel to 10mm.

Sample 1103: light-mid, somewhat pinkish to purplish-brown, plastic to stiff, laminated clay with abundant silty partings and evidence of gleying. A very small residue of sand and gravel and stones to 30mm was left from the 1kg subsample, but the bulk was ?root/burrow concretions.

Sample 1303: light-mid, stiff, finely laminated clay with abundant silty partings and ?gleying (blue-grey mottle on brown ground). There was a very small residue left from testing of a 1kg subsample; it was mostly ?root/burrow concretions, but with some wood, charcoal and bone fragments.

Sample 1502: mid gingery-brown, plastic to stiff and sticky, slightly sandy, silty clay, with irregular internal laminations, substantial sandy partings, the partings grey against a brown ground colour. A 1kg subsample was tested; the residue was very small and comprised ?root/burrow concretions 1-3mm in size with a little sand and gravel to 40mm.

Summary of contexts 1007/2006: this distinctive laminated clay represents an episode of deposition in an aquatic environment with much lower energy than that which deposited the till or the gravel. The most likely conditions would be still or sluggish water with occasional episodes of inwash of coarser material. Two samples gave evidence for plants usually associated with human occupation; if these are not contamination from later deposits they suggest that the upper part of the clay probably formed no earlier than the 1st century AD.

Context 1006/2004:

Sample 202: mid yellow-brown, plastic clayey sand with evidence of oxidation/reduction, traces of stones 2-6mm and abundant stones 6-200mm. The 1kg test subsample left a large residue of sand and gravel with pebbles to 40mm, including angular and rounded clasts of micaceous sandstone, and traces of ?iron-stained tufa, glassy slag, charcoal, wood and bone and some ?modern root fragments. There were only a few scraps of insect cuticle, all of terrestrial taxa. There was also an *Oryzaephilus* (grain weevil).

Sample 804: blackish, oxidising to orange-brown, sandy clay with abundant gravel 2-60mm. There was quite a large residue remaining from the 1kg test subsample, mainly of sand and gravel, with stones to 30mm, including grit-stone, micaceous sandstone and limestone, and with traces of brick/tile.

Sample 1002: mid-dark grey-brown (reduced) to yellow-brown (oxidised) sticky to unconsolidated clayey sand with abundant gravel 2-60mm. The whole sample of approximately 15kg was bulk-sieved; the residue was mostly gravel 2-40mm, subangular to rounded in shape and including micaceous sandstone and grit-stone.

Summary of contexts 1006/2004:

Contexts 1006 and 2004 appeared to be a gravel- and sand-rich clay, perhaps reworked till. The content of occupation debris in the samples from holes 2 and 8 suggests that it may have been dumped into the river (these layers were only observed in the western parts of the transects).

Context 2005:

Sample 1302: light-mid brown, plastic to stiff to sticky, silty clay with some sandy partings (though less clearly stratified than in samples from contexts 1007/2006), patches of grey/brown mottle (gleying) and very rare stones 6-20mm. A 1kg subsample was tested; the residue was small and comprised sand and gravel and rather rounded stones to 40mm, and modest amounts of charcoal. There were remains of weeds of cultivated and waste ground in the flot and residue, notably *Coronopus squamatus* fruits. Aquatic taxa (*Potamogeton*, *Myriophyllum spicatum* and *Ranunculus* Subgenus *Batrachium*) were present in trace amounts. There were a few, poorly preserved, insect remains; only two were identifiable - one aquatic (a corixid bug) and one terrestrial (*Trox scaber*).

This 'sandy boulder clay' proved to have formed in water but with an input of remains from weeds growing nearby or deriving from deposits dumped into the river.

Contexts 1005 and 2002:

Sample 201: black, plastic, humic, slightly sandy clay silt with coarse herbaceous detritus. The residue from the 1kg test subsample was smallish and rich in plant detritus with sand and fine gravel, and shell (probably freshwater mussel) fragments to 15mm. Closer inspection of the flot and residue gave a modest list of plant taxa, including modest numbers of fig (*Ficus carica*) seeds, willow (*Salix*) fruits and lesser spearwort (*Ranunculus flammula*) achenes. The bulk of the other taxa were weeds, both arable and waste-ground types, with a few other taxa indicating moist soils, but no other true aquatics. The only foodplant other than fig was a single achene of strawberry (*Fragaria vesca*).

The flot contained modest numbers of insects, and little else. There were several *Sitophilus granarius* and some *Oryzaephilus surinamensis*, both common pests of stored grain, and other typical urban insects (for example, *Xylodromus concinnus*, *Lathridius minutus* group (several), *Aglenus brunneus*, and *Tipnus unicolor*). The material was probably of post-Conquest date on the basis of the insect fauna.

Sample 301: mid-dark black (oxidising to grey-brown), plastic to brittle, humic clay or silt with traces of brick/tile and few seeds and beetle fragments visible; a distinct smell of rotting organic matter. A very small residue was left from the 1kg test subsample - it was mostly plant detritus and

sand, with some fine gravel-sized brick/tile fragments.

Though the paraffin flot yielded only a small amount of plant detritus and insect cuticle, there were small numbers of ostracods and a few *Sphagnum* leaves, including *S. imbricatum*, a species likely to have been present in old peats in the region and deposited through erosion of peat or perhaps through importation and later dumping of peat by the local inhabitants. The leaves of *Leucobryum glaucum* might also have arrived in this way, and the leafy shoot fragments of heather (*Calluna vulgaris*) is another probable peatland indicator.

Evidence of human occupation is provided by the modest amounts of brick/tile, seed and capsule fragments of flax (*Linum usitatissimum*) and fig seeds, as well as the weeds of cultivated soils and waste ground. Deposition in water is indicated by ostracods and seeds of yellow water-lily (*Nuphar lutea*).

The rather large paraffin flot consisted mostly of well-preserved insect remains. There were some aquatics (e.g. *Colymbetes fuscus* and a corixid), but most of the insects were terrestrial, including representatives of a variety of habitats; there were some phytophages and grain pests.

Sample 401: black, oxidising to mid grey-brown, plastic to brittle/elastic, humic silt. From the 1kg subsample there was a very small residue of sand and gravel, especially brick/tile and mortar to 15mm. Moderate amounts of charcoal and some plant detritus, fish scale, bark, mammal bone, and beetles and a trace of glassy slag; plant remains noted were *Agrostemma githago* (seed fragment), *Quercus* (bud-scale) and *Reseda luteola* (seed). The paraffin flot contained traces of ostracods and *Daphnia ephippia*. There were not many insects and their preservation was rather unusual. There were various aquatics and some terrestrial insects from rotting matter. There was a *Sitophilus granarius* and a death-watch beetle, *Xestobium rufovillosum*, but no sign of a community indicating dumping.

Sample 501: mid-dark grey-brown (with internal black patches), brittle, humic silt with comminuted snail shell fragments, abundant mottles at 10 and 50mm scales. The whole sample (1.07kg) was tested; the smallish residue was mostly plant detritus and sand, with one very large bone fragment, some gravel to 30mm (though mostly brick/tile fragments less than 4mm). Snails were extracted after careful disaggregation prior to paraffin flotation and examined by TOC.

Together, the flot and residue gave a rather large list of identifiable plant taxa, including modest numbers of willow (*Salix*) fruits, water-plantain (*Alisma* sp.) carpels, celery-leaved crowfoot (*Ranunculus sceleratus*) and stinging nettle (*Urtica dioica*) achenes, together with plants of aquatic and waterside habitats, weeds of arable land and waste ground and a few fig seeds likely to have originated in occupation deposits or sewage. (A single herring, *Clupea harengus* precaudal vertebra was recorded from the snail assemblage); this must also have originated in urban refuse. *Daphnia ephippia* were again moderately common. There were abundant insects, which were well preserved and the greater part of the flot was made up by arthropods. There was a rich variety of eurytopic aquatic beetles and bugs, including *Colymbetes fuscus*, *Hydrobius fuscipes*, *Helophorus* and *Ochthebius* species. There were decomposers from various habitats, *Sitophilus granarius* and *Oryzaephilus* from grain, *Anobium punctatum* (woodworm) and other typical urban species. There were, however, also beetles and bugs that probably originated in semi-natural conditions.

A small assemblage of 58 snails from this subsample indicated very

slow-moving, not stagnant water, with plenty of vegetation in the vicinity and quite hard ($> 20\text{mg l}^{-1}$). The presence of *V. macrostoma* is interesting: this taxon is now limited to a few locations in the Fenland and in well-vegetated marsh drains at sites in the south coast of England

Sample 601: dark grey-brown (internally black), plastic to brittle/elastic, humic, slightly sandy clay silt, with some vivianite and highly oxidised iron-rich patches and traces of stones 2-6mm and 10mm scale mottles. The first 1kg test subsample left a small residue of sand and gravel to 30mm, mostly brick/tile, with some charcoal, coal, glassy slag, mussel shell, bone, mortar and a very little plant detritus. The result was very similar for the second 1kg test subsample. There were a few poorly preserved insects in the flots, both aquatic and terrestrial; the latter included an *Oryzaephilus ?surinamensis* and some decomposers.

Sample 701: dark grey, oxidising to mid-dark grey-brown, brittle silty clay with some fragments of brick/tile. The 1kg subsample tested left a very small residue of sand and gravel to 15mm, with c.50% brick/tile and traces of charcoal, bone and plant detritus. There were modest numbers of ostracods and *Daphnia ephippia* in the paraffin flot, together with a single *Sphagnum* leaf. Indeed, the flot consisted mostly of arthropod remains. There were a few aquatic beetles (*Colymbetes fuscus*, *Ochthebius* sp., *Helophorus* sp.) and some terrestrial beetles, both urban (e.g. *Sitophilus granarius*) and from semi-natural habitats.

Sample 802: mid grey, oxidising to mid grey-brown, stiff, slightly sandy, silty clay with traces of ?charcoal, and vivianite throughout the fabric of the sediment in some places. A 3kg subsample was tested; the small residue was mostly of orange-brown rounded pellets of ?iron-rich concretions, with some brick/tile and stones to 10mm, traces of bone and of charcoal.

Sample 803: no record of description or processing; sample presumed not to have been provided by YAT.

Sample 1001: mid-dark grey (oxidising to olive, via mid grey-brown), very stiff, brittle to crumbly, humic, slightly sandy, slightly silty clay. The 3kg test subsample yielded a small residue mostly of sand and gravel and small rounded iron-rich pellets and a few ?root/burrow cast fragments; there was quite a lot of plant detritus, modest charcoal, and traces of mussel shell, brick/tile (mostly 1-2mm), brown and colourless glass, glassy slag, mammal bone and a large mammal tooth fragment.

The paraffin flot contained modest numbers of *Daphnia ephippia* and several weed taxa. There were a few insects in an unusual state of preservation. The remains were of terrestrial forms, with some very rotted remains of very durable forms such as large robust weevils. There was very little further information from the residue.

Sample 1301: dark grey, crumbly to brittle, somewhat heterogeneous, humic silt with some light brown sand patches. A 2kg subsample was tested; the residue resulting was quite large, with much organic matter, especially wood and charcoal and some bark to 40mm and a mineral component of sand and angular to rounded limestone pebbles to 50mm. There was also a little brick/tile and some (?freshwater) mussel shell. The flot and residue provided a modest list of plant taxa, including moderate numbers of dock (*Rumex*) nutlets, swinecress (*Coronopus squamatus*) fruits, and stinging nettle (*Urtica dioica*) achenes. With them were several other weed taxa, mostly indicative of nutrient rich soils typical of occupation sites with abundant organic waste. Deposition presumably took place in water, since traces of ostracods were present, but

there was a single plant taxon suggestive of ditch or riverside habitats - *Rorippa islandica*. There were modest numbers of urban terrestrial insects, some plant-associated forms, and a few aquatics.

Sample 1501: black (oxidising to dark grey-brown), plastic to slightly brittle, humic, silt clay with freshwater mussel shell. A very small residue was left from the 1kg test subsample. It comprised plant detritus, sand, fine gravel (to 10mm) mostly of limestone, and brick/tile. The paraffin flot contained traces of ostracods and several weed taxa, modest numbers of beetle fragments and a *Sphagnum* leaf; the residue gave a small list of plant taxa including arable weeds and plants of waterside and aquatic environments. A single freshwater snail, *Bithynia tentaculata*, and fragments of freshwater mussel, *Anodonta* sp., were also recorded from this subsample. The flot consisted mostly of arthropod remains. There were some aquatics, but most of the identifiable remains were terrestrial. There was a single *Oryzaephilus ?surinamensis*.

Summary of contexts 1005 and 2002: the input of occupation debris was clear in these rather richly organic deposits. They are most likely to have formed in still or slowly-flowing water, the remains of weeds and foodplants having been sorted from dumps near the bank - or perhaps from dumped deposits upstream of the present site.

Context 2003:

Sample 1102: greyish-brown, oxidising to yellow-brown, plastic to sticky, clayey sand with abundant stones 2-60mm. The whole sample of approximately 19kg was bulk-sieved. The residue was mostly of gravel to 50mm, though mainly 5-20mm, with a little brick/tile.

Context 2001:

Sample 1101: mid-dark grey, very heterogeneous, ?humic, sandy, clay silt with light-mid brown (oxidised) sand and traces of brick/tile. The 1kg test subsample left a small residue of fine sand and gravel, with angular brick/tile and fine-grained micaceous sandstone to 50mm; a modest component of charcoal, a little plant detritus, bone and a *Sambucus nigra* seed. The only insect was an entire, modern drosophilid fly.

'Modern' (unstratified):

Sample 801: dark grey, plastic, slightly sandy silty clay, with traces of stones 20-60mm, ?eggshell and moderate amounts of fine brick/tile fragments; no further analysis undertaken.

Samples from trenches

Three samples from trenches were also examined.

Sample 1, Trench B, depth 5.2m: black, oxidising to dark grey, crumbly to brittle, very humic, silty amorphous organic sediment and woody and herbaceous

detritus with traces of wood fragments. A 1kg subsample was tested and gave modest amounts of wood and a trace of charcoal, and one large worked piece of ash wood (*Fraxinus*). Between them, the flot and residue gave evidence of food- and other useful plants (fig, flax, hemp and summer savoury), a wide range of weeds of various kinds, and some aquatic and waterside taxa. Most important were nutlets of the nitrophile weed pale persicaria (*Polygonum lapathifolium*), with modest numbers of achenes of buttercup (*Ranunculus* Section *Ranunculus*), leaves of the woodland/heathland/moorland moss *Leucobryum glaucum*, oak (*Quercus*) buds/bud-scales and stinging nettle (*Urtica dioica*) achenes. With yellow water-lily seed and *Daphnia ehippia* present, it is likely that the deposit was waterlain, but included some occupation debris and plant remains from local weed vegetation. An intriguing record is for a leaf fragment of box, *Buxus sempervirens*, perhaps an ornamental plant in the town.

The flot was quite large and consisted mainly of insect remains. The majority were urban terrestrial forms, but there were some aquatics (*Helophorus aquaticus* or *grandis*, *Ochthebius* sp.) - taxa often encountered in terrestrial deposits. The terrestrial forms included *Sitophilus granarius* and *Oryzaephilus ?surinamensis*, *Lathridius minutus* group, *Tipnus unicolor*, *Anobium punctatum*, *Aphodius* sp., and *Phyllotreta nemorum* group: typical urban medieval taxa.

Sample 2, Trench B, depth 6.8m: mid-dark grey (with reduced black streaks), humic, slightly sandy silt with abundant coarse and fine herbaceous detritus. A 1kg subsample was tested and gave modest numbers of wood fragments. The list of plant taxa from flot and residue included moderate amounts of oak buds/bud-scales, seeds of fig and strawberry, leaves of *Leucobryum glaucum*, seeds of yellow water-lily, and fragments of nutlets of the cornfield weeds black bindweed (*Bilderdykia convolvulus*) and corncockle (*Agrostemma githago*). These last two, together with the traces of apple (*Malus*) seed and endocarp ('core') and coriander (*Coriandrum sativum*) mericarp, perhaps suggest the incorporation of food remains from kitchen waste or perhaps faeces in this deposit. Since *Daphnia* and *Ceriodaphnia ehippia* and a modest number of aquatic insects (e.g. a corixid bug and *Colymbetes fuscus*) were present, the deposit was probably waterlain. There were several of each of the grain pests *Sitophilus granarius* and *Oryzaephilus ?surinamensis* and a quite large group of other terrestrial forms, mostly typical of urban archaeological deposits. There was also evidence of herbaceous vegetation and open ground. There were quite large numbers of decomposers, including *Aglenus brunneus* but no evidence of a community such as might be found in dumped organic waste.

Sample 3, Trench C, depth 5.0m (to be compared with samples 1 and 2): mid-dark grey-brown, plastic to crumbly, humic sandy clay silt, with moderate amounts of bivalve (*Anodonta*, freshwater mussel) shell. A 1kg subsample was tested molluscs being removed after gentle disaggregation and prior to paraffin flotation. It contained a large fragment of tile. The list of plant taxa from flot and residue was rather smaller than those from samples 1 and 2, and somewhat different. There were modest numbers of fruits and buds of willow and seeds of dyer's rocket (*Reseda luteola*), with a range of other weeds and traces of flax capsule fragments. *Potamogeton* and *Nuphar* suggest deposition in water, as do the moderate numbers of ostracods. Besides the freshwater mussel, there were three further freshwater mollusc species of no further interpretative value. The abundant, well-preserved insects included some beetle larvae. The majority of the beetles were terrestrial decomposers, with some phytophagous and open-ground forms. There was a single *Sitophilus granarius*. A few aquatics were noted. This group may have included more insects from dumped material than seen in other samples.

Recommendations for further work at this site

The uppermost layer for which samples have been analysed (1004/2002), containing considerable evidence for organic human occupation debris deposited in an aquatic or aquatic-marginal environment, warrants more detailed examination by means of trenches. In particular, changes along a section normal to the inferred river edge would be especially welcome, to investigate in more detail how the deposits formed in relation to possible hydrological changes and to see how rubbish dispersed from the banks.

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