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Plant and invertebrate remains from Anglo-Scandinavian deposits at 16-22 Coppergate, York: Technical Report

Part 5: Period 5C

Summary

This Technical Report provides a sample-by-sample account of the plant macrofossil and invertebrate remains (apart from hand-collected shell) from deposits dated to the fifth major part of the Anglo-Scandinavian sequence (Period 5C: mid-later 11th century) at 16-22 Coppergate. Samples are arranged into groups according to the position of the context from which they were taken by feature type or location on the site.

Keywords: YORK; ANGLO-SCANDINAVIAN (PERIOD 5C); 16-22 COPPERGATE; PLANT MACROFOSSILS; PARASITE EGGS; INSECTS; FLY PUPARIA

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Part 5: Period 5C

Introduction to this series of data archives and *Technical Reports*

The account of the non-vertebrate biological remains from Anglo-Scandinavian deposits at 16-22 Coppergate presented by Kenward and Hall (1995) was necessarily extremely condensed and it was impossible to publish, even in microfiche, the very large volume of data (there were at the time of writing, for example, nearly 19,000 records of identifiable plant remains from samples from 397 contexts, and about 25,000 records of adult beetles and bugs representing over 53,000 individuals). These archives and *Technical Reports*, published as *Reports from the EAU, York*, are intended as a means of placing on record the data behind the narrative of Kenward and Hall (1995).

In the data archives, information concerning timber identifications, records of other macrofossil plant remains, of insects, and of other invertebrate groups, is presented separately. The datasets for some of these groups are too extensive to produce under single covers and are thus presented as a series of separate parts. Unless stated otherwise, data have normally been sorted by context number to facilitate cross-reference with lists of contexts, samples and phasing information.

In the *Technical Reports*, accounts are structured by period, tenement and feature type, and include brief outlines of the implications of the recorded biota at the sample or subsample level.

(N.B. An account of the stratigraphic sequence and, in particular, the nature of the structures recorded, is in preparation at the time of compiling these archives and reports. The phasing used here follows that provided by York Archaeological Trust during 1997 and may be subject to slight modification when the sequences are eventually published.)

Abbreviations used for type of sample (see Dobney *et al.* 1992):

BS	'bulk-sieved' sample
C14	sample for radiocarbon dating
GBA	'general biological analysis' sample
Spot	'spot' sample

For GBA subsamples, '/T' indicates a 'test' subsample (*sensu* Kenward *et al.* 1986; Kenward 1992) usually examined for both insect and plant remains; '/M' represents a subsample specifically processed for recovery of plant remains alone (usually of 0.5kg, with '+' used to indicate subsamples larger than 0.5kg and '*' indicating those of smaller weight); '/1', '/2' etc. are subsamples for which insects have been studied, but plant remains usually have not. A set of additional subsamples—mostly from floors of Period 4B—examined during 1998 and intended in part to plug some gaps in the coverage of context type and tenement, is designated by '/T3'; most of these were of 2 or 3kg.

For BS samples, 'V' indicates that remains extracted by 'rough sorting' from the residue have been recorded (i.e. they have only been examined during general sorting for all classes of remains and also for artefacts, by staff or volunteers with little archaeobotanical expertise). 'W' and 'R' indicate that material from the washover and from the residue, respectively, has been examined by means of a more thorough examination (by ARH).

Methods

Practical and interpretative methods are summarised in the publication text. For insect remains see also Kenward *et al.* (1986) and Kenward (1992).

Results of the analyses

For each of the periods covered by the separate *Technical Reports* in this series, material is discussed under feature types in the following order:

- (i) contexts forming part of a structure, including post-pits, construction trenches, and so on, and alignments of posts and/or wattle;
- (ii) floors and other deposits within buildings—these include contexts identified by the excavators as ‘made’ floors *sensu stricto*, and the deposits that built up on them during use, other use-phase deposits (including hearths and the fills of cuts of all kinds inside buildings), and dumps and other backfills of building cuts;
- (iii) external deposits immediately around and between buildings, particularly in the strips between them (identified as ‘alleyways’ for Period 4B);
- (iv) external surface deposits in the area behind each building or set of buildings;
- (v) fills of cuts identified as ‘pits’;
- (vi) fills of other cuts (gullies, wells, etc.), and of features described by the excavators as ‘scoops’ and here given the purely descriptive term ‘depressions’.

Naturally, not all context types are necessarily represented at all periods.

Within each context, a brief description of the archaeological nature of the deposit (provided by the excavators) and a brief, mainly lithological, description, taken from the context card, are given. In the discussion of results, bulk-sieved (BS) samples (if any) are dealt with first (except where subsamples of GBAs have been bulk-sieved but no detailed record made of their content), followed by general biological analysis (GBA) samples, and then spot and other types of samples (chemical, C14, wood, etc.). For GBA samples, there will usually be a series of sections as follows: (a)

sample description (made in the laboratory); (b) results of analyses of plant macrofossils; (c) results of analyses of the eggs of parasitic worms; (d) results of analyses of insects and other arthropods (this section deals primarily with adult beetles and bugs, but includes an outline of other groups). For cuts, fill contexts are dealt with as far as possible in order from stratigraphically lowest to highest.

The primary purpose of these *Technical Reports* is to reveal the reasoning leading to the very condensed form of presentation used in the publication text (Kenward and Hall 1995). The text of the *Technical Reports* was written prior to 1994 (some in the mid 1980s) and has not been more than very superficially revised. It has not been possible to take account of subsequent re-phasing or re-interpretation, or of recent developments in interpretative methods, so that there are some inconsistencies with the published report (in particular, revisions to the insect species lists will not be reflected in the statistics presented in the *Technical Report* texts, although the data archives give definitive statistics).

Bearing in mind the nature of these texts, they should not be used as a source for citation without consultation with the authors, though the species lists and statistics given in the data archives may be used safely.

Period 5C: introduction

In this latest phase of the Anglo-Scandinavian period at Coppergate, buildings were reconstructed at the front of Tenement D (5/10, 5/11) and a new building erected at the rear of the site, behind Tenement C (5/12). Deposits of this period were only recognised at the front of Tenements C and D, and across the rear half of the area of excavation, these two areas being distinguished in documentation relating to phasing as 5CF and 5CR, respectively; these designations appear in the context-by-context account which follows..

Tenement A

External layers

Context 3463: an area of about 2 x 1m in maximum dimensions, a build-up or dump to the rear of the Tenement A building; very dark grey friable soil with many bones and oyster shells. [5CR]

Sample 552 (Spot): an assemblage of fruitstones and concreted wheat/rye 'bran' with *Agrostemma* seed fragments and fly puparia. There were 78 'cherry' stones, 20 'plum' (including some ?sloes), and two hazel nuts; this was clearly a faecal deposit.

Records of 'cherry' (*Prunus* Section *Cerasus*) stones were notably concentrated in the latest phases of Anglo-Scandinavian Coppergate. Most were from BS samples, in which they were recorded from 2% of Period 3 samples, 5% of Period 4 and 12% of Period 5; of the last of these, eight of the 11 Period 5 contexts yielding 'cherry' were from Period 5C.

Pit fills on Tenement A

Cut 3523: the available section was too poor to extract information concerning the size and relationships of the cut. It lay in the backyard behind the Tenement A building. [5CR]

Context 3464: 'greyish-brown layer of straw etc.'

Sample 585 (Spot): this was a collection of *Prunus* fruitstones and hazel nutshell. The former comprised *PP. spinosa*, *domestica insititia*, *domestica domestica* and Section *Cerasus*. There were also faecal concretions and *Agrostemma githago* seed fragments, indicating this probably to have been a deposit of faeces.

Context 3562: Tree roots. [5CR]

Timber not examined.

Tenement D

Structural elements

Cut 7986=14222: the construction trench for Structure 5/11 in the (site) north-east corner of the excavation. It was about 3.4 m E-W and 3.2 m N-S and up to 0.25m thick. A beam in that part of the cut designated **7986** was of oak (sampled as Timbers **8437** and **8438**).

Context 14133: the basal context, a black, very compact, peaty layer.

Sample 683 (GBA): dark red-brown, crumbly, amorphous organic material with lenses of grey silty clay.

Parasitic worms: A single subsample was examined, which gave a single *Trichuris* egg.

Insects (/T): Rapid scan recording produced a list of 35 beetle and bug taxa (38 individuals) and other remains including 'many' Acarina and a larva of *Melanotus erythropus*. Diversity was probably high ($\alpha = 208$, but SE = 119!) and the outdoor component moderately large (about a fifth of the individuals). There was no evidence of a breeding decomposer group. There were three *Lathridius minutus* group and two *Carpelimus bilineatus*, with single individuals of the remaining taxa. This fauna had a mixed character; it may have been background fauna or re-worked remains introduced in backfill or levelling.

In addition, a 6kg subsample was bulk-sieved after the main period of processing; it has not been sorted.

Context 14186: immediately overlying **14133** in the northern part of Cut **14222**; very dark greyish-brown, peaty, silty loam.

Sample 675 (GBA): dark grey, crumbly, somewhat heterogeneous, slightly sandy silt with traces of stones 6-20mm, and of wood fragments.

Insects (/T): Processed at a late stage of the project, a small assemblage of typical Anglo-

Scandinavian insects was recorded, including a human flea, several *Aglenus brunneus* and a few other taxa suggesting that this was primarily a house fauna group.

A 5kg subsample was bulk-sieved after the main period of processing; it has not been sorted.

Sample 677 (GBA): mid-dark grey-brown, crumbly, somewhat heterogeneous, humic, sandy silt with some large bone fragments, greyish silty lumps and compressed herbaceous detritus.

Insects (/T): A modest-sized group of insects was noted (by non-quantitative recording). There was perhaps a house fauna community, but this was not certain.

Context 7954: the uppermost fill in the northern part of the cut, immediately overlying **14186**; a yellowish-red burnt clay loam.

Sample 671 (Spot): A specimen of *Blaps mucronata*, entire apart from the appendages.

Sample 672 (Spot): a modest-sized collection of soft fin rays and radials of ?Gadidae. Hand-collected hazel nutshell was also recorded from this context.

Context 7863: very dark greyish-brown silty clay with much charcoal.

Sample 997863 (BS): a binful of this context was bulk-sieved and the sorting notes record that pottery, metal, brick/tile, wood, charcoal, seeds, nutshell, fruitstones, bone, shellfish and eggshell were present, but the plant remains were not examined in detail.

Sample 622 (GBA): light-mid grey to yellow-grey, crumbly, silty fine sand, with abundant stones 2-6mm, and traces of stones 20-60mm, charcoal and ?ash. There were four subsamples of 622 recorded separately on site from different parts of the context.

Plants (/T, /M): Neither of these two subsamples gave more than a few identifiable plant

remains—both assemblages were amongst the five smallest from this series from the Period 5 samples—though both contained a wide range of inorganic occupation debris (including moderate amounts of mammal bone in 622/T). The lists of eight taxa from the /M subsample, and seven from the /T were essentially identical and comprised plants that were regularly recorded from other samples from this and many other urban archaeological sites and which are of little interpretative value.

Parasitic worms: Six subsamples were examined; all were barren with the exception of one subsample yielding a single *Trichuris* egg.

Insects: A series of subsamples taken on site was processed:

Subsample 622B/1 (renumbered to 62202/1) was recorded non-quantitatively by a rapid inspection. The flot contained a quite large group of insects typical of Anglo-Scandinavian deposits at this site, including a house fauna component. This subsample gave moderate numbers of Limosininae sp. puparia.

Subsample 622E/T was also examined rapidly: there were only a few insect remains, with no particular character.

Subsample 622C/1 gave a large flot containing much charred material. It was not examined further.

In addition, a 14kg sample was bulk-sieved after the main period of processing; it yielded a lot of charcoal with a range of artefactual material, a little bone and eggshell, fish scale and some bark.

Context 7862: a patch about 1 x 0.5m within 7863, of very dark grey clay loam with peaty material and abundant wood pieces

Sample 997862 (BS): the residue from this sample was sorted and pottery, wood, charcoal, seeds, nutshell, bone, shellfish and fly puparia, but the plant and invertebrate remains have not been examined.

Sample 610 (GBA/charcoal/ash): no action to date.

Sample 623 (GBA): mid grey-brown, crumbly (dry) to plastic (moist), rather heterogeneous, slightly sandy silt, with inclusions of plastic silty clay, traces of small limestone fragments and of shellfish. (This was recorded on site as the third of the five subsamples of 622.)

Plants (/M): The list of 19 taxa from this subsample was more substantial than those from 622, though still not large. Together with a range of occupation debris, there were remains of weeds of wasteland and arable fields, possible foodplants, plants of wet/damp places and a trace of *Diphysium*, but the assemblage was too diverse and too small to provide useful interpretative information.

Parasitic worms: Two subsamples were examined. One gave a single *Trichuris* egg, the other was barren.

Insects (/T): A rather small group of beetles was present (N = 71, S = 42); other remains were rare, but included two human fleas and some cladoceran ephippia. Preservation was rather better than average for the site. Diversity was moderate ($\alpha = 44$, SE = 10) and the outdoor component small (four individuals). There were six *Xylodromus concinnus* and five *Aglenus brunneus*, with *Falagria caesa* or *sulcatula* and *Lathridius minutus* group (4) and *Cratarea suturalis* and *Atomaria ?nigripennis* (3). The dominant group was probably 'house fauna', perhaps with an admixture of the 'oxyteline association', the latter being poorly represented.

Layers associated with Structure 5/11

Context 7868: a dump in Structure 5/11, to the W of Construction Trench Cut 7986; at least 2 x 3m, it was a dark greyish-brown clay loam.

Sample 630 (GBA): Two bags of this deposit were available; the sediment in one was described as follows: mid grey, plastic to crumbly to brittle, rather heterogeneous, slightly humic sandy clay silt

with traces of small limestone fragments, charcoal and brick/tile.

Insects (/T): Recorded non-quantitatively. Insects were not very abundant and consisted of taxa typical of Anglo-Scandinavian Coppergate, but with no special character.

In addition, subsamples of 8kg (first bag) and 25kg were bulk-sieved after the main period of processing; they have not been sorted.

Sample 632 (GBA): mid-dark grey, crumbly, somewhat heterogeneous, slightly clayey silt, with cm-scale patches of more reddish silt, and traces of stones 2-6mm, charcoal, shellfish and brick/tile; no further analysis undertaken.

Context 9797 (=7783): a deposit of reddish-yellow silty clay, about 1.5 x 3m (though of irregular shape) and up to 0.15m thick, in the far NE corner of the site, against the shoring; a floor in the N end (of the excavated area) of Structure 5/10.

Sample 647 (GBA): no action to date.

Sample 695 (GBA): varicoloured (grey-black-brown-pink-orange), crumbly, very heterogeneous, slightly sandy silty clay with traces of stones 2-20mm (orange patches were sandier); no further analysis undertaken.

Context 9798: an irregular tongue of very dark grey sandy silt with patches of yellowish-red burnt silty clay and some charcoal and sand, covering several metres within the area of and to the S of **9797**, with which it was laterally contiguous; about 0.15m thick; a floor at the south end of Structure 5/10.

Sample 999798 (BS): no plants remains from this sample were available, though wood and charcoal, fruitstones, moss and nutshell were recorded during rough sorting, along with bone, leather, fly puparia, pottery, brick/tile, shellfish and eggshell.

Sample 648 (GBA): no action to date.

Context 14063: a large area in the NE corner of

the excavation, a floor in Structure 5/10; it covered most of the NE corner, being about 4.6 m across E-W and 2.7 m N-S (though the northern limit lay beyond the edge of the excavation). There were sill-beams in or on it. It comprised a black to dark grey charcoal layer with patches of lighter grey sediment with charcoal flecks. Under **9797** and up to 0.15m thick.

Sample 656 (GBA): black, crumbly, slightly sandy, silty charcoal (very fine, perhaps unlikely to be from structural timber).

Parasitic worms: The subsample examined yielded a single *Trichuris* egg.

Insects (/I): Insects were few, single individuals of ten beetles and a few other remains including a ?human flea being noted.

Sample 657 (GBA): black, crumbly charcoal (fine particle size), with traces of ?burnt soil.

Parasitic worms: The subsample examined yielded a single *Trichuris* egg.

Insects (/T): There were only two insects—a head of *Anotylus rugosus* and a fly puparium—in this 1kg subsample.

Sample 660 (Spot): this sample of ?crucible was neither available for examination nor appropriate for bioarchaeological investigation!

Context 14077: a thin floor up to about 0.07-0.08m thick, covering much of the area of Structure 5/10; dark olive grey peaty charcoal. Under **14073**, and up to 0.07m thick.

Sample 661 (GBA): dark grey, brittle charcoal.

Parasitic worms: The single subsample examined was barren.

Insects (/T): A rapid examination showed that the large flot consisted principally of plant tissue, perhaps rotted wood. Insects were not very numerous and the assemblage has no special character in the context of the present study.

In addition, a subsample of 4kg was bulk-sieved after the main period of processing; it has not been sorted.

Sample 664 (Spot): avian eggshell; no further analysis undertaken.

Sample 667 (Spot): avian eggshell; no further analysis undertaken.

Sample 670 (Spot): a mixture of the mosses *Hylocomium splendens* and *Thuidium tamariscinum* in a silty matrix; both mosses were common in the deposits at this site, especially in primary cess-pit fills.

Pit fills on Tenement D

Cut 14099: a modest-sized cut, perhaps a pit, of about 1.5m diameter and between 0.3 and 0.6m in depth with one sampled fill; associated with Structure 5/10. Cuts **7868** and so presumably construction phase or early use.

Context 14069: very dark greyish-brown structured peat.

Sample 659 (GBA): very dark grey-brown, crumbly, humic, slightly sandy silt with much evidence of damage by modern arthropods; traces of bark, wood and shellfish. A test subsample was requested but appears not to have been processed.

A 4kg subsample was bulk-sieved to 1mm after the main period of processing. It has not been sorted.

Rear area

Structure in rear area

Cut 19290: post-hole for Structure 5/12 (overall context **19172**), towards the SE corner of the site.

Context 19289: very dark greyish-brown sandy silty clay loam with charcoal flecks.

Sample 1232 (GBA): mid grey, plastic to slightly

brittle, slightly sandy clay silt, with traces of stones 2-6mm, small limestone fragments, charcoal, small burnt bone fragments and tile.

An 18kg subsample was bulk-sieved after the main period of processing, but the residue was not sorted.

Cut 19356: a post-hole containing squared post **19210** (this was of oak and, on the basis of its 73 annual rings, was given a felling date by dendrochronology of AD 1003±9). This post was at the SE corner of Structure **19172** (5/12).

Context 19355: dark grey silty loam with charcoal flecks and some wood traces.

Sample 1284 (GBA): mid grey to grey-brown clay silt with charcoal, bark and wood fragments.

Plants (/M): Though yielding an assemblage of only 31 taxa, this was rather different from many in Period 5 in having a large proportion of weeds of wet, nutrient-rich soils (group BIDE). The AIV for this group was 23 (rank 5, based on 7 taxa). Group CHEN was also well represented: the AIV was 44 (more than one standard deviation above the period mean) and more than 50% of the taxa scored in this group. Unusually, there were abundance scores of 2 for the following taxa: *Urtica urens*, *Ranunculus sceleratus*, *Apium graveolens* and *Sambucus nigra*, and a score of 3 for *Chenopodium* Section *Pseudoblitum*. Another unusual feature was the lack of dyeplants; barely one quarter of the Period 5 GBA subsamples had no dyeplants at all (although they were generally rather poorly represented in those from Period 5C). Other use and vegetation groups were poorly represented and the overall impression given by the assemblage is of a weedy corner with impeded drainage, at least seasonally—though this post-hole was, of course, at the topographically lowest point of the site, and presumably closest to the river margin.

Parasitic worms: The single subsample examined gave small numbers of *Trichuris* and a single *Ascaris* egg.

Insects (/T): Recording was by a semi-quantitative rapid scan. Only 33 individuals of 31 beetle and bug taxa, 'several' fly puparia and Acarina, and a few other remains were seen. Such an assemblage cannot reasonably be interpreted in isolation, although the apparently high diversity and large proportion of outdoor forms, together with relatively small proportion of decomposers, suggests a largely 'background' origin.

Cut 19253: a post pit SE of the NW-most of a series of such pits for the W wall of Structure 5/12 (19172).

Context 19254: the fill, a very dark grey sandy silty clay loam.

Sample 1231 (GBA): mid-dark grey-brown, plastic to crumbly to brittle, humic silty clay or clay silt, with traces of wood fragments.

Parasitic worms: The single subsample examined gave a trace of *Trichuris* eggs.

Insects (/T): The very large flot appeared to consist almost entirely of finely comminuted wood, presumably the remains of the post inserted into the pit.

The material was rapid-scanned. There were only 33 individuals of 22 beetle taxa, and a few other remains including 'several' puparia. There were five *Anotylus nitidulus*, three each of *Platystethus nitens*, *P. cornutus* group and *Carpelimus elongatulus*, and two *Anotylus complanatus*. This may have been background fauna, although the estimated low diversity ($\alpha = 29$, although $SE = 10$) suggests the presence of a breeding community or at least species attracted to somewhat foul matter. The insects may well, of course, have originated in backfill or slump.

Cut 19256: post pit in same series as 19253, the second to SE-most along the same W wall of 19172.

Context 19257: the fill, a black, sandy silty clay

loam.

Sample 1234 (GBA): mid-dark grey, plastic, slightly sandy silty clay, with traces of stones 2-20mm and of tile.

A 19kg subsample of this was bulk-sieved after the main period of processing; it has not been sorted.

Cut 19287: post pit in middle of E wall of Structure 5/12 (19172).

Context 19286: black, silty sandy clay loam with wood fragments.

Sample 1229 (GBA): no action to date.

Cut 19303: post pit immediately SE of 19287.

Context 19304: very dark greyish-brown, sandy silty clay loam, with flecks of charcoal and ash and small wood fragments.

Sample 1245 (GBA): mid grey, plastic to slightly crumbly/slightly brittle, slightly sandy clay silt, with moderate amounts of wood fragments.

A 13kg subsample of this was bulk-sieved after the main period of processing; it has not been sorted.

External layers in the rear area

Deposits associated with Structure 5/12

Context 6789: a very large area (equivalent to Contexts 19120 and 20163, which follow) many metres long and wide in the SE corner of the site, overlying Structure 5/12; it was cut by 5750 (Period 6), 6572 (5CR), 20142 (5CR), and 21191 (6), and comprised black silty sandy clay loam with flecks of clay and charcoal.

Sample 1148 (Spot): a lump of very dense, very calcareous ?concreted organic matter including some fine brick particles and organic detritus, perhaps some form of slag; passed to YAT's Finds

Department.

Context 19120: (details above)

Sample 1115 (Spot): a single snail (*Helix aspersa*) shell.

Sample 1117 (Spot): a single modern snail (*Helix aspersa*) shell.

Sample 1121 (GBA): mid-dark grey, plastic, slightly sandy silty clay with traces of small limestone fragments and brick/tile.

Parasitic worms: The single subsample examined was barren.

Insects (/T): There were only a few, mostly unidentifiable, fragments of insect cuticle.

In addition, a subsample of 16kg was bulk-sieved after the main period of processing; it has not been sorted.

Sample 1122 (Chemical): a sample of indurated light-mid grey, slightly sandy clay silt with small stones, containing some ?worm burrows/root channels lined with vivianite; no further analysis undertaken.

Sample 1269 (Spot): five modern snail (*Helix aspersa*) shells.

Context 20163: (details above)

Sample 1168 (Spot): a single snail (?Helicidae, but not *Helix*) shell.

Sample 1221 (Spot): ?worm burrow/root channel mould, lined with vivianite.

Sample 1227 (Spot): a single snail (*Helix aspersa*) shell.

Context 19132: towards the rear of the site, against the shoring, this was an area of about 1 x 1.2m, and up to 0.09m thick, of light olive grey ash with charcoal flecks with a thin layer of charcoal underneath; it lay above **19120**.

Sample 1113 (Spot): light yellow-grey, crumbly, sandy silty ?ash with traces of stones 20-60mm; no further analysis undertaken.

Context 19090: archaeological details not requested [dump above Structure 5/12].

Sample 1094 (Spot): a single modern snail (*Helix aspersa*) shell.

Sample 1096 (Spot): two (one modern) snail (*Helix aspersa*) shells.

Sample 1103 (Spot): a single snail (*Helix aspersa*) shell.

Sample 1104 (Spot): four (three modern) snail (*Helix aspersa*) shells.

Sample 1105 (Spot): a single snail (*Helix aspersa*) shell.

Sample 1116 (Spot): three (two modern) snail (*Helix aspersa*) shells.

Context 19167: archaeological details not requested [dump above Structure 5/12].

Sample 1129 (Spot): a single snail (*Cepea* sp.) shell.

Other external deposits in rear area

Context 3507: an area of about 3.6 x 1.5 x 0.4m of very dark grey sandy loam, containing charcoal flecks and many small patches of brown clay.

Sample 663 (Spot): a matted lump of moss (cf. *Rhynchostegium confertum*), a plant of shaded habitats of various kinds; the rhizoids that were observed attaching it to the silty matrix of the sample perhaps suggest that it was growing *in situ* at Coppergate or that it had been collected with soil adhering and disposed of before the soil fell away.

Context 6781: archaeological details not requested [layer to rear of site].

Sample 1131 (Spot): a single snail (*Helix aspersa*) shell.

Context 15311: a very substantial deposit in the SW corner of the excavation, of dark grey sandy silty clay loam, a probable dump of at least 10.5 x 8.3m in lateral extent and up to about 0.35m thick. For many of the samples, the context was divided into an upper and lower part (A and B respectively), leading to the need for some renumbering of samples (see below).

Sample 819 (Spot): dark grey-brown, plastic to crumbly, slightly sandy silty clay with traces of charcoal and yellow (iron-rich?) flecks; no further analysis undertaken.

Samples 1074-7 and 1088 (BS—VW): These BS samples can be dealt with together. None produced a large assemblage (mean number of taxa 15, range 6-26) and the taxa were mainly the more decay-resistant types regularly recorded from deposits with poor organic preservation. *Sambucus nigra* was present at an abundance of 3 in three of the samples, at 2 in the other two—perhaps consistent with an interpretation of neglect of this corner of the site at this period, with elder scrub developing *in situ*. All other taxa scored 1. They included a few possible foodplants (*Corylus*, as well as blackberry and charred field bean, bread/club wheat, rye, barley and oats) but were otherwise dominated by weeds of waste places and disturbed soils. Dyeplants were restricted to a trace of *Diphysium* in 1077. There was a tentative identification from 1075 of fennel, *Foeniculum vulgare*, the only record for Anglo-Scandinavian Coppergate, and *Cannabis* was recorded from 1077.

Samples 1078, 1080-3, 1085, 10791-2 (originally 1087A, B), 108401-2 (1084A, B), 108601-2 (1086A, B) and 108701-2 (1087A, B) were taken as part of a student project designed to look at intra-context variations.

Sample 1078: No action to date.

Samples 1080-3: No action to date.

Sample 1085: No action to date.

Sample 107901 [formerly 1079A]: mid-dark grey-brown, crumbly, sandy clay silt with traces of shellfish and brick/tile and one whole archaeological trowel; two 1kg subsamples (I, II) were processed by J. Chiles but the data have not been incorporated into the main archives.

In addition, a subsample of 8kg was bulk-sieved after the main period of processing; the residue contained pottery, brick/tile, daub, bone, shellfish and eggshell, together with a few seeds, nutshell fragments and charred grain.

Sample 107902 [formerly 1079B]: mid-dark grey, crumbly to brittle (sticky when wet), slightly sandy silty clay with abundant fine charcoal.

A subsample of 13.5kg was bulk-sieved after the main period of processing; it yielded a range of occupation materials similar to those from the residue from 107901, all in small amounts.

Sample 108401 [formerly 1084A]: two 1kg subsamples (I, II) were processed by J. Chiles but the data have not been incorporated into the main archives.

Sample 108402 [formerly 1084B]: mid-dark grey, crumbly to stiff clay with traces of small limestone fragments and white flecks.

Sample 108601 [formerly 1086A]: two 1kg subsamples (I, II) were processed by J. Chiles but the data have not been incorporated into the main archives.

Sample 108602 [formerly 1086B]: mid-dark grey, plastic to crumbly clay with traces of small limestone fragments and white flecks.

A subsample of 9.5kg was bulk-sieved after the main period of processing; it yielded a range of occupation debris including pottery, brick/tile, bone, charcoal and charred grain.

Sample 1087 (GBA): four 1kg subsamples were

processed for insects but only one specimen was recorded. No distinction between 1087A and B was made.

In addition, a subsample of 4kg was bulk-sieved after the main period of processing; it has not been sorted.

Sample 108701 [formerly 1087A]: light grey clay (dark grey on wetting); three 1kg subsamples (I (twice!), II) were processed by J. Chiles but the data have not been incorporated into the main archives.

In addition, a subsample of 8.25kg was bulk-sieved after the main period of processing; the residue gave components including pottery, brick/tile, charcoal, charred grain, nutshell, bone, shellfish and eggshell.

Sample 108702 [formerly 1087B]: mid grey, plastic to crumbly, slightly sandy silty clay with traces of small limestone fragments and large and small bone fragments.

A subsample of 15.5kg was bulk-sieved after the main period of processing; the residue included rather large amounts of faecal concretions with fruitstones of 'plum' and 'cherry', as well as oyster shell and a little bone. Evidently this was a deposit with faecal material that was not distinguished within the main body of Context 15311.

Sample 1090 (Spot): a single modern snail (*Helix aspersa*) shell.

Sample 1091 (Spot): a single modern snail (*Helix aspersa*) shell.

Sample 1092 (Spot): a single snail (*Helicella ?itala*) shell.

Sample 1093 (Spot): a single modern and two ?ancient snail (*Helix aspersa*) shells.

Sample 1219 (Spot): a single modern snail (*Helix aspersa*) shell.

Context 16733: archaeological details not

requested [layer to rear of site].

Sample 1555 (Spot): fragments of a sea urchin test.

Context 16763: a strip of dark grey clay with ash and charcoal against the shoring towards the SE corner; lateral extent not discernible but interpreted as a dump.

Sample 1134 (Spot): three ?modern snail (*Helix aspersa*) shells.

Sample 916763 (Spot): four subsamples of ?hand-collected material were examined for parasite eggs; all produced small numbers of *Trichuris* eggs and traces of *Ascaris*.

Context 18744: archaeological details not requested [dump].

Sample 1118 (Spot): a single winkle (*Littorina littorea*) shell.

Context 20324: archaeological details not requested [layer].

Sample 1214 (Spot): a single snail (*Helix aspersa*) shell.

Context 21078: archaeological details not requested [layer, rear of site].

Sample 1316 (Spot): a single sub-adult whelk (*Buccinum undatum*) shell.

Pit fills in rear area

Cut 6571: a substantial pit in the backyard behind Tenement D, perhaps about 4.5 x 2m across and up to 0.45m deep. The basal, and largest fill was sampled.

Context 6570: black silty sandy peat.

Sample 1073 (BS—VW): The best represented group of taxa in this rather rich assemblage of 54 taxa (well above the mean for BS samples) were

foodplants, and the bulk of this deposit may well have been faeces to judge from the presence of faecal concretions (abundance 1), with moderate numbers of *Prunus* stones of *P. spinosa*, *P. domestica* and *P. Section Cerasus*, and traces of *Malus* seed and endocarp, and *Rubus fruticosus*. The presence of several grape pips in the sample were consistent with this dating, since grape was very rare in Anglo-Scandinavian deposits at this site, and the records from Period 5C deposits have been treated with caution in case they are actually post-Conquest.

There were also rather a lot of fly puparia in the sample (perhaps consistent with the presence of faeces), whilst dyeplants were limited to traces of *Diphysium* and *Rubia*, and there was a considerable component of weeds, notably *Chenopodium album* (the only other taxon scoring 2) and other nitrophile annual weeds (including *C. murale* and *Urtica urens*).

Parasite worms: Two subsamples of concretion gave small to moderate numbers of both *Trichuris* and *Ascaris* eggs, with some of the former being measured.

Cut 6786 (=6957): a narrow, deep, wicker-lined pit in the backyard behind Tenement D, close to the shoring. It was about 0.55m in diameter and at least 1.5m deep. The basal two contexts were recorded as coming from Cut 6957. The wicker lining was recorded from levels where Contexts 6926 and above were the fills.

Context 21141: the basal context recorded, a very dark grey, sandy, clay loam with wood and charcoal flecks.

Sample 1321 (BS—VW): A total of 39 taxa formed this assemblage, the mean value for the sub-phase and a little below the mean for Period 5 as a whole. The deposit was probably faecal, since there were moderate numbers of sloe stones, together with traces of ‘plum’, apple (seed and endocarp), rowan and hawthorn, and *Vaccinium* (probably bilberry), as well as wheat/rye ‘bran’. The AIV for FOOS was, not surprisingly, rather high (41, equal rank 9), one third of the taxa

scoring in this group.

With the exception of flavourings, FOOF (AIV 9, equal rank 4), other useful plants were rather sparse, with DYES achieving a very small AIV of 7. Weeds were moderately well represented.

Sample 1320 (GBA): varicoloured (red, yellowish-brown and black, perhaps partly a function of post-sampling oxidation), slightly sandy silt, with patches up to 100mm across of fine, black, sulphide-rich silt, with ‘bran’ and parasite eggs.

Plants: not recorded. There was ‘bran’ in the /T flot, together with some ‘cherry’ stones and these remains seem likely to have originated in faeces.

Parasitic worms: Three subsamples were examined, though one was not counted completely. All gave moderate to large counts for *Trichuris* and *Ascaris* eggs, many of which were measured.

Insects (/T): About 62 beetles were noted (49 taxa), and there were various other remains including ‘many’ beetle larvae, ‘several’ hoverfly larval respiratory appendages, an adult *Melophagus ovinus*, a few *Leptocera* sp. puparia, and a human flea. Diversity was estimated to be high ($\alpha = 107$, but SE = 49). Outdoor forms were proportionally important (about a fifth of the individuals). Decomposers made up only about half of the group and this component seemed to be of high diversity (alpha RT = 52, but SE = 21).

Four individuals of *Cercyon analis* and a *Stenus* species were recorded, and there were three *Bruchus ?rufimanus*, one of them fresh: these ‘bean weevils’ quite possibly arrived in pulses which had been eaten. Otherwise the assemblage appears to have had a very mixed or random origin.

Context 21088: immediately overlying 21141; a dark brown, very sandy, peaty clay loam, rich in organic fibre.

Sample 1315 (BS—VW): This assemblage of 42 taxa was near the period and sub-period means; the largest components were foodplants and annual

weeds in CHEN (both accounted for 29% of the assemblage), with smaller components of flavourings and woodland/hedgerow plants. The FOOF group achieved its second highest AIV of 12 (based on four taxa—*Humulus*, *Apium*, *Papaver somniferum* and *Satureja hortensis*); the QUFA/RHPR groups were largely accounted for by taxa scored under FOOS—including *Malus* endocarp and seeds, *Prunus spinosa* stones (these scored 2), and ‘plum’ stones. The DYES component was small, as in the previously-discussed sample from this pit; it may merely represent material reworked from earlier deposits. There was a modest-sized assemblage of mosses of the kinds regularly recorded from—*inter alia*—cess-pit fills.

Context 6926: immediately overlying **21088** (and the lowest context from the cut numbered **6786**); dark reddish-brown, oxidising to black, thick layer of silt mixed with fine organic material.

Sample 1215 (BS—VW): Somewhat larger than the phase and sub-phase means, this assemblage comprised 49 taxa. Again, faeces are indicated for, together with the large component of food remains, faecal concretions scored 2. *Rubus fruticosus* and *Linum usitatissimum*, both components of FOOS, scored 2, as did *Agrostemma githago* seed fragments, this last presumably a residue from grain milled with weed seeds. The AIV for FOOS was 42 (rank 8 within the Period 5 BS samples) and foodplants made up a little over one quarter of the taxa.

Dyeplants were at the same level of importance here as in two lower deposits from this fill sequence, flavourings quite well represented, and oil-plants especially so (the AIV for FOOO was 10, equal rank 1, based on three taxa, including linseed at abundance 2).

Weeds made up the bulk of the remainder of the assemblage, all of them in trace amounts, however.

Sample 1216 (GBA): slightly reddish, dark grey-brown, slightly crumbly, gritty, silty organic detritus, with fragments to about 5mm; deposit has the appearances of faeces.

Plants: not recorded. There was cereal ‘bran’ in the /T flot.

Parasitic worms: Two subsamples from this context were analysed, one from *Sample 1216*, the other from a hand-collected concretion (*Sample 99626*). The former gave a rather large count of 44 *Trichuris* eggs, the latter a count of 34 *Trichuris* and nine *Ascaris*.

Insects (/1): The flot was rather large and number estimation somewhat difficult. There were abundant invertebrates, including ‘many’ mites and fly puparia (with only *Leptocera* sp. represented by more than one or two individuals), ‘several’ syrphid and beetle larvae, an adult *Melophagus ovinus* and about 119 individuals of 78 beetles and bugs. Diversity was high ($\alpha = 98$; SE = 17), the outdoor component was fairly substantial (19 individuals, % N OB = 16), decomposers were not very abundant (% N RT = 57). There was, however, a quite substantial representation of taxa coded ‘rd’: % N RD = 17. Perhaps this pit was open for some time and received a variety of rubbish.

The most abundant taxon was *Lathridius minutus* group, with eight individuals; there were also five *Cercyon analis*, four *Mycetaea hirta* and three each of a series of other taxa including *Cercyon haemorrhoidalis* and *Bruchus rufimanus*. Despite high diversity there seems to have been a breeding, attracted or imported community of fairly foul decomposing matter, but there may also have been house fauna.

Context 6903: overlying **6926** but separated from it by unsampled **Context 6908**; very dark grey, sandy, silty peat with inclusions of limestone, wood, bone and wattle.

Sample 1233 (BS—VW): With 55 taxa, this assemblage was rather larger than the means for the phase and sub-phase. One taxon scored an abundance of 2—*Chenopodium album*, and weeds in group CHEN made up the largest single component (AIV 41, one third of the assemblage), with moderate numbers of foodplants and arable weeds. The grassland component (MOAR) was fairly large for a Period 5 BS sample, but the taxa

concerned did not constitute a coherent group for interpretative purposes. The DYES AIV was the same (7) as for the lower samples from this pit, but included *Isatis tinctoria*, which is perhaps less likely than the others to have been reworked and may indicate continued dyeing activity at the site at this period (though the pod material is perhaps as likely to have originated from plants escaping from cultivation in the vicinity since the pods would not normally be expected as a component of the prepared woad used as a dyestuff).

Sample 1429 (GBA): dark brown to reddish-brown, soft (like ‘cake dough’) silty detritus—almost a mud (in the lithological sense)—with quite a lot of wood chips, wicker fragments and ?grass fragments.

Parasitic worms: Two subsamples were examined. One gave rather large numbers of *Trichuris* and a moderate number of *Ascaris* eggs, the other a moderate count for *Trichuris* but no *Ascaris*. Some *Trichuris* eggs were measured for each subsample, as were *Ascaris* for the subsample in which they occurred.

Insects (/T): There were ‘many’ mites and fly puparia, some of the latter identified as *Nemopoda* sp. and a few *Leptocera* sp., ‘several’ Proctotrupoidea and Chalcidoidea, and single of the human flea and the human louse *Pediculus humanus*. Various other remains were present in small numbers. About 110 individuals of 61 beetle and bug taxa were present. Main statistics were of little note for the present site except that the RD component was perhaps a little larger than usual: % N RD = 14. There were 13 *Carpelimus bilineatus*, nine *Lathridius minutus* group, six *Carpelimus elongatulus* and four *Cercyon analis*. Smaller numbers of other species suggest the presence of two communities: the ‘oxyteline association’, probably indicating fairly foul conditions, and house fauna, perhaps originating in rubbish or backfill.

Context 6909: this deposit lay outside the wicker lining, towards the top of the pit, but within the cut as defined on excavation. It was at the same stratigraphic level as the top of **6926** and **6908**. It

was a dark reddish-brown, very silty peat.

Sample 1323 (GBA): dark brown to reddish-brown, crumbly, very organic silt or clay silt with bone and faecal concretions; ?madder-rich.

Plants (/M): This subsample yielded 48 taxa, putting it rather above both phase and sub-phase means for this parameter for GBA subsamples. There can be no doubt that this was almost entirely faecal material, for faecal concretions and wheat/rye ‘bran’ both scored 3 and with them was a suite of foodplants, including apple endocarp and linseed, both at abundance 2, and smaller amounts of blackberry seeds, and sloe and ‘plum’ stones. The AIV for FOOS was, at 35, not exceptionally high, but the linseed component pushed up the AIV for FOOO to 10 (another first rank record). The DYES component was barely larger than for other samples from this pit (and madder was certainly not present in large amounts, indicating that the reddish colour seen on inspection of the raw sediment in the laboratory must have derived from some other source—perhaps the fruit remains).

Seeds and seed fragments of corncockle, *Agrostemma githago*, were both abundant (scored as separate part taxa with scores of 3), indicating consumption of grain products rich in this potentially harmful contaminant. The AIV for SECA was very high (35, equal rank 5), though over half this figure is accounted for by the corncockle alone.

Parasitic worms: Two subsamples were examined: one, a putative rodent dropping, was barren, whilst the other gave a large count for *Trichuris*, the vast majority of them bearing both polar plugs, with a moderate count for *Ascaris*. Many of the eggs were measured.

Insects (/T): There were 126 individuals of 71 beetle and bug taxa and numerous other remains including ‘many’ fly puparia (mostly *Teichomyza fusca*, but also a *Melophagus ovinus*) and mites, ‘several’ beetle larvae, Proctotrupoidea, syrphid respiratory processes and earthworm egg capsules. In addition there were two *Pulex irritans* and two *Damalinia ?ovis*.

Diversity was quite high ($\alpha = 67$, $SE = 11$) but the outdoor component was not very large (% N OB = 10). Decomposers were abundant but of (relatively) high diversity (alpha RT = 30, $SE = 6$). The RD component made up 15% of the assemblage.

There were 16 *Carpelimus bilineatus*, seven *Anotylus nitidulus* and six *Lathridius minutus* group, together with four *Bruchus rufimanus*, one of which was pale. For these last, an origin in pulses, via the human gut, seems probable. The assemblage as a whole appears likely to have been a mixture of invaders of rather foul decomposing matter and house fauna.

Context 6859: the wicker lining of the upper part of the pit.

Sample 1322 (Wicker): A sample of 55 pieces of wood, of which 50 were hazel, the rest willow. The diameter ranges for these two taxa were, respectively, 13-32 and 21-37mm, their mean annual ring counts 10.8 ($SD = 3.5$) and 7.4. All were uncompressed, except for three of the hazel rods which showed slight compression.

Cut 16888: a modest-sized, circular pit of 1.5m diameter and about 1m deep, in the far south-east corner of the site, behind Tenement D. It had three fills, all sampled.

Context 16889: dark reddish-brown organic layer containing wood chips, shell, bone, possible 'cess', plant remains and nutshells.

Sample 903 (Chemical): no action to date.

Context 16887: immediately overlying **16889**; very dark grey, organic fill, consisting of wood fragments, bone, shell, limestone chips in possible 'cess'/plant remains with nutshells, etc.

Sample 1314 (BS—VW): this sample was originally dated to Period 6 and was not included in the main dataset for the purpose of this report. The washover and rough-sorted residue gave a rather large assemblage of 52 taxa, with large amounts of hazelnut (abundance 3) and moderate numbers of *Chenopodium album* seeds. The remaining taxa

were a mainly weeds, but there were traces of charred pea and field bean, and waterlogged opium poppy, and a half-seed of grape. Both endocarp and seeds of apple were recorded, along with sloe and 'cherry' stones, linseed, and charred wheat and one and a half seeds of caper spurge, *Euphorbia lathyris*, recorded from only three other Period 5 samples (two from Period 5CR pit fills and one from a Period 5B pit fill) and from a single Period 3 pit fill context.

Context 16877: immediately overlying **16887** and the uppermost fill; a dark reddish-brown, sandy, silty, peaty loam, with wood pieces, shell, bone, and possible 'cess'/plant remains, etc.

Sample 887/Sample 905 (BS—VW; the material from *Sample 905* was deliberately mixed with that from 887 before processing): the total of 39 taxa was the same as the sub-phase mean for this parameter and a little below the overall Period 5 mean; no taxon in the assemblage achieved an abundance greater than 1. Rather over a third were weeds in CHEN, but the AIV for this and the other groups were unexceptional.

Parasitic worms: Four subsamples from this sample were examined; three were barren, whilst one gave a single *Trichuris* egg.

Sample 890 (GBA): mid-dark, grey-brown, plastic, somewhat heterogeneous, slightly sandy silty clay/amorphous organic material with traces of charcoal and small burnt bone fragments.

Parasitic worms: The single subsample gave one *Ascaris* egg.

Insects (/T): Semi-quantitative scan-recording produced a list of 22 beetle taxa, with about 44 individuals. Other remains, too, were not very common; they included 'several' mites and a putative *Melophagus ovinus* puparium. There were also 'several' Sepsidae puparia.

The small assemblage and recording method make the main statistics unreliable. There were 'many' *Carpelimus fuliginosus* and 'several' *Neobisnius* sp., but only one or two individuals of the

remaining taxa. There seems to have been some colonisation of moist organic matter; the origin of the rarer taxa is uncertain.

In addition, a 17kg subsample was bulk-sieved after the main period of processing; it was sorted and gave a range of animal and plant remains like bone, eggshell, wood and charcoal, together with glass beads, tile, mortar, daub, and slag.

Cut 17053: a long shallow cut or scoop, to 2m across and no more than 0.1m deep, behind Tenement D. Of the three fills, **16720** was the largest and the uppermost over most of the cut as seen in section. The feature was cut into layer **16763** (*q.v.*).

Context 16720: dark reddish-brown compact, 'not structured' peat.

Sample 830 (GBA): (not adequately described in laboratory.)

Insects (/1, /2, /3): The first subsample gave 161 individuals of 52 beetle and bug taxa; other remains included 'several' Parasitica and 'many' fly puparia. Diversity was low ($\alpha = 27$, SE = 3), the outdoor component proportionally small (% N OB = 6); decomposers were abundant (% N RT = 79), of low diversity (alpha RT = 13, SE = 2) and included a large proportion of foul-matter species (% N RF = 25, 31% of the coded decomposers). The assemblage (and others from this sample, see below) was exceptional at the site in being dominated by *Sphaeridium bipustulatum*, of which there were 23 individuals. *S. bipustulatum* is a fairly large beetle of foul conditions, including wet dung. Some of the other abundant taxa might be found with it: *Oxytelus sculptus* (18); *Omalium rivulare* (9); *Cercyon analis* (8); *C. haemorrhoidalis* (7), *C. terminatus* (5), *Anotylus rugosus* (5) and *Platystethus arenarius* (3). This was indeed an indisputable community of conditions about as vile as tolerated by beetles.

The second subsample gave 112 individuals of 52 beetle and bug taxa, and other remains including 'many' fly puparia and six ?*Spalangia* sp. Main

statistics differed somewhat from those for the /1 subsample, but were of the same flavour, and a similar group of taxa occupied the higher ranks. Again *S. bipustulatum* was predominant (11), with nine *Oxytelus sculptus* and seven *Cercyon analis*. There was undoubtedly a well-developed community of very foul matter.

A notable record was a single specimen of the groundbug *Pachybrachius fracticollis*, which 'lives in bogs and fens, characterised by cotton grass and bog myrtle: sedges are possibly the host plants' (Southwood and Leston 1959, 90).

Subsample /3 produced 101 individuals of 51 beetles and bugs, 'many' mites, 'several' fly puparia and small numbers of other remains. Main statistics, curiously, in several cases continued the trend seen between subsamples 1 and 2. There were 12 *Sphaeridium bipustulatum*, eight *Oxytelus sculptus*, and six each of *Ptenidium* sp. and *Omalium rivulare*. Clearly similar conditions existed. The variations between subsamples are of interest: were they random sampling effects, minor variations in corpse deposition brought about by heterogeneity in the layer, or successional, co-incidentally seen as a gradient through the depth of the sample bag?

There was a single *Tipnus unicolor*, a species much more typical of the Roman and post-Conquest periods.

Cut 19158: a cut well to the rear of Tenement C.

Context 19141

Sample 1109 (Spot): one eroded shell of *Helix aspersa* and one shell of periwinkle, *Littorina littorea*.

Cut 19160: well to the rear of Tenement C, behind Structure 5/12.

Context 19140

Sample 1123 (Spot): seven modern *Helix aspersa*

shells.

Cuts 19191 and **19258** (with unnumbered cut containing Contexts **19165** and **19190**): the very large pit **19191** was cut into from above at one side by **19258** and tops of both of these cut by an unnumbered cut. **Cut 19191**: a large, wattle-lined pit (itself cut into unsampled pit **19372**), at least 1.7m deep (it was not bottomed) and 2.2m in diameter. It lay at the rear of the site, in Tenement C. (N.B. The stratigraphic relationships of, and sediment description for, the contexts from which only spot samples were taken have mostly not been elucidated for this report.)

Context 19197

Sample 1142 (Spot): a sample of 1.15kg almost entirely composed of mussel, *Mytilus edulis*, shells—estimated at approximately 2000, including many young ones. The assemblage also contained the following:

Cerastoderma edule (cockle): 11 left, 12 right valves, including many very young individuals; *Gibbula cineraria* (top shell): 1 plus a fragment; Dog whelk sp. operculum; *Littorina littorea* (periwinkle) 2 shells; *Buccinum undatum* (whelk) 1 shell; *Lora turricula* 1 shell; *Ostrea edulis* (oyster) 3 left (immature), 5 right (four of them large) valves, plus 4 fragments; cf. *Scrobicularia plana* 1 right valve; *Tellina tenuis* 15 left and 18 right valves, including many immature specimens.

There were also scraps of fish bone, including cod (*Gadus morhua*) dentaries.

Sample 1268 (BS): this sample was apparently bulk-sieved, though no record of processing remains; it was rewashed and dried in 1989 but has not been sorted to date.

Context 19325

Sample 1277 (Spot): two eroded shells of *Helix aspersa*.

Sample 1289 (Spot): a small pad of moss

(*Isothecium myurum* and *Neckera complanata*) with a matrix containing *Trichuris* eggs.

Context 19327

Sample 1279 (Spot): a single *Helix aspersa* shell.

Context 19357

Sample 1285 (Spot): two eroded *Helix aspersa* shells.

Sample 1287 (Spot): parts of a specimen of the beetle *Agabus bipustulatus*.

Context 19374: dark grey-brown (oxidising to black), sandy silty peaty loam; ?the lining of the pit.

Sample 1302 (Spot): three modern snail (*Helix aspersa*) shells.

Context 19192

Sample 1139 (Spot): the basal stem/upper root part of an elder (*Sambucus nigra*) stump, presumably not *in situ*.

Context 19212: dark grey-brown (oxidising to black) sandy silty peaty loam.

Sample 1162 (BS—VW): A modest-sized assemblage of 33 taxa was recorded from this sample. It was unusual in having very few ‘useful’ plants—merely five scored with FOOS and one in FOOO (*Brassica rapa*, which is perhaps more likely to have been an arable weed). The largest component was weeds in CHEN (making up 36% of the assemblage, but with only a modest-sized AIV of 27). An interesting record for this sample was for both caryopses and cleistogenes (basal, cleistogamous spikelets) of heath-grass, *Danthonia decumbens*. These are perhaps most likely to have arrived in turves, for the basal parts of the plant must have been present for cleistogenes to be incorporated into the deposit. The tentatively identified twig fragments of *Salix repens* may indicate a species from a similar habitat—poor, perhaps slightly acid, grassland with scrub

Sample 1265 (Spot): sample not examined to date.

Context 19328

Sample 1280 (Spot): seven ?modern *Helix aspersa* shells.

Sample 1291 (Spot): sample not examined to date.

Cut 19258: a pit of about 0.75m deep and 0.5m diameter, cut into the upper part of **19191** on one side; it, too, was wattle-lined. The three fills in this pit were all sampled (see also above).

Context 19288: black silty clay loam. Sample number *1255*, supposedly from **19288**, was not used, according to the site records.

Sample 1235 (GBA): dark grey-brown, crumbly, sandy humic clay silt with bone, wood and mollusc shell fragments.

Plants (/M): With 63 taxa, this was one of the larger assemblages from the GBA subsamples. It was dominated by weeds, especially those in groups CHEN (AIV was 55, rank 2) and BIDE (24, rank 4), these high figures in part resulting from the score of 3 for *Chenopodium* Section *Pseudoblitum*. There were scores of 2 for *Stellaria media* and *Urtica dioica*, and traces of a wide range of other taxa in Polygonaceae and Chenopodiaceae, typically associated with annual weed communities, especially on disturbed, nutrient-rich or seasonally wet substrates. Perennial weed communities were also quite well represented, with the AIV for ARTE of 16 being equal rank 6 for this series of samples, and it overlapped in some of its taxa with MOAR, which achieved a fairly high AIV of 19 (equal rank 8).

An indication of wetland communities—perhaps not surprising in these deposits at the lower end of the site, nearest the supposed course of the Foss—is given by the (comparatively) high AIV of 9 (equal rank 1) for ISNA (based on 4 taxa, the largest number for this group for any Period 5 sample in this series), and there were unusual records for two mosses of fen/marsh habitats

(*Drepanocladus aduncus* and *D. cf. uncinatus*).

Parasitic worms: The single subsample gave traces of *Trichuris* and *Ascaris* eggs.

Insects (/T, /M1): The /T subsample gave 123 individuals of 95 bugs and beetles; there were also ‘many’ mites, ‘several’ beetle larvae and fly puparia, and a variety of other invertebrates in smaller numbers. Preservation was good. Diversity was estimated to be very high ($\alpha = 191$, SE = 40) and the outdoor component accounted for over two-fifths of the assemblage. There were 14 aquatic taxa with 19 individuals (% N W = 15). Decomposers were (comparatively) not well represented (% N RT = 39, one of the lowest values recorded at the site) and of high diversity (alpha RT = 65, but note that SE = 21). There were four *Pterostichus ?melanarius*, and several taxa with three individuals, but only one or two each of the remainder. A mixture of invading water beetles, pitfalls (*P. melanarius* seems particularly likely to have entered in this way) and background fauna seems to have been the basis for this group.

The /M1 subsample was processed for insects in view of the unusual character of the /1 assemblage: it consisted of 0.5kg of sediment. There were 63 individuals of 52 beetle and bug taxa; diversity was again very high ($\alpha = 138$, although SE = 45) and the outdoor component was exceptionally large (% N OB = 49, one of or the highest values observed at the site). There were eleven individuals of nine aquatics, all common eurytopic forms likely to invade small water surfaces. Decomposers were relatively rare and of high diversity. There were three *Cercyon analis* and *Carpelimus bilineatus* and small numbers (one or two) of other taxa frequently associated with these, so there may have been an invading or redeposited decomposer element. However, apart from the aquatics and the Carabidae (which were probably pitfalls), most of the assemblage was probably background fauna.

Context 19269: very dark grey silty clay loam with large wood fragments.

Sample 1212 (BS—V): A very small assemblage of 13 taxa was recorded from the rough-sorted

remains, making this one of the smallest from this series of samples (it is not certain whether a washover existed or not). It is difficult to make an interpretation on the basis of this small list, but it may be noted that some large food remains were present (sloe and 'plum' stones, some recorded during sorting as bearing signs of gnawing by small mammals). There was also a record for one or more seeds of *Euphorbia lathyris*, caper spurge, a plant that is likely to have been growing as a ruderal once introduced to the town, but whose seeds may have been eaten as a purgative.

Sample 1209 (GBA): dark brown, slightly crumbly, clay silt, with sand and fine to medium plant detritus, fine twigs and a *Helix* shell.

Parasitic worms: A single subsample was examined; it gave traces of *Trichuris* eggs.

Insects (/T): The material was semi-quantitatively rapid scanned. Insects were well preserved, and it was noted that there were more large beetles than usual. There were also 'several' aphids and an ostracod. Altogether, the assemblage of beetles and bugs comprised about 62 individuals of 50 taxa; diversity was estimated to be very high ($\alpha = 119$, SE = 37) and the outdoor component was large (%N OB = 44). Five individuals of four aquatics were present. Decomposers were unusually rare (% N RT = 39, one of the lowest values from this or any other occupation site). There appeared to have been some decomposing matter in the cut or nearby as there were 'several' *Cercyon analis* and a few other taxa which suggested foul matter, all as single specimens, however. The only other species with more than two individuals was a *Stenus* of uncertain ecological implications. The group appears to have been primarily a mixture of invading aquatics, pitfalls (the Carabidae) and background fauna.

Sample 1236 (Spot): a single modern *Helix aspersa* shell.

Context 19267: black, sandy silty clay loam; very gritty; contains wood and charcoal fragments, much fragmentary wattle and a lot of bone.

Sample 1201 (BS—VW): A rather modest-sized assemblage of 34 taxa was recovered, with *Urtica urens* and *Atriplex* sp(p). being the only taxa to score an abundance of 2. Indeed, these two taxa contributed to the very high percentage (50) of taxa in CHEN, though the AIV of 42 was high but not exceptionally so. There was a moderately large component of foodplants, amongst them a rare record for grape, *Vitis vinifera* (it was recorded from 3 other Period 5C contexts, and from one context in each of Periods 3, 4B, 5A and 5B).

Sample 1202 (GBA): dark brown to grey-brown, crumbly, humic, sandy clay silt with wood fragments, bone, *Mytilus* and *Helix* shells, and some clasts of ?natural sediment.

Plants (/M): This subsample yielded a modest-sized assemblage of 37 taxa, with three weed taxa (*Urtica urens*, *Stellaria media* and *Atriplex* sp(p).) all scoring abundances of 2. They account in part for the fairly high AIV for CHEN of 41 (which group made up 41% of the assemblage). Other groups were rather poorly represented. An unusual record of *Myrica* fruits was made for this sample. It may represent material brought for dyeing, for flavouring, or for medicinal purposes, if not accidentally arriving incidentally with some peatland materials.

Parasitic worms: There was a single *Trichuris* egg in the sample examined.

Insects (/T): The beetles (and one bug) were well-preserved. There were proportionally more large beetle species than normal at the site. Recording was by rapid scanning. There were about 107 individuals of 74 taxa; a very large proportion were 'outdoor' forms (34 individuals; % N OB = 32). Diversity was very high ($\alpha = 106$, but SE = 21). There were six aquatic taxa, with eleven individuals (a tenth of the assemblage). These were eurytopic forms likely to colonise small water bodies such as a flooded pit: four *Ochthebius* sp. and two each of *Helophorus* sp. and *Hydrobius fuscipes*. Decomposers were relatively unimportant (% N RT = 43). This assemblage appears to have consisted of invading aquatics, pitfalls (e.g. the Carabidae and *Silpha atrata*), and background

fauna.

Fly puparia from this subsample ('many') included small numbers of Sepsidae sp. and *Leptocera* sp. and a *Melophagus ovinus*. There were also 'many' mites and small numbers of some other remains.

Cut —: this unnumbered cut contained at least three fills, of which the lowermost, **19190** and uppermost, **19165**, were sampled. It lay directly across the top of the fills of Cuts **19258** and **19191**.

Context 19190

Sample 1132: two (modern) *Helix aspersa* shells.

Sample 1259: four (modern) *Helix aspersa* shells.

Context 19165

Sample 1130 (Spot): two (modern) *Helix aspersa* shells.

Sample 1180 (Spot): a single *Helix aspersa* shell.

Cut 20142: a pit of about 1.8m diameter and 1.2m depth, cut into natural in the centre of the rear third of the excavated area. There was a single sampled fill, the basal and largest one.

Context 6795: black, structured peat made up of grass and wood chips.

Sample 1120 (BS—VW): This was certainly a very rich sample, yielding a total of 81 taxa (the third highest BS assemblage for Period 5). Wheat/rye 'bran' scored an abundance of 2, as did several other taxa: *Stellaria media*, *Agrostemma githago* (seed fragments), *Malus* (seeds and endocarp fragments), *Prunus* Section *Cerasus* and the woodland (bark- and rock-dwelling) moss *Leucodon sciuroides*. Overall, the assemblage was dominated by foodplants (FOOS, with 17 taxa, achieved an AIV of 60, rank 2 for this series of samples), but with a very large component of arable weeds (AIV for SECA 39, rank 2) and many perennial and nitrophile weeds (AIV for ARTE = 20, equal rank 5, that for CHEN 48, within the top quartile). Though faecal concretions were not

recorded by AH from the washover (they may have been present in the residue but not recorded as such during rough sorting), their presence in the GBA sample indicates that this deposit was at least partly—if not largely—faecal in origin.

Mosses were well represented, too, with high AIVs for LIGN (18, equal rank 3) and FENS (8, rank 1, four taxa) and MARS (10, rank 1, based on five taxa, including *Campylium elodes*, *Scorpidium scorpioides* and *Calliergon giganteum*). Their presence in the pit may be explained if they were collected for use as toilet tissue though, as indicated above, only *Leucodon* was present in more than small amounts. The record of caddis larval cases suggests that fresh river water was perhaps brought to the pit at some stage (caddis are unlikely to have bred in a pit in this situation). There were few other indicators of wetland habitats, though both *Ranunculus sceleratus* and *R. flammula*, whose achenes might be carried with water drawn from a river or pond, were both recorded.

Both leaf fragments and fruits of bog myrtle, *Myrica gale* were observed in this sample (accounting to a large extent for the unusually high AIV for ALNE of 8). This taxon has been scored in several other groups, including DYES and FOOF.

Sample 1119 (GBA): dark brown, rather crumbly, humic silt or organic mud with a large faecal concretion and some lighter lumps of silt; there were abundant fly puparia, and a very large squashed stool from this sample was passed to A. K. G. Jones.

Plants (/M): A rather large assemblage of 58 taxa was recorded from this 0.5kg subsample. Faecal concretions scored 2, as did fly puparia, *Urtica urens*, *Agrostemma githago* (seed fragments) and *Calliergon giganteum*, whilst 'bran' scored 3. However, the food component was not very large, with an AIV for FOOS of 29, the nine taxa scored in this group including raspberry, apple, ?pea, ?bilberry, and elderberry. *Myrica* was again present, this time as fruits and tentatively identified twig fragments.

Weeds were much the most important groups in this assemblage, with high (though not excessively so) AIVs for CHEN, ARTE and SECA. There was also a rather high AIV for grassland plants in MOAR (19, equal rank 8) and the mosses again gave relatively large scores for fen/marsh taxa, as in the BS sample from 1120 (see above).

Parasitic worms: The subsample examined gave a modest count for *Trichuris* eggs, of which several were measured.

Insects (/T, /1, /M1): The /1 subsample was a 1.5kg subsample processed to investigate further the apparently unusual group from the /T; as only 1.5kg of material remained, the /M1 was also investigated for insects. In the event the /1 group was very different from that of the /T.

The largest group came from the /1 subsample: 130 individuals of 66 beetle and bug taxa, and other remains which included 'many' fly puparia and mites and syrphid larval spiracular processes. Preservation was better than normal at the site. The assemblage was of intermediate diversity ($\alpha = 53$, SE = 8) and included a fairly substantial 'outdoor' group (% N OB = 15). Decomposer statistics were of little note: % N RT = 64; % N RD = 12; % N RF = 9 (moderately high); alpha RT = 22, SE = 4. There were ten *Anotylus complanatus*, together with *Acrotrichis* sp. (6), *Anotylus nitidulus*, *Gyrophynus fracticornis* and *Ephistemus globulus*; there were also four *Cercyon analis*, *Cordalia obscura* and *Aphodius ?prodromus*. There appears to have been rather foul matter in the pit or nearby, an impression supported by the presence of three each of *Aphodius ?granarius* and *Oxyomus sylvestris*. There were only the merest hints of 'house fauna'.

The /T subsample gave a smaller group, semi-quantitatively rapid-scan recorded. There were about 49 individuals of 39 beetle and bug taxa, 'many' mites and fly puparia and 'several' earthworm egg capsules. Preservation was excellent and diversity high ($\alpha = 87$, although SE = 30), with the outdoor component large (over a third of the individuals). About half of the assemblage was contributed by the decomposers. The most

abundant taxon was a large *Philonthus*, probably *P. politus* although not recognised as such when recorded. There were three *Aphodius prodromus*, but no other taxa were recorded as more than two individuals. It is tempting to suggest that this was entirely background fauna deposited over a considerable period of time into a layer containing a little exposed foul matter. The outdoor component seems unlikely to have originated in redeposited surface material in view of the state of preservation of the fossils.

Amongst the fly puparia, *Leptocera* spp. (at least two species) were abundant, and there was some *Teichomyza fusca*. Puparia of *Nemopoda* sp. were very numerous and there were a few *Tephrochlamys tarsalis*.

Subsample /M1 gave 33 individuals of 30 beetles, recording being by a rapid scan. Preservation was again excellent. There were abundant fly puparia (identified as *Leptocera* sp. and *Teichomyza fusca*) and a few other remains. The small beetle assemblage was subjectively like that from subsample /1.

A single *Apion aeneum* was the only record from the site. It lives on *Malva sylvestris*, and probably also other Malvaceae (Morris 1990). There was also an *Anthicus ?antherinus*, one of only two records from Coppergate and to the north of its present range (Buck 1954).

Sample 1150 (GBA): dark brown to blackish, somewhat fibrous silty peat ('cess') to yellowish or greenish slimy to 'grassy' mud. Rather heterogeneous—some paler yellow patches within a predominantly dark matrix.

Plants (/M): This subsample yielded another assemblage of 58 taxa. The similarity based on presence/absence to the assemblage from 1119 was only 30%, however, a not particularly large figure and typical of values for this parameter for subsamples of the same deposit from this and other urban archaeological sites.

Once again there was evidence for faeces, with faecal concretions and 'bran' both scoring 3 (on a

three-point scale); other more abundant taxa were corncockle (*Agrostemma githago*) seed fragments, apple (*Malus*) endocarp and the fenland moss *Calliergon giganteum*. A testimony to the excellence of preservation is the records of mesocarp ('flesh') of *Prunus*, including *P. spinosa*; evidently only partly eaten or digested remains were voided into this pit. There were also tentatively identified fragments of *Vaccinium* berry epidermis (?bilberry). With several part taxa of this kind included in the calculations for the AIV of FOOS, it was not surprisingly high at 43 (equal rank 4). There were, however, substantial components of weeds and other taxa, and ALNE reached its highest AIV in this series of sample (10, based on 5 taxa, including the two part taxa of *Myrica*—leaf fragments and fruits).

Parasitic worms: The subsample examined gave modest numbers of *Trichuris* eggs, of which several were measured.

Insects (/T): Recording was by a semi-quantitative rapid-scan. Preservation was excellent. There were about 94 individuals of 54 bugs and beetles. Apart from a rather large proportion of foul matter individuals (% N RF = 13) the main statistics were of little note bearing in mind the method of recording used for this small group. There were 'several' *Omalium rivulare*, *Philonthus* sp., *Lathridius minutus* group and *Anthicus formicarius*, and a variety of taxa at frequency 2 or 3 which might have lived with it under fairly foul conditions; something with the texture and consistency of stable manure may have been present. Background fauna, or insects of some other 'mixed' origin were, however, clearly present.

Fly puparia were numerous, mostly *Leptocera* sp. and *Nemopoda* sp.; other invertebrate remains included 'several' beetle larvae and mites.

Cut 20165: a rather large pit of about 2m diameter and 2m depth, with a series of about five fills. Data pertaining to the fills of this pit are discussed by Hall *et al.* (1983) in connection with the identification of cereal bran and faecal deposits.

Context 20179: black, amorphous peat, the second-to-lowest fill layer.

Sample 1145 (BS—VW): A total of 45 taxa were recorded from this sample, all at a score of 1, with the exception of wheat/rye 'bran' which scored 3. There is no doubt that this was primary faecal material, though the weed components were quite large and other materials were evidently discarded into the pit. The food remains included linseed, apple, sloe, 'plum' and ?bilberry. A modest-sized range of mosses of the kinds usually interpreted as toilet tissue were present, too.

Sample 1146 (GBA): dark brown, highly humified amorphous organic detritus.

Parasitic worms: Two subsamples were examined; both gave rather large counts of generally well preserved *Trichuris* eggs, many of which were measured.

Insects (/T): This subsample was rapid-scan recorded. Preservation was rather good but there were only some 36 individuals of 34 beetles, with the main statistics rather typical of many small dilute groups from the site, inasmuch as they can be regarded as significant. The species list offered no clear information about depositional conditions, although there may have been a few insects attracted to foul matter. There were a few puparia of Sepsidae and *Leptocera* sp., 'several' beetle larvae, a human flea, and a few other remains.

Context 20178: immediately overlying 20179; dark brown amorphous peat.

Sample 1143 (BS, also treated as GBA): black, slimy organic detritus with pale flaky inclusions and brittle 'pan-like' inclusions.

Plants (BS—VW): (plant remains were only examined from the BS sample) There were 30 taxa, of which *Prunus spinosa* scored 2, and 'bran' 3, with faecal concretions also at 3. The FOOS component was quite large, the AIV of 30 and many of the taxa involved being exactly the same as for the assemblage from the BS sample from 20179 (see above).

Insects (/1): A subsample of 1kg was processed for insect remains. A modest-sized assemblage of 64 individuals of 51 beetle and bug taxa was ‘detail’ recorded. Diversity was high ($\alpha = 115$, although $SE = 35$), the outdoor component moderately large (% N OB = 14), and decomposer diversity high (alpha RT = 52, but $SE = 17$). There were six *Cercyon analis* and three *Xylodromus concinnus* and *Oxytelus sculptus*; the assemblage appeared to consist of a mixture of invading or established decomposers with ‘background fauna’. There was a hint of a ‘house fauna’ element.

There were two fleas, probably *Pulex irritans*, and other remains including ‘several’ mites and a few *Leptocera* sp. puparia.

Sample 1144 (GBA): no action to date.

Sample 920178 (Spot):

Insects (/SPT): This was a ‘grab’ sample of the worst kind collected by the authors during a site visit. There were ‘several’ mites and fly puparia and a few other remains. A small group of beetles was recorded—24 individuals of 19 taxa. A quarter of the individuals were of foul matter taxa and the subjective impression was of a small group of decomposers attracted to a heterogeneous but primarily foul organic deposit.

Cuts 35812 and **19243**: these two pits, which lay one above the other, were found at the very far site SE corner of the excavation.

Cut 35812: this was about 1.3m across with fills up to about 0.3m in thickness. There were at least five sampled fills.

Context 19283: black, very sandy silty organic material up to 0.1m thick.

Sample 1256 (BS—VW): Though of average size (44 taxa), the assemblage contained several taxa with an abundance score of 2: *Urtica urens*, *Polygonum persicaria*, *Chenopodium murale*, *C. ficifolium*, *C. album*, *Atriplex* sp(p)., *Stellaria media*, and *Lamium* Section *Lamiopsis*. Not

surprisingly, there were very high AIVs of 55 (rank 7 for this series of samples) for CHEN and 30 (rank 1) for BIDE (the latter was represented by nine taxa—more than in any other Period 5 BS assemblage). There was a modest-sized foodplant component of seven taxa and a variety of other kinds of plants, but the weeds of disturbed, including seasonally wet, habitats were predominant. This is perhaps to be expected in deposits from that part of the excavated area nearest the supposed course of the Foss.

Sample 1218 (GBA): mid to dark brown clay-rich humic silt with a few small wood fragments, oyster shell and bone.

Parasitic worms: The single sample gave traces of *Trichuris* eggs.

Insects (/T): Invertebrates included ‘several’ fly puparia (one of them a *Melophagus ovinus*) and a human flea. There were only single individuals of all but two of the 40 beetle and bug taxa ($N = 42$), well over a third of which were ‘outdoor’ forms. There were four aquatics, which may have been colonists of open water, but otherwise this was probably background fauna.

Context 19272: immediately above **19283**; mixture of light brown to brownish-yellow ‘plant-stalk’ remains and greyish-brown silt; 0.02-0.03m thick.

Sample 1217 (GBA): dark grey-brown, crumbly, humic silt.

Plants (/M): This subsample gave a slightly below-average assemblage of 39 taxa was recorded, of which the following achieved abundance scores of 2: *Chenopodium* Section *Pseudoblitum*, *Stellaria media*, and *Brassica* sp(p). There was a fairly large AIV for CHEN but a very large one (25, rank 3 within this series of samples for Period 5). Only three taxa were scored in FOOS and only one in WOOD—the sum of useful groups represented. Other components of the sample—wood (scoring 3), bone, limestone, oyster shell and charcoal point to the occupation debris forming part of this accumulation.

Parasitic worms: the single subsample examined was barren.

Insects (/T): Insects were rather scarce. Among the invertebrates recorded there were a single *Melophagus ovinus* puparium, 'several' mites, and 33 beetles, only two with more than a single individual (*Anotylus complanatus* and *Acritus nigricornis*, each with two). Half were outdoor forms and aquatics were proportionally well represented (single individuals of seven taxa). This may have been a mixture of background fauna and aquatics attracted to a water surface.

Context 19271: immediately overlying 19272; dark reddish-brown, sandy silty peat, 'riddled' with plant remains; layer about 0.03-0.05m thick.

Sample 1244 (BS—VW): A large assemblage was recovered—71 taxa (equal sixth largest for the BS samples) though with only the following achieving an abundance of 2: *Potentilla* sp(p). (probably both *PP. erecta* and *reptans*), *Carex* sp(p). and *Calliergon cuspidatum*. There were traces of faecal concretions, but the foodplant component was rather modest (seven taxa) and the bulk of the taxa recovered (48%) were scored with one or more of the weed groups: CHEN, BIDE, ARTE or SECA, the last three being proportionally better represented within this series of samples than CHEN. Amongst taxa scored in SECA (cornfield weeds), there was the only Anglo-Scandinavian record for the site for *Bupleurum rotundifolium*, an plant which has become very scarce in recent decades, though which, on the available evidence from York, never seems to have been an important cornfield weed in this area (there are a few other isolated records for fruits of this plant from other York excavations, mainly for the Anglo-Scandinavian period).

The other vegetation groups that must be mentioned are MOAR, whose AIV of 18 was at equal rank 3 and FEBR (9, rank 1). The 10 taxa scored in MOAR reflect a diversity of grassland habitats, with both *Picris hieracioides*—a species most typical of heavy calcareous soils—and *Danthonia decumbens* (both caryopses and tentatively identified cleistogenes)—more usually

associated with poorer, acid soils. If at least some of the large numbers of *Potentilla* achenes were *P. erecta*, these and the *Danthonia* remains might indicate the presence of turves. Two other rather unusual records were for *Silene vulgaris* and *Reseda lutea*, species typically of grassy hedgebanks and roadsides, especially on calcareous soils; they were recorded more from Period 5C deposits than from any other Anglo-Scandinavian deposits at this site and, indeed, almost all the records were from the fills of the two pits discussed here.

Sample 1211 (GBA): dark brown, soft, somewhat crumbly, humic silt with moss and wood fragments and fibrous plant remains.

Parasitic worms: The single subsample examined was barren.

Insects (/T): A small group of arthropods was present in the large flot, and was rapid-scan recorded. There were 24 species of beetles and bugs, all but one represented by single individuals, together with 'many' mites; there were hardly any other remains. Preservation was good. A third were outdoor forms. This may have been background fauna, perhaps with some attracted aquatic and waterside forms.

In addition, a 10kg subsample was bulk-sieved after the main period of processing. Rough sorting recorded a large proportion of wood fragments and moss with some bone, charcoal, rounded (?reworked) oyster shell fragments and eggshell.

Context 19270: immediately overlying 19271; black layer, entirely composed of wood chips, wattle fragments, and plant remains in a grey silt; 0.02-0.04m thick.

Sample 1210 (BS—VW): A large assemblage of 58 taxa was recorded. One taxon scored 2—*Potentilla* sp(p)., as in the BS sample from 19271. Many taxa were shared in common between the two samples (the Jaccard similarity coefficient was high, at 42%) and there were relatively high AIVs for the grassland groups MOAR (17, rank 5, most taxa also in 1244) and FEBR (7, equal rank

3, all taxa that were present in this group in 1244). Again, *Danthonia* caryopses were recorded and this time also securely identified cleistogenes.

Sample 1208 (GBA): dark grey-brown crumbly humic sandy clay silt, with wood chips and wood fragments, bone shavings, shell fragments and fibrous plant fragments.

Parasitic worms: A single subsample was examined; it yielded a single *Trichuris* egg.

Insects (/T): The flot was rapid-scanned, only 36 individuals of 31 beetle and bug taxa being noted, together with 'several' fly puparia, mites, aphids and scale insects, and a few other invertebrates. A proportion of the insects may have been colonists of rotting matter but all could have been background fauna.

In addition, a 13kg subsample was bulk-sieved after the main period of processing; rough-sorting yielded a variety of occupation debris, particularly bone, moss and shellfish but a predominance of wood fragments.

Context 19268: immediately overlying **19270** and underlying **19255** (basal context of Cut **19243**); dark reddish-brown (oxidising to very dark grey) humic, sandy very silty peat; 0.05-0.06m thick.

Sample 1205 (BS—VW): Of the 38 taxa in this sample, many were the same as in BS samples from **19270** and **19271** (*Silene vulgaris* and *Danthonia* caryopses and cleistogenes were again recorded). Similarity coefficients for the assemblages in Samples *1244* and *1205* (36%) and *1210* and *1205* (41%) were quite high. The grassland groups were much less conspicuous in this sample, however, and weeds in CHEN were predominant (nearly 40% of the assemblage).

Sample 1203 (GBA): fibrous, reddish-brown structured peat with humic silt matrix; has something of the appearance of rotted turf.

Parasitic worms: The single subsample examined was barren.

Insects (/T): A rather small group of beetles and a single bug were recorded (N = 48, S = 38); there were also 'many' mites and a few other remains. Diversity was high ($\alpha = 83$; SE = 28) and almost half of the assemblage consisted of 'outdoor' forms. There were seven individuals of five aquatics. Well under half of the assemblage consisted of decomposers. There were three *Omalium ?rivulare*, but other taxa were represented by only one or two individuals. This appears to have been background fauna with a few attracted aquatics; in addition, some decomposers may have been attracted to foul matter.

Cut 19243: a smallish pit of about 1.5m across and 0.5m deep cut into the upper part of **35812**, and containing a series of about four fills of which two were sampled.

Context 19255: the basal context; black, silty, sandy clay loam, with 20% inclusions of wood fragments, limestone pieces, shell and bone.

Sample 1196 (BS—VW): There were 50 taxa in this assemblage, putting it somewhat above the Period 5 mean for BS samples. Weeds in CHEN were by far the largest group (AIV 47, 34% of the taxa), with abundance scores of 2 for *Urtica urens*, *Chenopodium murale*, *Stellaria media* and *Lamium* Section *Lamiopsis* all contributing to this substantial figure. Unusually, the moss *Calliergon cuspidatum* scored 2; this is perhaps a species most likely to have been growing in wet grassy places at the lower end of the site. As in the BS sample from **19271** (above), there were records for *Silene vulgaris* and *Reseda lutea*. There was a modest-sized component of foodplants, including sloe, 'plum', 'cherry', field bean, linseed and rye, but there was probably no faecal material. The assemblage was most similar to that from *1244*.

This sample also yielded a single puparium of *Spilogona contractifrons*.

Sample 1195 (GBA): dark brown, slightly sandy silt, with quite a lot of fine plant detritus, wood chips and small pebbles.

Parasitic worms: Two *Trichuris* eggs were recorded from the subsample examined.

Insects (/T): Rapid scanning was employed. There were about 43 individuals of 37 beetles and bugs, only *Monotoma bicolor* occurring with more than two individuals (there were three), and a variety of other remains including 'many' mites, 'several' ostracods and fly puparia, two human fleas, a human louse, and adult and puparia sheep keds. Preservation was good, so presumably input was low. Diversity was high ($\alpha = 124$, although $SE = 53$), and the outdoor component accounted for nearly a third of the individuals. The origin of these remains is not obvious.

In addition, a 16kg subsample was bulk-sieved after the main period of processing. The rough sorting yielded pottery, a little tile, wood, charcoal, hazel nutshell, mammal and fish bone, shellfish fragments and a dog coprolite.

Sample 1192 (Spot): a single modern *Helix aspersa* shell.

Context 19247: immediately overlying **19255**; very dark grey, mottled, organic layer, consisting of what looked on excavation like 'stalk' vegetation and wood chips.

Sample 1191 (BS—VW): A large assemblage of 60 taxa, perhaps not surprising given the very organic nature of this deposit. Only two taxa scored an abundance of 2, however: *Stellaria media* and *Ranunculus* Section *Ranunculus* (it may be significant that this was one of only two records for this latter taxon at an abundance greater than 1 in the Period 5 BS series). Taken as a whole, though, the assemblage was a mixture of weeds (especially in groups CHEN and SECA) and foodplants, with small amounts of dyeplants, woodland taxa, and plants representing a variety of other habitats, not unlike many other deposits from the site at this period. The AIVs for ARTE (21, rank 4) and BIDE (19, equal rank 5) are probably the only ones worth noting in isolation. The 10 taxa counted in ARTE were quite diverse and, as in other BS samples from this series of fills, included *Silene vulgaris* and *Reseda lutea*. Another taxon

present here, and in several other 5C assemblages, but rare in earlier Anglo-Scandinavian deposits at Coppergate (and apparently rarely if ever recorded in York before the Norman Conquest) was *Chrysanthemum segetum*.

Sample 1186 (GBA): dark reddish-brown humic silt, with many wood fragments and some bone.

Parasitic worms: The subsample examined was barren.

Insects (/T): Rapid scanning gave records of 34 individuals of 28 beetles and bugs, and other remains including 'several' mites. Preservation was good, so input was presumably small. A quarter of the individuals were outdoor forms. This appears to have been a mixed group, and its origin is difficult to determine.

Pit fills not accurately located

Cut 6572: a small pit, about 0.9m across with a single fill.

Context 6785: lower(most?) fill of cut.

Sample 1124 (Spot): two fragments up to 20 x 30mm across of a polypore bracket fungus with maze-like pores beneath, perhaps *Daedalea* sp.

Context 6473: very dark grey silty sandy clay loam with bone, limestone and cobbles; above **6785**.

Sample 1112 (Spot): skull, mandibles, atlas and axis of domestic cat; transverse knife cuts on frontal bones indicate skinning.

Other deposits

Context 3543: archaeological details not requested, but located well to the rear of Tenement A.

Sample 603 (Wood): not submitted for identification.

Context 21433: archaeological details not

requested (layer, rear of site).

Sample 1690 (Spot): six precaudal vertebral centra of cod (*Gadus morhua*), probably all from the same individual.

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(N.B. items are sorted alphanumerically, which means, for example, that Context 3463 appears after 21433)

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