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

### **Part 3: Period 5A**

#### **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 third major part of the Anglo-Scandinavian sequence (Period 5A: c. AD 975) 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 5A); 16-22 COPPERGATE; PLANT MACROFOSSILS; PARASITE EGGS; INSECTS; FLY PUPARIA

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

## Part 3: Period 5A

### 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.**

### Introduction to Period 5A

Dated to *c.* AD 975, this short-lived phase has been interpreted as one of reorganization. Deposits of this phase were only recorded from the front two-fifths of Tenements A and B (and of the western half of C) and the front fifth of Tenement D and the eastern half of Tenement C. There were no buildings identified, but we have often located contexts with respect to the lines of later (Period 5B) buildings for ease of discussion.

#### *Tenement A*

## External layers

**Context 2325:** small area in Tenement A, in the vicinity of the N end of Ditch **2181**; very dark grey layer of fibrous plant remains, about 0.12m thick.

*Sample 39* (GBA): no action to date.

**Context 2498:** a modest area of about 1 x 0.8m in greatest extent, and 0.05m thick, to the W of the N end of Ditch **2181**; very dark grey silty loam, with many plant and wood remains.

*Sample 45* (GBA): dark grey to grey-brown, plastic to crumbly, sandy silt with traces of charcoal. A 1kg /T subsample was to have been processed but there is no record of this having happened.

A 5kg subsample was bulk-sieved after the main period of processing; there was much wood, charcoal and hazel nutshell in the residue, along with some pot, bone, oyster shell, eggshell and amber.

**Context 2548:** a layer in Tenement A, in the same area as **2498**, about 1 x 0.7m, of very dark grey clay loam with charcoal flecks.

*Sample 137* (Spot): A spot find of avian eggshell; no further analysis undertaken.

**Context 2437:** layer up to 0.15m thick, to NW of where the ?Victorian brick-lined well, **2001**, was sunk; at least 2m in greatest lateral extent; very dark greyish-brown silty loam, with patches of dark brown silty clay and flecks of ash.

*Sample 92437* (Spot): Two subsamples from ?hand-collected material were examined; neither gave any *Ascaris* eggs, but both gave poorly preserved *Trichuris* in small numbers.

## Cuts on Tenement A

**Cut 31266:** this cut, about 0.9m across and 0.4m deep was apparently for the insertion of a barrel (as a well?); the barrel (whose staves—including timbers **8987-9**—were identified as oak) was *in situ*, though its staves had collapsed into the fill of

the cavity. The cut was in Tenement A, just below the S wall of the ‘cavity-walled building’ (5/1).

**Context 31300:** the second-to-lowest fill, a black, sandy silty loam.

*Sample 1992* (GBA): dark grey to slightly greenish grey-brown, soft humic clay silt to silty clay with some sand and grit; perhaps charcoal-rich.

Plants (/M): There were 44 taxa in this assemblage, making it somewhat larger than the period mean and rather smaller than the sub-period mean. Only *Chenopodium album* at 2 scored an abundance greater than 1, and taxa in CHEN formed the largest single group (34%). There were in addition small components of foodplants, dyeplants and taxa from acid peat habitats, as well as from a wide range of other environments, but none in more than very small amounts.

The other components of the sample included amphibian and mammal bone, tile, charcoal, limestone, pottery, slag and charred textile fragments; they might have originated in backfill or have arrived in the deposit during the use phase of the well. The fine-grained nature of the matrix at this level perhaps argues more for gradual accumulation during use than deliberate dumping.

Parasitic worms: Two subsamples were examined; both were barren.

Insects (/T): The small group of beetles (S = 23, N = 27) was rapid scan recorded. There were also some other remains including ‘several’ mites and an adult and puparium of *Melophagus ovinus*. No beetles were represented by more than two individuals and no clear interpretation is possible.

**Context 31271:** immediately overlying **31300**; a very dark grey, slightly sandy clay loam, with a few organic inclusions.

*Sample 1991* (GBA): mid grey to dark grey-brown sandy clay silt or silty clay; very heterogeneous, with bone, grit, tile—has very much the appearance of ‘backfill’.

Plants (/M): The assemblage (43 taxa) was effectively the same size as that from 1992/M, though the Jaccard similarity coefficient for the two taxa lists was only 0.32. *Chenopodium album* and *Rubia* scored 2 in this sample and there were modest amounts of charcoal and wood fragments amongst the other components (which included baked clay/daub, tile and mortar).

Amongst the other identifiable plant remains, there was a hint of a calcareous grassland component, mainly via *Linum catharticum* and *Pastinaca sativa* (presumably wild parsnip), giving an AIV for FEBR of 7 (equal rank 3, but based on only four taxa). For the rest, though there was a mixture of food- and dyeplants, weeds and plants of a diverse range of habitats from woodland and moorland to wetland.

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

Insects (/T): There were varied insect remains, including a *Melophagus ovinus*, two human fleas, and a few others, but numbers were small and only 54 individuals of 40 beetles were found. Main statistics were not unusual for an assemblage of this size. There were four *Carpelimus bilineatus*, including remains of a pale, recently-emerged, individual, and three each of *Anotylus nitidulus*, *Lathridius minutus* group and *Aglenus brunneus*. There were hints of the presence of a 'house fauna' group, but the assemblage was not otherwise informative.

**Context 31302:** a small context lying above 31271 and on one side of the pit only, as seen in section; this was backfill outside the barrel, deposited after the latter was inserted into the cut; it was a very dark grey, very peaty silty loam.

*Sample 1994* (GBA): dark grey-brown to brown, rather crumbly, highly humic silt with medium to coarse plant detritus, including *Genista* stem fragments.

Plants (/M): The assemblage comprised only 36 taxa, and of these only *Genista* stems (at 3) scored more than 1. The dyeplant component was

otherwise rather small, however, with only one other taxon (traces of *Rubia*) and the other use and vegetation groups achieved unexceptional AIVs. There was a 39% non-quantitative similarity coefficient between this assemblage and that from 1992, but only 29% between this one and that from 1991. Once again there was a range of organic and inorganic occupation debris, including tile, charcoal and bone, but the sediment description suggests gradual accumulation, perhaps with wholesale disposal of the *Genista*, rather than dumping of the deposit as one brief event. Rather large numbers of elderberry (*Sambucus nigra*) seeds were recorded in the insect 'flot'; these are perhaps most likely to have originated in trees growing near the site, given that the foodplant component of the assemblage from the residue was so small.

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

Insects (/T): The flot was rapid-scanned. Insects were rare—only 14 individuals of twelve beetles and a few other remains being found. Preservation was excellent, however, so input was presumably low.

## Tenement B

### External layers

**Context 2393:** a very small patch to the E of where the rear Period 5B Tenement B building (5/4) was later built, just outside the line of its E wall; brown loamy clay.

*Sample 992393* (Spot): Two subsamples of ?hand-collected material were examined; both gave small numbers of poorly preserved *Trichuris*, and one a single ?*Ascaris*.

**Context 2447:** a ?dump layer, about 0.7 in greatest lateral extent, and up to 0.25m thick, N of where the ?Victorian well, 2001, was inserted, just W of the line of the W wall of the rear Period 5B building (5/4) on Tenement B; dark brown silty sand, with patches of dark brown sandy loam and strong brown sand and containing limestone

fragments. The excavator asked if it might have been an *in situ* waterlain deposit.

*Sample 251* (GBA): light-mid yellow-brown, crumbly sand with small pale clay lumps and traces of wood fragments; it seems unlikely to have formed by deposition in water *in situ*. Analysis for worm eggs alone was undertaken.

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

**Context 8099**: a layer about 0.75 x 0.4m, up to 0.07m thick, just N of the line of the N wall of the rear Period 5B Tenement B building (5/4); very dark greyish-brown clay loam.

*Sample 998099* (Spot): Two subsamples were examined from ?hand-collected material; both gave trace amounts of *Trichuris* eggs only.

**Context 8168**: in the same area as **8099**, immediately N of the area where the N wall of the rear Tenement B building (5/4) collapsed; about 0.9 x 0.8m and up to 0.08m thick; very dark grey clay loam with patches of brown clay.

*Sample 998168* (Spot): Two subsamples from ?hand-collected material both gave traces of *Trichuris* eggs only.

**Context 8169**: in the same area (Tenement B) as **8099** and **8168**; about 1.3 x 1m in extent and up to 0.03m thick; very dark grey peaty clay loam.

*Sample 224* (GBA): mid grey, crumbly to brittle, somewhat heterogeneous, sandy, slightly clay silt with traces of stones 6-60mm and of charcoal. A 1kg /T subsample was to have been processed but there is no record of this having happened.

Parasitic worms: The single subsample examined contained very small numbers of *Trichuris* eggs.

**Context 8175**: in the same area of Tenement B as **8169**; a heterogeneous (?dump) layer of reddish-brown organic material, largely wood

chippings, with inclusions of leather, bone and pebbles.

*Sample 228* (GBA): mid-dark grey-brown, sticky, rather heterogeneous, slightly sandy clay silt with some herbaceous detritus and traces of small bone fragments. There were varying degrees of humicity giving a patchiness; buff silt inclusions at cm and mm scales, and white flecks also present.

Insects (/1): Modest numbers of insects were recovered, including small numbers of fly puparia (mostly Limosininae), a sheep ked puparium, and probably two human fleas. Recording was semi-quantitative, about 76 individuals of 47 beetle taxa being noted. Main statistics were generally unremarkable. There were 'several' of the following: *Cercyon analis*, *Acritus nigricornis*, *Anotylus nitidulus* and *Lathridius minutus* group, and three *Anobium punctatum*. The decomposers may have lived in the layer but if so the ecological conditions remain uncertain.

**Context 8243**: in the same area of Tenement B as **8175**, about 1.2 x 0.9m in extent; a compact layer of rotting wood chips and twigs.

*Sample 252* (Spot): A 0.5kg /M subsample examined for plant remains gave an average-sized assemblage of 41 taxa, but all in trace amounts; wood chips were not recorded as such, though wood fragments were present. The assemblage contained many of the same components seen throughout these Anglo-Scandinavian deposits, but none in especially large quantities.

**Context 8282**: large area, about 4.5 x 2.2m, and up to 0.11m thick, to the E of the line of the E wall of the Period 5B rear Tenement B building (5/4); very dark grey organic loam, containing wood stains, flecks of daub, tile and charcoal.

*Sample 257* (Soil): mid-dark grey-brown, crumbly to more-or-less brittle, humic, slightly clay silt, with traces of shellfish and small plant fragments.

Insects (/1): There were not many insect remains, and only 26 beetle and bug taxa (37 individuals)

were noted. Other remains included a single *Melophagus ovinus*, an ostracod, 'many' ephippia of *Daphnia* and of another, unidentified, cladoceran, and a larval abdominal apex of *Athous ?haemorrhoidalis*. Whole-assemblage diversity was rather low ( $\alpha = 39$ , SE = 14), and the proportion of outdoor individuals high (nearly a third). Although numbers were small, aquatic and damp ground beetles were proportionally abundant. *Anotylus nitidulus* was the most abundant taxon (3), and there were nine taxa with two individuals including *Helophorus* sp., *Ochthebius* sp. and *Platystethus cornutus* group. Other remains were ecologically mixed and decomposers relatively unimportant. There seems little doubt that this layer included waterlain sediment, received waste water, or even had puddles on it.

**Context 8290:** located on the line of part of the spine between Tenements B and C, E of the subsequent Period 5B Structure 5/4; very dark grey loam, occupying an area of about 1.7 x 0.5m.

*Sample 261* (GBA): mid grey sandy silty clay to clay silt with orange flecking, burnt bone, shell and a few stones.

Plants (/M): The small assemblage of 19 taxa was dominated (42%) by weeds in CHEN, which included *Descurainia sophia* and *Coronopus squamatus*; only *Urtica dioica* scored an abundance of 2. There were no dyeplants and only mere traces of foods and flavourings. The traces of *Daphnia* ephippia may point to the presence of water, either *in situ* or imported.

Insects (/T): Insects were rare and poorly preserved; only single individuals of six beetle taxa were seen. There were three or four types of cladoceran ephippia, including 'several' *Daphnia*; the only other invertebrate observed was a single fly puparium.

*Sample 277* (GBA and Spot): light-mid grey-brown, crumbly, very heterogeneous, slightly sandy clay silt, with traces of stones 2-6mm and of large bone fragments. Some charred grain from this deposit was recovered by the excavator as 'Subsample 1' of Sample 277.

The subsample of charred grain consisted mainly of wheat with a little oats and ?rye; many of the grains were fused together.

In addition, a 7kg subsample was bulk-sieved after the main period of processing; the residue was rough-sorted and yielded a substantial amount of slag, charcoal and charred grain, with some pottery, bone, daub, oyster shell and fish scale and bone.

**Context 8349:** a layer towards the SE corner of the line of the rear Period 5B Tenement B building (5/4), about 2 x 1.4, and up to 0.05m thick; very dark grey clay loam, with numerous bones, wattle, tile, limestone and cobbles.

*Sample 998349* (Spot): Two subsamples examined for parasite eggs both gave moderate to large numbers of *Trichuris* eggs, though the majority had lost one or both polar plugs.

**Context 8358:** on the other (W) side of the same building outline (Tenement B), a similar dump deposit, only about 0.5 x 0.4m across, of very dark grey loam, with charcoal flecks, wood chips and bits of tile.

*Sample 998358* (Spot): The two subsamples examined for parasites gave small amounts of *Trichuris* eggs, mostly lacking polar plugs, and one gave a trace of *Ascaris*.

**Context 8453:** extensive layer, about 3 x 1.6m, and up to 0.33m thick, on the E side of the same building plan (Tenement B); dark reddish-brown peaty loam, with numerous wood chips, some bone and tile (the section shows lenses of almost solid wood chips, with bone, leather and 'tiny black grubs').

*Sample 280* (GBA): mid-grey to reddish-brown, soft, humic silt, with much fine plant detritus, compressed leaf/stem fragments, grit, stones, eggshell and patches of mineral material, in places a large amount of leather and wood chips.

Plants (/M): There was a rather large assemblage of 63 taxa, but with only *Diphasium* reaching an



abundance of 3. There was a modest DYES component, but FOOS were almost absent, and the assemblage was dominated by annual weeds in CHEN and SECA. Occupation debris included bark, bone, leather, eggshell and limestone, and wood fragments were scored at 2. There was a fairly rich moss flora, including *Polytrichum* cf. *formosum*, a heathland/moorland or woodland taxon, only otherwise recorded from a Period 4B scoop fill (19748) and, also tentatively, from a Period 5A pit (Cut 20991) and *Dicranum* cf. *majus*, otherwise only recorded, tentatively, from a Period 5B pit (Cut 6422).

Insects (/T): Recorded semi-quantitatively and by rapid scanning; there were about 61 individuals of 40 beetle and bug taxa. There were also assorted other invertebrates including 'many' mites, a *Daphnia* ephippium, a single ephippium of another cladoceran, 'several' fly puparia and scale insects, a *Melophagus* adult, and a human flea. The main statistics did not give any clear pointers to interpretation, and the species list little more. There were 'several' *Cercyon analis* and *Lathridius minutus* group and three *Anotylus rugosus* (all rather eurytopic), and the remaining taxa had only one or two individuals. There may have been a component of rapid colonisers of plant litter.

Puparia included modest number of *Nemopoda* sp., *Leptocera* sp., and *Stomoxys calcitrans*, and a few *Musca domestica* and Sepsidae.

Sample 286 (Spot): This was mid-dark grey-brown, crumbly, very heterogeneous, humic, slightly sandy, clay silt with much herbaceous detritus, including leafy shoots of *Erica tetralix* and stems of moss, and fly puparia; there were also patches of greyish clay and of more organic material. A 1kg subsample was processed.

Insects (/T): Recorded non-quantitatively, the flot was small, about half insect and half plant fragments. There were 'many' mites and 'several' *Chionaspis salicis*, beetle larvae, several unidentified lice and fly puparia. Single adult and puparial *Melophagus ovinus* were noted and there was a flea and a single cladoceran ephippium.

Beetles were not very abundant, and a single leafhopper was observed. There were 'several' *Carpelimus pusillus* group, and a few individuals of *C. bilineatus*, *C. fuliginosus*, *Lathridius minutus* group and *Leptacinus* sp. Overall, this was a rather a mixed decomposer group (with a few 'outdoor' taxa), perhaps a mixture of remains from redeposited or dumped layers from in or around a building, together with subsequent invaders in a rather damp surface layer.

**Context 8454:** to the W side of the outline of the rear Tenement B building (5/4), about 1.2 x 0.7m, and up to 0.05m thick; black, very organic loamy peat with abundant wood chips.

Sample 292 (GBA): very dark grey-brown, crumbly, amorphous organic material/herbaceous detritus (?cess), with traces of charcoal and wood fragments.

Parasitic worms: There was a single *Ascaris* egg in the subsample examined.

Insects (/T): The small flot consisted almost entirely of insect remains. The beetle and bug assemblage was rather limited, however (N = 76, S = 40). There were 'many' fly puparia (including unquantified Sepsidae sp., Limosininae and *Stomoxys calcitrans*), and among various other remains there were 'several' mites and a larval apex of a click beetle, *Melanotus* sp. (doubtless *M. erythropus*, as all other records of the genus from the site appear to have been this). Whole-assemblage diversity was quite low ( $\alpha = 34$ , SE = 7), foul matter taxa relatively well represented (% N RF = 14), and diversity of the decomposer component quite low (alpha RT = 15, SE = 4). The most abundant taxa were *Carpelimus bilineatus* (9), *Lathridius minutus* group (6), *Anobium punctatum* (5) and *Platystethus arenarius* (4). There were also three *Cercyon atricapillus*, *Carpelimus fuliginosus* and *Neobisnius* sp. and one or two individuals of several other taxa suggesting moist, rather foul but probably open-textured decaying matter.

In addition, a 2kg subsample was bulk-sieved after the main period of processing, but has not been sorted.

**Context 8523:** a layer about 1.4 x 0.5m, and up to 0.02m thick, below and within the ground plan of the rear building (5/4) on Tenement B; very dark grey amorphous peat/loam, containing wood chips.

*Sample 309* (GBA): dark grey-brown, crumbly, humic silt, with moderate amounts of charcoal and traces of wood fragments.

**Worms:** A single *Trichuris* egg was recorded from the subsample examined.

**Insects (/T):** A small group of beetles was present (30 individuals of 26 taxa), almost a third classified as 'outdoor' forms. There was no evidence that a breeding community was present, only *Lathridius minutus* group (4) and *Anotylus nitidulus* (2) being represented by more than one individual. This may have been entirely 'background fauna', although the *L. minutus* group, a human flea, 'several' scale insects, and a *Melophagus ovinus* puparium may indicate the presence of material originating within a building. There were 'several' other fly puparia.

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

**Context 8799:** this large layer of about 3.3 x 1.8m, and up to 0.04m thick lay within the outline of the later rear Tenement B Period 5B building (5/4); dark greyish-brown, compact, sand loam.

*Sample 428* (GBA): not described in detail in laboratory, but recorded as clay-like, perhaps trampled clay, containing tile, leather and wood fragments. The residue from the /1 subsample was described as containing much 'curved-shaped wood', perhaps wood shavings or chips.

**Parasitic worms:** Two subsamples were examined, both giving traces of *Trichuris* eggs only.

**Insects (/1, /2):** The /1 subsample gave 152

individuals of 74 beetle and bug taxa; there were also 'several' mites and a variety of other remains in small numbers. Main statistics were generally unremarkable apart from the large proportion of 'rd' taxa (% N RD = 30). The more abundant species included what appeared to be a 'house fauna' component: *Lathridius minutus* group (15), *Atomaria* sp. (11), *Xylodromus concinnus* and *Aglenus brunneus* (8) and *Cryptophagus* sp. and *Mycetaea hirta* (6). There were also five *Anotylus nitidulus* and four each of an aleocharine and *Anobium punctatum*. It appears that most of this assemblage formed in or by a building; perhaps the material was redeposited from earlier layers, or dumped from a nearby contemporaneous floor.

Subsample /2 gave a smaller assemblage of beetles (N = 102, S = 51, detail recording), and a few other remains including 'many' mites, 'several' fly puparia, a human flea and a sheep ked puparium. 'Dry' decomposers were again proportionally abundant (% N RD = 32). The more abundant taxa were a somewhat different group, however: *Carpelimus pusillis* group (18), an *Atomaria* species and *Lathridius minutus* group (8), *Mycetaea hirta* (6), *Cryptophagus scutellatus* (5) and *Anotylus nitidulus* (4). It is possible that this represents a dump, or redeposited spadeful, of different origin to the /1 subsample; certainly there was again strong evidence of 'house fauna'.

*Sample 998799* (BS): This was processed at an early stage of the excavation; no subsequent record of the material apart from two subsamples examined for parasite eggs, both of which gave traces of *Trichuris*.

**Context 8800:** a large area of about 5 x 2m, up to 0.05m thick, in the same area as **8799** (within the outline of Structure 5/4, on Tenement B); dark brown peaty loam, with many small wood chips and bone fragments.

*Sample 998800* (BS): The sample was processed at an early stage of the excavation; there is no subsequent record of the material.

**Context 8801:** another extensive layer, about 2.5 x 2m, up to 0.05m thick, below and around the

plan of Structure 5/4 (rear of Tenement B); very dark greyish-brown silty clay loam, with flecks of tile, charcoal and ash.

*Sample 998801* (BS): Another sample processed at an early stage of the excavation and with no subsequent record of the material except for a single puparium of *Musca domestica*.

**Context 8802**: a layer of about 3 x 0.4m, to 0.05m thick, in the same area as **8799-8801** (rear of Period 5B Tenement B Structure 5/4); very dark grey silty loam, with patches of grey clay.

*Sample 1850* (Spot): A sample of four avian tracheal rings.

**Context 8844**: a layer about 2.2 x 0.75m, up to 0.1m thick, just W of and abutting the Period 5A Tenement B/C boundary alignment **8850**; very dark grey loam.

*Sample 998844* (BS): A sample processed at an early stage of the excavation but with no subsequent record of the material.

**Context 8845**: immediately S of and abutting **8844** (Tenement B); area about 1.3 x 1.2 and up to 0.15m thick; dark brown, silty loam, containing much brown silty clay.

*Sample 998845* (BS): A further sample processed at an early stage of the excavation but with no subsequent record of the material.

*Sample 429* (GBA): mid-dark grey-brown, crumbly, humic, slightly sandy clay silt, with traces of stones 20-200mm, small limestone fragments and white flecks.

Insects (/1): Recorded semi-quantitatively, this assemblage included about 67 individuals of 41 beetle and bug taxa. In addition there were 'many' mites, 'several' fly puparia, a human flea and a *Melophagus ovinus* puparium, with a few other remains. There was nothing of special note about the main statistics. The most abundant taxa were *Xylodromus concinnus*, *Anobium punctatum* and *Aglenus brunneus* 'several' of each), and there

were also three *Anotylus nitidulus* and *Cryptophagus* sp. It seems that this layer included floor debris; the resemblance to some of the other Period 5A layers is striking.

**Context 8874**: a large area, 2.3 x 1.2m (thickness not recorded) in the same area as 8845 (Tenement B); very dark grey clay with patches of dark brown clay and grey silty clay.

*Sample 998874* (BS): One of several samples processed at an early stage of the excavation; there is no subsequent record of the material.

**Context 15173**: a very large area of at least 4.9 x 2.6m (thickness not recorded), between the outlines of the two Period 5B structures (5/3, 5/4) on Tenement B; very dark greyish-brown silty loam, with many small patches of mortar and charcoal flecks.

*Sample 769* (GBA): light grey to mid grey-brown sandy silt with pale flecks and inclusions of pale (? 'natural') clay, stones, oyster shell and ?ash; very mixed.

Plants (/M): Only 10 taxa were recorded from this subsample; they were mostly weeds of some kind, though there was at least one charred bread/club wheat grain, too.

Insects (/T): There were only single individuals of five beetle taxa in the minute flot. There were also three earthworm egg capsules and a single *Daphnia* ephippium. Preservation was poor. A few *Leptocera* and a single muscid were the only fly puparia recorded.

**Context 18594**: immediately behind the area later occupied by Structure 5/4 (Tenement B), an area of about 3 x 1.6m; very dark grey peaty silty clay loam, with flecks of olive ash and charcoal.

*Sample 1102* (BS—VW): There was a moderately large assemblage of 57 taxa, of which only *Diphysium* and *Atriplex* scored an abundance of 2. The assemblage was in many ways very typical of Anglo-Scandinavian deposits from this site which had only modest components of foodplants and

dyeplants with rather modest amounts of weed and other taxa.

*Sample 1101* (GBA): dark red-brown, crumbly, sandy amorphous organic material, with small stones, some shellfish fragments and appreciable amounts of wood fragments and large and small bone fragments. A 1kg /T subsample was to have been processed but this appears not to have happened.

Parasitic worms: Of the two subsamples examined, one was barren, the other yielding two *Trichuris* eggs.

*Sample 1106* (Spot): no action to date.

**Context 18727:** [layer, ?Tenement B]

*Sample 1035* (Spot): A sample of avian eggshell; no further analysis undertaken.

**Context 18919:** a narrow strip immediately abutting (but earlier than) the E wall of the front Structure (5/3) on Tenement B, about 2.4 x 0.25m; very dark grey silty loam, with patches of reddish-grey clay and flecks of charcoal and pale yellow ash.

*Sample 1108* (Spot): A shoot of modern conifer, perhaps *Cupressus* sp., and probably debris from ornamental shrubs used to enhance the excavation for the fee-paying public.

**Context 20062:** an irregular-shaped area, about 2.7 x 1.4m, and up to 0.03m thick, behind the line of the cut for the front building (5/3) on Tenement B; a typical Period 5A deposit, being rich in coarse debris; very dark grey silty, ashy loam.

*Sample 1098* (BS—VW): There was a rather large assemblage of 57 taxa, of which *Chenopodium album*, *Ranunculus* Section *Ranunculus*, *Sambucus nigra* and *Carex* sp(p). were all scored at 2. There was a mixture of taxa of different kinds, but predominantly weeds in CHEN and SECA, with a fairly large AIV of 35 for FOOS. The latter included raspberry, blackberry, sloe, ?field bean, pea, linseed, wheat, barley and oats.

*Sample 1097* (GBA): mid grey-brown, unconsolidated slightly silty fine sand, with traces of twig fragments and large and small bone fragments; has very much the appearance of a house floor deposit.

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

Insects (/T1, /T2): The first subsample gave a small group of arthropods including 'several' mites, a human louse, and 41 individuals of 38 beetle taxa. Over a fifth of these beetles were outdoor forms and only just over half were decomposers. No species was represented by more than two individuals and the material may have been randomly accumulated. The /T2 subsample was not recorded, and indeed perhaps never really existed.

In addition, a 16kg subsample was bulk-sieved after the main period of processing. The residue was rich in wood fragments, with traces of stone, brick/tile, slag, small bones and ?daub, and there were also small amounts of faecal concretions.

**Context 20105:** another 'dump' in the same area as **20062** (front of Tenement B); area about 3.7 x 3.2m, and thickness 0.12m; black, peaty clay loam, with wood and charcoal fragments.

*Sample 1110* (BS—VW): This sample yielded another rather large assemblage (62 taxa), all but *Chenopodium album* and *Atriplex* sp(p)., which both scored 2, being present in small amounts. The assemblage was very similar to that from *1098* (similarity coefficient = 55%) except for the moss component (there was one unclassified moss taxon in *1098*, but seven taxa in *1110*). One of the few records for this site for grape, *Vitis vinifera*, was from this sample.

*Sample 1133* (GBA): no action to date.

**Context 20131:** a strip to the E of the outline of the front building (5/4) on Tenement B, about 1.4 x 0.9m in extent; very dark grey silty, very peaty loam, with charcoal and wood flecks.

*Sample 1330* (GBA): dark, slightly reddish, grey-brown, crumbly to brittle, humic, slightly sandy silt, with traces of wood fragments and ?some concreted organic material.

Insects: This assemblage was recorded semi-quantitatively in view of the poor condition of the flot, which had particles stuck together in clumps by a 'waxy' substance (perhaps beeswax?).

There were two human fleas, 'many' mites, 'several' scale insects, assorted other remains and about 60 individuals of 41 beetle taxa. Main statistics were unremarkable in the context of the present site, bearing in mind assemblage size and recording method. There were 'several' *Aglenus brunneus* and an assortment of species with two or three individuals. The assemblage appeared ecologically mixed and may have consisted of background fauna, *A. brunneus* perhaps being a post-depositional invader (two other species of this postulated association were represented by single individuals).

In addition, a 2kg subsample was bulk-sieved after the main period of processing, but it has not been sorted.

*Sample 1111* (Spot): A sample of avian eggshell; no further analysis undertaken.

**Context 20746:** a deposit from the earliest part of the 5A sequence, just over a Period 4B hearth and alignment, but still a coarse detrital deposit typical of Period 5A; position between the outlines of the two Tenement B buildings (5/3, 5/4), area 1.3 x 1.2, and about 0.04m thick; black, peaty, very silty loam.

*Sample 1336* (BS—VW): An above-average-sized assemblage of 48 taxa was recorded from this sample, with abundance scores of 2 for *Diphasium* and *Chenopodium album*. There were moderately high AIVs for CHEN (38% of the assemblage were scored in this group) and SECA and reasonably large components of food- and dyeplants.

*Sample 1335* (GBA): mid grey-brown, unconsolidated, humic fine sand, with traces of

twigs and wood fragments and some ?ashy lenses; has the appearance of a floor deposit.

Parasitic worms: Two subsamples were examined; both gave traces of *Trichuris* eggs.

Insects (/T): A fairly large beetle and bug assemblage was recovered (N = 150, S = 75), as well as 'many' fly puparia, mostly *Nemopoda* sp., 'several' scale insects, proctotrupoids and mites, at least ten human fleas, some unidentified lice, 'several' *Melophagus* adults and a puparium, and a probable honeybee. The beetle and bug assemblage was diverse ( $\alpha = 60$ , SE = 8), had a rather large proportion of outdoor forms (% N OB = 17) and a substantial RD group (% N RD = 23). The most abundant taxa were a mixture of 'house fauna' taxa (e.g. *Lathridius minutus* group (13), *Anobium punctatum* (10), *Atomaria* sp. (6), *Aglenus brunneus* (5), *Ptinus* sp. (3), *Cryptophagus* sp. (3)), and other forms such as *Carpelimus ?bilineatus* (8), *C. fuliginosus* (7), *Anotylus nitidulus* and *Neobisnius* sp. (both 3). This apparent mixture of groups continued into the 15 taxa recorded at a frequency of two.

The outdoor component was ecologically diverse, It seems possible that this group had mixed origins, including floor debris, perhaps with a large 'background' component, redeposited elements, an perhaps even secondary invaders of the redeposited material—but interpretation is speculative.

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

**Context 20930:** an alignment in the same area as **20105**, **20746**, etc., continuing further S beyond the area occupied by the Period 5B buildings on Tenement B.

*Sample 1341* (Wood): There were 14 pieces of hazel roundwood in the sample with a diameter range of 19-41 mm and a mean ring count of 12.6 rings (SD = 2.2). Thus, although exhibiting a wide range of sizes, they represented stems with a limited range of ages at cutting and may, therefore, have originated in managed woodland. The material

was mostly either uncompressed or moderately strongly compressed.

**Context 26953:** a very large area of about 6.7 x 1.3m, and up to 0.07m thick, underneath deposits associated with Structure 5/4 (Tenement B); very dark grey peaty silt, with many small wood fragments.

*Sample 1788* (BS—VW): Only 17 taxa were recovered from this sample, making it one of the smallest BS assemblages; the washover was noted as having as being very bulky, but being composed mostly of madder root and unidentifiable plant fragments there was a low diversity of identifiable remains. All the taxa were scored at 1, with exception of *Corylus* and *Rubia* at 2. The madder, together with stem and pod fragments of *Genista* and stem fragments of *Diphysium*, accounted for a fairly high AIV for DYES, and foodplants were well represented, with apple seeds and endocarp, sloes, charred wheat and coriander also present (this last was one of only two records for Period 5 for a taxon that was rather frequent in Period 3—though here context type may be implicated). There were also capsule fragments of flax and a few weed taxa.

*Sample 1787* (GBA): reddish-grey-brown humic silt, with evidence of recent damage by arthropods; perhaps large quantities of rotten wood may have been lost during storage (the sample was taken in 1980 and analysed in 1985); some patches of more and of less richly organic material.

Insects (/T): There were few insects, and only 23 beetle taxa, all with single individuals. Other remains were uncommon. Preservation was mixed, some fossils being pale, others more normally preserved.

**Context 26958:** a very small patch of dark grey ashy silty loam, about 0.7 x 0.25m, and up to 0.15m thick, lying just W of the Tenement B/C boundary, in a position between where the two Tenement B buildings were later inserted in Period 5B.

*Sample 1801* (BS—V): Only 16 taxa were

recovered from this sample, all from rough sorting of the residue (there was no separate washover—it was probably negligible or very small and therefore returned to the residue after disaggregation). They included modest numbers of sloe stones, with small numbers of ‘plum’ stones, apple seeds, linseed and wheat/rye ‘bran’, with some of the material being mineralised (the *Agrostemma* seeds present were also mineralised). There seems little doubt that part of the deposit, at least, comprised faecal material. There was a suite of mosses—all present in small amounts—of the kinds recorded from samples rich in evidence for faeces.

*Sample 1800* (GBA): dark grey-brown, slightly plastic herbaceous detritus with wattle-sized wood fragments; it was thought perhaps to contain faecal material.

Insects (/T): A small group of insect was recorded, with 30 individuals of 25 beetle taxa. Other remains were not common, although there were ‘several’ mites, a *Melophagus ovinus* puparium, and ‘several’ other fly puparia. The beetle group was distinguished by the presence of three *Bruchus* ?*rufimanus*, of which one was represented by pale, soft remains and another by darkened but distorted ones. Other beetles were all represented by one or two individuals.

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

### Pit fills on Tenement B

**Cut 18341:** a modest cut about 1.2m across and 0.5m deep, between the positions of the two ranks of Period 5B buildings on Tenement B. There were four fills seen in section, only the lowest being sampled.

**Context 18344:** dark grey clay loam mixed with very dark grey structured peat into which large quantities of wood were mixed.

*Sample 995* (BS—VW): A small assemblage of 23 taxa was recorded, all at an abundance of 1. There

were small numbers of taxa representing groups of dyeplants, foodplants, weeds of various kinds and woodland plants (all essentially probable foodplants), and no further interpretative discussion is warranted. A trace of charred bread was recorded amongst the other elements of the sample, together with leather and wool fragments.

*Sample 993* (GBA): no action to date.

*Sample 994* (GBA): no action to date.

**Cut 20987:** a rather large pit, about 2m across and at least 0.65m deep, cut into the rear corner of the wicker building on Tenement B; it cut through the Period 4B floor levels and was sealed by deposits associated with the Period 5B building.

**Context 20877:** the relationship of this deposit to the other fills could not be ascertained in the absence of a section; it was a dark grey peaty loam.

*Sample 1345* (GBA): very dark brown, crumbly, humic silt with coarse wood and bark fragments

**Plants (/M):** This moderately large assemblage of 49 taxa included a fairly substantial component of dyeplants, with both *Diphysium* and *Rubia* scoring 2. The only other taxon scoring more than 1 was *Malus* endocarp (also 2), though the foodplant component was not otherwise especially conspicuous. Weeds made up the largest single component, with nearly one-third of the taxa scored in CHEN and one-fifth in SECA (some taxa are counted in both groups, of course). Nitrophile weeds of wet places (BIDE) was reasonably prominent, too.

**Parasitic worms:** The subsample examined was barren.

**Insects (/I):** A modest assemblage of insects was 'detail' recorded. In addition to 98 individuals of 57 beetle and bug taxa there were 'many' fly puparia, a human flea, a louse, and two *Melophagus ovinus* adults. Main statistics were about normal for Anglo-Scandinavian Coppergate, with no ecological group unusually well or poorly

represented. The most abundant species were *Lathridius minutus* group (8), *Cercyon analis* (7) and *Anotylus complanatus* (5). There were also four each of *Carpelimus ?fuliginosus* and *Anotylus rugosus*. This group was hard to interpret, but may have included 'house fauna' in moderate amounts together with a small oxyteline-dominated community. This subsample provided one of only two few records of the wood-boring weevil *Eremotes ater* from Coppergate.

**Context 20990:** overlying 23001; a black, peaty, silty loam with wood chips and clay flecks.

*Sample 1352* (BS—VW): There were 60 taxa in this large assemblage, nearly a third of them foodplants (the AIV for FOOS of 62 was the largest for any Period 5 sample (and at rank 2 for the BS samples from Anglo-Scandinavian deposits as a whole). 'Bran' was recorded in trace amounts but there was no evidence of faecal concretions; a suite of mosses typical of cess pit fills at this site was recovered, though this would not stand alone as evidence for faeces. The food remains included seeds (at abundance score 2) and 'pistil bases' of *Vaccinium*, the latter almost certainly indicating bilberry, *V. myrtillus*. Apple seeds and endocarp both scored 2, and there were small numbers of blackberry, sloe, rowan; hawthorn and 'plum'. The charred cereals included bread/club wheat, barley and rye.

Nearly as many taxa scored in CHEN as in FOOS, however, and there were smaller components of cornfield weeds, woodland plants (the majority also scored as foodplants), and some taxa of grassland and other vegetation groups.

**Parasitic worms:** The one subsample examined gave small numbers of eggs of *Ascaris* and moderate numbers of those of *Trichuris*.

The fly puparia included an unusual record—*Phaonia ?pallida*.

*Sample 1353* (GBA): dark brown, humic, slightly clay silt.

**Plants (/M):** With a total of 75 taxa, this was the

third largest assemblage from the Period 5 GBA subsamples. As in the BS sample, *Vaccinium* seeds were rather common (score 2) and with them abundant (score 3) wheat/rye 'bran' and moderate amounts (score 2) of faecal concretions (and *Trichuris* eggs were noted from a smear of undisaggregated sediment).

Three other taxa were present with an abundance score of 2: *Agrostemma githago* seed fragments (probably milled with the cereal grain represented by the 'bran' fragments), *Rubia tinctorum* (one of four taxa included in the rather poorly represented DYES group) and *Anthemis cotula* (a taxon which may have arrived as an arable weed, though there is reason to believe it may have grown as an urban weed in the past).

The foodplants group produced a high AIV (43, equal rank 4), but there was a large weed component in CHEN (AIV 49, rank 7, nearly one-third of the assemblage). SECA reached 34 (equal rank 7) and there were fairly large components of grassland taxa in MOAR and woodland taxa in QUFA (mostly foodplants, though *Oxalis acetosella* petiole abscission plates were present). Traces of Gramineae/Cerealia culm fragments may indicate the incorporation of material such as hay or straw into the deposit.

Parasitic worms: Two subsamples were examined; one gave modest numbers of *Trichuris* and a few *Ascaris*, the other a few of each,

Insects (/1, /M): The 1kg subsample was recorded as a 'detail' sample. There were 113 individuals of 67 beetle taxa and a single bug. Other insects included 'many' fly puparia (mostly Sepsidae sp.), 'several' scale insects and beetle larvae, and two human fleas. There were also 'many' mites. The main statistics were, like those for Sample 1345, rather bland, diversity being quite high ( $\alpha = 69$ , SE = 12), the outdoor component rather modest (% N OB = 11), decomposers fairly abundant (% N RT = 61), with rather few 'rd' taxa (% N RD = 10) and a modest representation of foul-matter taxa (% N RF = 8). The decomposer component was of relatively high diversity (alpha RT = 35, SE = 7). As with Sample 1345, Oxytelinae were important

(five *Carpelimus bilineatus*, four each of *A. complanatus* and *A. nitidulus*, three *Platystethus arenarius* and *Anotylus rugosus*). There were also six *Cercyon analis* and five *Philonthus ?politus*. 'House fauna' taxa were present, but in small numbers. This assemblage had the appearance of a mixture of background fauna, possibly redeposited material, and an invading foul-matter group.

The /M subsample produced several fly puparia, but few other arthropod remains.

Sample 1372 (Spot): This was a faecal concretion with moulds of fly puparia, impressions of straw-like material, fragments of corncockle (*Agrostemma githago*) seeds and *Triticum/Secale* 'bran'.

**Context 23001:** dark olive-grey 'cessy' structured peat.

Sample 1356 (GBA): dark grey-brown, crumbly, humic, slightly sandy silt with traces of twigs and small bone fragments.

Parasitic worms: There were modest numbers of both *Trichuris* and *Ascaris* eggs in each of a series of subsamples. Some eggs were measured. The proportions of eggs of the two taxa were unusual, with approximately equal numbers of each.

Insects (/1): A 1kg subsample was fully-processed and 'detail' recorded. Insects were not especially abundant, and 79 individuals of 54 beetle and bug taxa were recorded. There were also 'several' fly puparia (including three *Teichomyza fusca*), 'several' mites and a human flea. Diversity was high ( $\alpha = 75$ , SE = 17) and the outdoor component moderately large (% N OB = 16). Decomposers included an appreciable proportion of 'rd' taxa, but diversity of the RT component was not very low (alpha RT = 27, SE = 7). The species list was rather reminiscent of those from the other samples from this cut. *Lathridius minutus* group was the most abundant taxon (6), but there were four Oxytelinae at a frequency of three or four, and a small 'house fauna' group.

Sample 1427 (Spot): A sample of bird eggshell; no



further analysis undertaken.

Insect assemblages from **Cut 20987** thus were very consistent, but not clearly interpretable other than that there was probably rather foul matter in the deposits.

**Cut 20991**: a large pit, not less than 2.5m by about 1.8m and about 0.8m deep, cut into the SE corner of the wicker building on Tenement B, opposite pit **20987**. The fills were the subject of an undergraduate project by Amanda Ward, Institute of Archaeology, London.

Note that samples from this pit originally numbered 1776 A-L have been renumbered as 177601-177612.

**Context 23000**: the basal fill, a black, structured peat.

**Sample 1354** (GBA): matted moss and *Genista* stems and other plant detritus, with intercalating patches or lumps of pale calcareous fine-grained mineral sediment ('fullers' earth-like).

**Sediment**: A sample of the pale mineral material from this sample was submitted to the Macaulay Institute for Soil Research, Aberdeen, who reported (M. J. Wilson *in litt.*) that the 'cubical fragments [of pale sediment] consist mainly of illite and kaolinite with some interstratified illite-smectite.' The absence of smectite *per se* means that this sediment is not fuller's earth *sensu stricto*, though it is not impossible that it was used as a poor substitute. Its origin is not easy to establish. It may have come from an outcrop of the Mercian Mudstone (formerly Keuper Marl), deposits of which lie quite close to York.

**Plants (/M\*)**: A 0.25kg subsample of this was examined since it was so rich in moss; there were 59 taxa, well above the period mean and somewhat larger than the Phase 5A mean.

There was a great deal of evidence from this subsample for woodland taxa, both moss (*Thuidium tamariscinum* at 3, *Neckera*

*complanata*, *Mnium hornum* and *Polytrichum cf. formosum* and *Eurhynchium striatum* at 2, with a variety of other woodland mosses) and vascular plants (*Oxalis* petiole abscission plates at 2 and traces of *Stellaria holostea* stem fragments, *Corydalis claviculata* and *Circaea* sp. Birch fruits also scored 2 and the fern rachis scales (score 2) may also be from an essentially woodland genus such as *Dryopteris*. The kinds of woodland exploited may be judged from these taxa as well as from the presence of fruits, female catkin scales and male catkin fragments of birch, alder fruits and oak buds/bud-scales, and holly leaf fragments and seeds—woods on both somewhat acid and neutral to base-rich soils are perhaps indicated. These abundant woodland taxa are reflected in the AIVs—those for LIGN and SLIT were equal rank 1 in their respective lists, and that for WOOF rank 2. The AIV for QUFA was 27, that for QUER 11 (both equal rank 2).

A vegetation group that was unusually well represented in this assemblage was MOAR (grassland/pasture/meadow); its AIV was 19, equal rank 8, though the taxa contributing to it did not form a very coherent group.

Dyeplants were also rather abundant in this sample, with scores of 2 for *Diphysium*, *Genista* and *Rubia*, giving an AIV of 18 (equal rank 6). The moderately abundant 'fuller's earth' could not be identified securely as such (see above); it may have been an ersatz clay used in the same way in the dyeing process.

Foodplants were rather poorly represented (AIV only 12, based on four taxa). At rank 6 within its series was the AIV for the heathland/moorland group NACA, reflecting scores of 2 for *Calluna* buds, flowers and shoot fragments; these were three of the five taxa contributing to the AIV. *Erica tetralix* leaves suggest that wetter peatland habitats were also exploited; together with the records for *Calluna*, they account for the high AIV for OXSP (15, equal rank 4).

**Parasitic worms**: The single subsample examined gave small numbers of *?Hymenolepis* eggs but no records of *Trichuris* or *Ascaris*.

Insects (/1, /M): The assemblage was 'detail' recorded. The concentration of beetles and bugs was very high, 233 individuals of 92 taxa being found; there were also several tens of puparia (see below), 'many' beetle larvae and mites, and 'several' syrphid larval respiratory processes. Diversity was moderate ( $\alpha = 56$ , SE = 6), the outdoor component of moderate size (% N OB = 14) and decomposers abundant (% N RT = 69). Within the last group, 'rd' coded forms were relatively rare (% N RD = 9), and those coded 'rf' unusually abundant (37 individuals, % N RF = 16). Indeed, if some rather eurytopic taxa predominantly found in foul places were included, the foul-matter community would have accounted for a quarter or more of the group.

The most abundant taxa were an *Acrotrichis* species (30), *Cercyon atricapillus* (18), a second *Acrotrichis* (14), *Lathridius minutus* group (13), *Oxytelus sculptus* and *Anobium punctatum* (10 each), *Cercyon unipunctatus* (8) and *Cercyon analis* and *Platystethus arenarius* (6 each). These must have bred in the pit, or have originated very close to it. This assemblage appeared very mixed ecologically, and included a substantial component of woodland or possible woodland taxa, notable among which was the site's only record of *Bryocoris pteridis*, of which there were two individuals. This little capsid bug feeds on ferns, mainly *Dryopteris* spp., especially in damp woodlands.

The very rich assemblage of fly puparia included of the order of 100 each of *Leptocera* sp. and *Stomoxys* sp., with moderate numbers of *Musca domestica*, a few Sepsidae sp. and a single *Sarcophaga* sp.

The /M subsample, recorded non-quantitatively, produced a small group of insects, including several foul-matter beetle taxa and 'many' fly puparia.

*Samples 177607, 177610, 177612*: these are all believed to have been collected from Context **23000**.

*Sample 177607* (GBA) (formerly Sample 1776G):

Insects (/1): Beetles were quite numerous (and there was a single bug; N = 197, S = 91). Other remains included 'many' mites, 'several' fly puparia and Proctotrupoidea, an adult *Melophagus ovinus*, and small numbers of a variety of other insects. Main statistics were unexceptional, although 'rd' taxa made up 15% of the individuals. There were affinities with the fauna from subsample 1348/1, although the character of the present group was less clearly defined. *Lathridius minutus* group (15) was the most abundant taxon, with eleven *Acrotrichis* sp., nine each of *Anotylus complanatus* and *Anobium punctatum*, eight each of *Cercyon analis* and *Cryptophagus* sp., and six each of *Anotylus nitidulus* and an Aleocharinae sp. Several of the taxa at a frequency of 2-5 indicated relatively foul conditions, although all or most of the decomposers could have existed in a single heterogeneous mass of decaying plant matter.

*Sample 177610* (GBA) (formerly Sample 1776J):

Insects (/1): recorded only by a rapid inspection; subjectively the assemblage was broadly similar to those from many of the other fills of this pit. There were 'many' Syrphidae larval spiracular processes and 'several' fly puparia and proctotrupoid wasps, and a variety of other remains in smaller numbers.

*Sample 177612* (GBA) (formerly Sample 1776L):

Insects (/1): Fully-processed and recorded fully quantitatively; this was a 1kg subsample. Beetles and bugs were abundant (N = 221, S = 88). Main statistics were unremarkable apart from a substantial RD component (% N RD = 23). *Lathridius minutus* group (34) and *Anobium punctatum* (19) were the most abundant taxa, and there were seven *Cercyon analis* and *Anotylus complanatus* and six *A. nitidulus* and Aleocharinae sp. Like other assemblages from this pit, this group appeared to be ecologically mixed. Other insect remains were abundant and included 'many' fly puparia, 'several' beetle larvae and what appeared to be a mineralised collembolan. There were also 'many' mites.

*Sample 1371* (Spot): This was a faecal concretion with fly puparia, achenes of stinking mayweed (*Anthemis cotula*), fragments of corncockle (*Agrostemma githago*) seeds and *Triticum/Secale* ‘bran’.

*Sample 175201* (GBA) (formerly *Sample 1752A*, mostly from **23000** but with some material from **20976**):

Insects (/A): The assemblage from the subsample of ‘Subsample A’ (/A in the records) contained fairly abundant insect remains—the 0.991kg processed giving 107 individuals of 66 beetle and bug taxa, and various other insects including ‘many’ fly puparia (mostly Limosininae, but with moderate numbers of *Nemopoda* sp.) and several beetle larvae. Diversity was high ( $\alpha = 73$ , SE = 13) and the outdoor component large (% N OB = 21). Decomposers were of near-average proportional abundance, and about a third of them were coded ‘rd’ (% N RD = 19). The RT component was of relatively high diversity (alpha RT = 30, SE = 7). The more abundant taxa were *Lathridius minutus* group (9), *Cercyon analis* (6), *Anotylus complanatus* and an aleocharine (5), and *Anobium punctatum* and a *Cryptophagus* sp. (4).

*Sample 177608* (GBA) (formerly *Sample 1776H*; represents parts of Contexts **23000** and **31225**, into which the floor of the pit had been cut):

Insects (/1): This was a 2kg subsample, fully-processed and fully-quantitatively scan recorded. ‘Several’ beetle larvae, ten Hymenoptera-Parasitica, ‘many’ fly puparia, and two individuals of each of two Formicidae species were among the insects noted. There were ‘many’ mites. Preservation was recorded as better than normal at the site. A substantial beetle and bug assemblage was present: 289 individuals of 107 taxa. Main statistics were broadly like those for other samples from this context. The same was true of the species list, there being 24 *Lathridius minutus* group, 19 *Cercyon analis*, 16 *Acrotrichis* sp. and *Anobium punctatum*, eleven of an Aleocharinae sp. and nine each of *Anotylus nitidulus* and *Atomaria nigripennis*. Other fairly abundant taxa included *Anotylus complanatus* and

*Cryptophagus* sp. (7) and *Xylodromus concinnus* and *Philonthus politus* (6). This sample gave the only specimen of the large shieldbug *Acanthosoma haemorrhoidale* from the site. *A. haemorrhoidale* is common on hawthorn and sometimes found on other trees. In the present samples it can be seen as part of woodland component.

**Context 20970**: separated from **23000** by unsampled (except partly through *Sample 175201*, q.v. under **Context 23000**, above) **Context 20976**; it was a dark olive-grey, mixed structured and amorphous peat.

*Sample 1350* (BS—VW): Only 31 taxa were recorded from this sample, well below the period mean of 43; all the taxa were present at an abundance of 1, even culm-nodes identified no further than Gramineae (and thus perhaps not from cereal straw). The assemblage had no particular character, though elements of other samples from this period were evident—woodland moss and other woodland plants and dyeplants, with a modest component of weed taxa, mostly annual nitrophiles.

*Sample 1348* (GBA): dark, slightly reddish, brown plant detritus and amorphous organic material with compressed ‘reed’, twigs, bird bone.

Plants: Remains were not recorded in detail, but examination of a small subsample by P. R. Tomlinson confirmed the presence of *Genista* twigs in a layer that was predominantly grass fragments, perhaps cereal culm.

Insects (/1): Detail-recorded, this subsample gave an assemblage of 113 individuals of 61 beetle taxa; there were various other invertebrates, including a human flea. Diversity was at an intermediate value ( $\alpha = 54$ , SE = 9) but the outdoor component was substantial (% N OB = 23); this component was of relatively high diversity (alpha OB = 26, SE = 11). The reason for this was the presence of several ‘d’ coded oxytelines with possible or probable decomposer affinities: *Carpelimus elongatulus* and *Anotylus nitidulus* (four each) and *Carpelimus ?corticinus*, *Platystethus cornutus* group and *P. nitens* (two each). These accounted for over a tenth of the fauna. There were few aquatics to go with

these, although there was a single *Cymbiodyta marginella*, the only record from the site. The most abundant taxa were *Acrotrichis* sp., an aleocharine and *Lathridius minutus* group (all 7), *Cryptophagus* sp. (6), *Atomaria* sp. (5) and the species listed at frequency 4 above.

*Sample 177611* (GBA) (formerly *Sample 1776K*): this is believed to have been collected wholly from Context **20970**.

Insects (/1): The 1kg subsample gave 210 individuals of 81 beetle and bug taxa as well as 'many' fly puparia and scale insects, two *Pulex irritans*, and a *Melophagus* puparium. Main statistics were unexceptional, and the species list closely resembled those from *Samples 177606* and *177609*. The upper ranks were occupied as follows: *Acrotrichis* sp. (18); *Carpelimus bilineatus* (15); *Lathridius minutus* group (12); *Cercyon analis*, *Anotylus nitidulus*, *Cordalia obscura* and *Aglenus brunneus* (all 7), and *Xylodromus concinnus*, *Anotylus rugosus*, an aleocharine and *Anobium punctatum* (all 6). Here too the intermediate ranks indicated heterogeneous but not incompatible decomposer habitats.

*Sample 177606* (GBA) (formerly *Sample 1776F*, from Contexts **20970** and **20972**):

Insects (/1): The 2kg subsample was treated as a 'detail' sample. Beetles were abundant, with only one bug (N = 224, S = 91). There were some scale insects, 'several' Proctotrupoidea, beetle larvae, mites and fly puparia, and a sheep ked. Only a high value of % N RD distinguished the main statistics (% N RD = 27). There were large numbers of *Lathridius minutus* group (43), with 14 *Anobium punctatum* and ten *Xylodromus concinnus*. The other more abundant taxa were *Anotylus complanatus* (8), *Cercyon analis* and *Anotylus rugosus* (7), *Atomaria* sp. (6) and *Acrotrichis* sp. and *Anotylus nitidulus* (5 each). Other taxa with two or more individuals indicated a range of decomposer habitats, but all could perhaps have co-existed in a limited area.

The record of *Platypus cylindrus* is one of only two from Coppergate.

*Sample 177609* (GBA) (formerly *Sample 1776I*, a mixture of Contexts **20970**, **20972** and **20976**):

Insects (/1): The 1kg subsample gave 170 individuals of 86 beetle and bug taxa; there were also 'many' fly puparia (of several species), 'several' Parasitica, syrphid larval respiratory processes and mites, and a *Melophagus* puparium. Main statistics were of no special note part from a slightly elevated value of alpha RT (28, SE = 4). The species list had much in common with that from subsample *177606/1*, with 12 individuals each of *Anotylus rugosus*, *A. nitidulus* and an aleocharine, and five *A. complanatus*.

*Sample 175202* (GBA) (formerly *Sample 1752B*, mostly from Context **20970**, but including some **20972**):

Insects (/B, 0.862kg): Subsample 'B': The insect remains were recorded as being rather well preserved. There were 'several' fly puparia and other remains (including 'many' fly puparia and 'several' beetle larvae and earthworm egg capsules), but beetles were fairly abundant (N = 168, S = 58). Diversity was estimated to be quite low ( $\alpha = 32$ , SE = 4), and that of the RT component was also low (alpha RT = 16, SE = 2). Decomposers were well-represented (% N RT = 68), with taxa typically associated with drier habitats important (% N RD = 39, 57% of N RT). Much of this decomposer component was accounted for by *Lathridius minutus* group, of which there were 48. *Anobium punctatum* was also abundant (21), with *Cryptophagus* sp. (7) and *Atomaria* sp. at ranks 3 and 4. There was thus some indication that 'house fauna' was incorporated. Outdoor forms were proportionally poorly represented (% N OB = 6).

**Context 20969**: immediately above **20970**; very dark greyish-brown, compact, matted, structured peat.

*Sample 1349* (GBA): there were three major components: dark grey-brown, crumbly, rather heterogeneous, sandy silt; moss fragments; and amorphous organic material.

Parasitic worms: The subsample examined was barren.

Insects (/1): The subsample was fully processed and 'detail' recorded. The concentration of beetles and bugs was high: there were 176 individuals of 62 taxa. There were 'many' *Chionaspis salicis* and some *Lepidosaphes ulmi*, a louse, a human flea, a honeybee and a *Melophagus puparium*. There were also 'many' mites. Diversity was quite low ( $\alpha = 34$ ,  $SE = 4$ ), and the RT component rather small (% N RT = 47), although this may have been a function of the presence of uncoded species which were in fact part of the decomposer community. As in Sample 1347, *Carpelimus fuliginosus* and *C. pusillus* group were abundant (27 of each), but in this case there were also 15 *Anotylus nitidulus*. *Aglenus brunneus* and *Lathridius minutus* group were well-represented and there were six *Anobium punctatum*.

**Context 20968:** immediately above **20970** and adjacent to **20969**; a dark reddish-brown peaty loam.

*Sample 1347* (GBA): dark brown, crumbly, humic silt; 'madder layer'.

Plants: These were not recorded, though the residue from the /1 test sample was examined briefly; it comprised abundant *Rubia* root fragments with a little *Genista*.

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

Insects (/1): The beetles and bugs were 'detail' recorded; there were 95 individuals of 45 taxa. There were also 'many' mites, 'several' fly puparia and scale insects, a sheep ked puparium and a human flea. Diversity was fairly low ( $\alpha = 32$ ,  $SE = 6$ ), but otherwise the statistics bore a general resemblance to those for most other samples from this pit. However, the most abundant taxa included *Carpelimus fuliginosus* (13) and *C. pusillus* group (6); there were also six *Lathridius minutus* group and five each of *C. bilineatus* and *Aglenus brunneus*. The remaining taxa were typical of the site. The implications of this group are not wholly

clear but the abundant *Carpelimus* may have exploited organic-rich muddy material.

**Context 20808:** separated from **20968** by Context **20972**; it was a very dark grey, peaty, silty loam.

*Sample 1340* (BS—VW): Of the 60 taxa in this large assemblage, only *Diphysium* scored an abundance of 2. Four other taxa scored as dyeplants were present, but the AIV was only 16 (high, within the period, but not especially so). Nearly one-third of the assemblage scored in the annual weed group CHEN, with almost one-fifth in the cornfield weed group SECA. There was quite a large component of woodland plants, but most of these were probably brought to the site as foodplants; an exception might well be holly, of which both seeds and leaf fragments were recorded. Mosses, all but one of them of them possible woodland taxa, were rather scarce (five taxa).

*Sample 1339* (GBA): mid grey-brown, crumbly, humic sandy silt, with traces of stones 60-200mm, wood and small bone fragments and pale flecks.

Parasitic worms: Both the subsamples examined yielded traces of *Trichuris* and *Ascaris* eggs.

Insects (/T): The rather small flot consisted predominantly of arthropod remains, with 'several' insect larvae and mites, a human flea, a louse and various other insects. There were 81 individuals of 52 beetle and bug taxa, and this assemblage gave main statistics of no special note. There were ten *Aglenus brunneus*, seven *Lathridius minutus* group, five *Carpelimus bilineatus* and four *Anobium punctatum*. This group included 'house fauna' elements but gave no clear ecological indications.

In addition, an 11kg subsample was bulk-sieved after the main period of processing; it has not been sorted.

*Sample 175203* (formerly Sample 1752C and wholly from Context **20808**):

Insects (/C, 0.990kg): Beetles were fairly abundant (119 individuals, 63 taxa), and other remains

included ‘many’ *Nemopoda* sp. puparia, ‘several’ mites, single adult and puparial *Melophagus ovinus*, six human fleas and seven Hymenoptera Parasitica. Diversity was quite high ( $\alpha = 54$ , SE = 9), but other statistics were not unusual apart from a strong RD component (% N RD = 23). There were 14 *Aglenus brunneus*, ten *Lathridius minutus* group, eight *Atomaria* sp. and seven *Anobium punctatum*. As in the previous subsample there appeared to be a ‘house fauna’ component (three *Cryptophagus scutellatus*, for example) as well as more generalised decomposers.

This subsample gave the only example of *Drusilla canaliculata* from the site, and one of only three records of *Sehirus bicolor*.

Samples 177601-5 (formerly Samples 1776A-E, all from Context **20808**).

Sample 177601 (formerly Sample 1776A):

Insects (/1): A 2kg subsample was processed and recorded as a ‘detail’ sample. There were 255 beetles and bugs (S = 94). Main statistics were generally unexceptional, although diversity was high for a group which included a large and apparently autochthonous decomposer component with some species very abundant. There were large numbers of *Aglenus brunneus* (32), *Lathridius minutus* group (24) and *Anobium punctatum* (22), and smaller numbers of other taxa assigned to the ‘house fauna’ group. There were also three or more individuals of seven oxyteline species and four *Neobisnius* sp., suggesting that this rather typical association was a genuine component of the fauna. The decomposers were, indeed, rather diverse ecologically. There were six individuals of five aquatic taxa, and some unusual damp ground forms (e.g. *Blethisa multipunctata* and *Anisosticta novemdecimpunctata*).

Apart from beetles and bugs, there were assorted invertebrate remains, including ‘several’ human fleas, sepsid fly puparia and mites, a *Melophagus* puparium and adult and an abdominal apex of an elaterid larva, identified by A. Kroupa as *Denticollis linearis*.

Sample 177602 (GBA) (formerly Sample 1776B):

Insects (/1): ‘Detail’ listed, 2kg produced abundant insects including 253 individuals of 100 beetle and bug taxa. Although several taxa were abundant, diversity was quite high ( $\alpha = 61$ , SE = 6). The RD component was substantial (% N RD = 23) but other statistics were unexceptional. *Lathridius minutus* group was most abundant (34 individuals, accounting for the greater part of the RD component) and, as in 177602/1, *Aglenus brunneus* (24) and *Anobium punctatum* (21) were also numerous. *Carpelimus bilineatus* and *Atomaria* sp. stood at rank 4 with nine individuals, and there were six each of *Anotylus nitidulus*, *Monotoma picipes* and a second *Atomaria* sp. The decomposers were ecologically mixed, and included taxa suggesting very foul conditions. Aquatics were not proportionally abundant but there were single individuals of eight taxa, and a *Blethisa multipunctata*.

There were abundant other arthropods, including ‘many’ puparia and mites, about five fleas (all probably *Pulex irritans*, although only one head was recovered), and adult and puparial *Melophagus ovinus*.

Sample 177603 (GBA) (formerly Sample 1776C):

Insects (/1): The 2kg ‘detail’ subsample produced 261 individuals of 92 beetle and bug taxa; there were also ‘many’ fly puparia (including 34 *Nemopoda* sp.), ‘several’ mites, and an adult sheep ked. Main statistics were unexceptional, and the RD component was not as large as in some other samples from this pit (% N RD = 18, 28% of N RT). The same three taxa occupied the first three ranks of abundance: *Aglenus brunneus* (at least 37), *Lathridius minutus* group (22) and *Anobium punctatum* (17). In this case *Carpelimus pusillus* group was rather numerous (11). There were also seven each of *Atomaria nigripennis*, *Carpelimus bilineatus* and an *Atomaria* species, and six each of *Carpelimus fuliginosus* and *Monotoma picipes*. There were thus representatives of a variety of decomposer communities.

This subsample was notable for the particularly

strong representation of woodland fauna—six such taxa, although some might have lived on the site in dead wood. *Pentatoma rufipes*, *Drymus brunneus* and *Acalles* sp., however, seem likely to have been brought in woodland materials, moss being the best candidate. Again there were varied aquatics, all as single individuals.

*Sample 177604* (formerly *Sample 1776D*):

Insects (/1): A 2kg subsample was recorded in detail. There were 221 individuals of 96 beetle and bug taxa and various other arthropods including ‘many’ fly puparia (mostly *Nemopoda* sp.), ‘several’ mites, a human flea and a *Melophagus* puparium. Main statistics broadly resembled those for other samples from the pit, and the species list was also similar, with *Lathridius minutus* group (21), *Aglenus brunneus* (19) and *Anobium punctatum* occupying the first three ranks of abundance. There were also eleven *Carpelimus fuliginosus*, eight of an *Atomaria* sp., seven *Xylodromus concinnus*, and six each of *Cercyon analis* and *C. unipunctatus*. Again there was a mixture of decomposer communities, with probably ‘house fauna’ at one extreme and foul decomposers like *C. unipunctatus* and *C. haemorrhoidalis* (3) at the other.

*Sample 177605* (formerly *Sample 1776E*):

Insects (/1): The 2kg subsample gave a large assemblage of beetles and a few bugs (N = 269, S = 78). Other remains included eleven human fleas and seven Proctotrupoidea, ‘several’ fly puparia and mites, and adult and puparial sheep keds. Diversity was moderately low ( $\alpha = 37$ , SE = 4), ‘dry’ decomposers moderately abundant (% N RD = 17) and foul decomposers quite well represented (% N RF = 8). *Aglenus brunneus* (28), *Anobium punctatum* (18) and *Lathridius minutus* group (18) occupied the first three ranks of abundance, as in other samples in this group, and again *Carpelimus fuliginosus* (16), *Xylodromus concinnus* (12) and *Carpelimus bilineatus* (11) were abundant. In this case *Cercyon atricapillus* was numerous (10) and there were the same number of a *Cryptophagus* species. In other respects the species list broadly resembled those from the other samples from this context.

A notable record was a single *Sitophilus granarius*.

**Cut 27805:** a pit about 0.75m across and 0.7m deep, cut into the top part of the Period 4B Cut

**36574**; it lay beneath the rear plank-built structure (Structure 5/4) on Tenement B.

**Context 27810**: the third fill context from the bottom of the pit; very dark greyish-brown, ‘cessy’, structured peat.

*Sample 1891* (Spot): This was a collection of 113 emerged and about 15 unemerged puparia of *Musca domestica* in a matrix which included wood and *Genista tinctoria* stem fragments.

**Context 27807**: lying above **27810** and separated from it by unsampled **Context 27809**; very dark greyish-brown ‘cessy’ structured peat.

*Sample 1888* (GBA): dark brown crumbly to felted detritus with abundant ‘monocot’ leaf/stem fragments.

Plants (/M): The stem/leaf fragments observed at the time the sample was described proved to be grass/cereal culm fragments (scoring an abundance of 3). The other taxa to score more than 1 were *Anthemis cotula* and *Eleocharis palustris*. Both of these taxa may have been growing in cornfields (*A. cotula* as a weed and *E. palustris* perhaps as a persistent perennial in areas of wet grassland that had been taken into cultivation) and this would suggest that the grass/cereal fragments were straw rather than hay—but the cornfield component of the assemblage, SECA, had an AIV of 19, a little below the Period 5 mean for this parameter. Perhaps this was straw that had been well cleaned of weeds?

The assemblage of 46 taxa (between the period and sub-period means) was otherwise unremarkable, with rather small components of food- and dyeplants, various weeds, wetland, woodland and peatland taxa, both mosses and vascular plants.

Parasitic worms: A single subsample was examined; it was barren.

Insects (/1, /2): Insects were not very abundant in the first subsample, with 78 individuals of 53 beetle taxa; there were, however, ‘many’ mites and ‘several’ beetle larvae. Main statistics were

unremarkable. There were five *Carpelimus fuliginosus* and four *Leptacinus* sp.; species which may have been attracted to similar habitats included three each of *Cercyon analis*, *C. atricapillus* and *Acritus nigricornis*. There was also a great variety of rarer species, suggesting the presence of rapid invaders of somewhat foul material, with background or redeposited fauna.

The second subsample gave a broadly similar assemblage, differing in the details of the more abundant species. Whole-assemblage and decomposer component diversity were lower than for subsample /1 ( $\alpha = 39$ , SE = 7; alpha RT = 22, SE = 5), but still not significantly low. It seems likely that some species bred. There were ten *Carpelimus fuliginosus*, nine *Acrotrichis* sp., six *Cercyon analis* and five *Ptenidium* sp., and smaller numbers of several other taxa likely to have occurred with these. Somewhat foul, but probably reasonably well aerated material was the probable habitat; there were hints of the ‘stable manure’ community seen in some samples from Tanner Row (and occasionally at Coppergate). Interestingly, in view of this, there were three individuals of an *Apion* sp. and one of a second; inconclusive evidence for the presence of a cut vegetation component by itself but notable in the light of the botanical evidence.

There were ‘many’ mites and ‘several’ earthworm egg capsules.

**Cut 27805A**: a pit cut by the ?C19th well **2001**; Tenement B; a series of at least four fill contexts, of which the basal one was sampled.

**Context 34295**: very dark grey peaty loam. The records for the treatment of these two samples are somewhat confused and it may be that only one of them was bulk-sieved but sorted as two separate samples; in that case, the other was not available for examination.

*Sample 2341* (BS—V): Only rough-sorted remains were available from this sample; the five taxa comprised abundant sloe stones, with modest amounts of ‘plum’, and traces of apple seed and



endocarp and of charred bread/club wheat. In addition there were traces of eggshell membrane fragments. The sorting sheet records the presence of abundant faecal concretions and there can be little doubt that the deposit was largely faecal in origin.

There were some unusual fly puparia, the assemblage comprising five each of *Fannia* sp. and *Muscina stabulans*, and single *Nemopoda* sp. and *Lispe tentaculata*.

*Sample 2354* (BS—VWR): There was no record of bulk-sieving, but a small list of 12 taxa recorded from the rough-sorting and from more careful checking of the washover and residue. Faecal concretions scored 3 and sloe stones 2, and there were small amounts of several other foodplants, two weed taxa and some moss of the kinds typical of cess pits at this site.

### Other cut fills on Tenement B

*Cut 20399*: an irregular, linear cut of which only one edge was defined during excavation. It abutted the property boundary between the front buildings on Tenements B and C, at the rear of Structure 5/3. No direct relationship between the two sampled contexts could be established; they may have been parts of the same layer since they overlay and underlay the same deposits and had identical lithologies.

**Context 20186**: black peaty loam with many wood chips and pieces of bark.

*Sample 1155* (BS—VW): The largest component of this fairly substantial assemblage of 50 taxa was CHEN; 44% of the taxa were scored in it and its AIV (52) was within the top 10% of values for the parameter in this period—equal rank 10. Only *Chenopodium album* and *Atriplex* scored 2 and the size of the AIV reflects the number of taxa rather than the abundance of the remains of individual taxa. There were modest components of dyeplants, foodplants, a range of other weeds, and some woodland plants, but none was prominent. The only record of *Chrysanthemum segetum* from

Period 5A deposits was from this sample; this taxon was conspicuously absent from earlier Anglo-Scandinavian deposits and only rather rarely recorded from Periods 5B and 5C, but is regularly observed in post-Conquest medieval assemblages. It is not immediately clear why this cornfield weed typical of light acid soils should have become so much commoner after the Conquest.

**Context 20190**: black peaty loam with many wood chips and pieces of bark.

*Sample 1152* (GBA): mid-dark grey-brown, crumbly, sandy silt with traces of stones 2-6mm, wood and bone fragments.

Insects (/T): Insects were not very abundant. They included 'many' puparia, an adult *Melophagus ovinus* and 24 beetle taxa (with 30 individuals). Clearly flies were able to become established; the beetles may have been background fauna of have included colonisers of plant debris.

### Tenement C

#### External layers

**Context 22179**: a modest area of up to 1 x 1m on Tenement C, of very dark grey structured, silty peat, with a little charcoal and twigs.

*Sample 1386* (GBA): dark blackish- to slightly reddish-brown, crumbly, highly humic sandy silt with much wood and small twig fragments, and tile.

Plants (/M): The number of taxa, 43, was at the period mean for this parameter. There were abundance scores of 2 for charcoal, *Diphasium*, *Corylus*, and *Genista* and 3 for wood fragments. The assemblage had no particularly well-represented component: weeds in CHEN were the largest group, with an AIV of 30, but other groups achieved only small or very modest AIVs. There were perhaps more significant scores for the grassland and heathland/moorland mosses in GRAS and HEM, though the numbers of taxa involved are rather small (4 in each case). In addition to the six taxa scored in QUFA, *Oxalis*

remains were recorded from the paraffin flot. This record would increase the AIV for this group to 18, bringing it within the top 10% of values for these Period 5A samples.

Parasitic worms: There were no eggs in the single subsample examined.

Insects (/1, /T): The /T subsample was recorded non-quantitatively; its fauna probably was much like that of the /1 subsample.

The /1 was a 3kg fully processed and 'detail' recorded subsample. A large assemblage of beetles, and a single bug of the groups uses in preparation of statistics, was recovered—N = 315, S = 111. Other remains included 'many' scale insects (mostly *Chionaspis salicis*, but also some *Lepidosaphes ulmi*), 'several' mites, fly puparia and earthworm egg capsules, and eight human fleas. Diversity was quite high and the outdoor component moderate ( $\alpha = 61$ , SE = 5; % N OB = 10). The substantial decomposer component (% N RT = 66) consisted one third of 'rd' taxa. Its diversity was not especially low (alpha RT = 22, SE = 2), but there can be little doubt that there was a large autochthonous (or mass-transported) group, the elevated alpha value probably being a consequence of the development of a rich community of decomposers. There were 29 taxa at a frequency of three or more, including 41 *Lathridius minutus* group, 22 *Aglenus brunneus*, twelve *Xylodromus concinnus*, eleven *Anotylus nitidulus* and ten *Anobium punctatum*. There were seven each of *Cercyon analis*, *Carpelimus fuliginosus*, *C. pusillus* group and *Atomaria ?apicalis*, and six each of *Acritus nigricornis*, *Ptenidium* sp., an *Acrotrichis* species, an aleocharine, *Falagria caesa* or *sulcatula* and *Cryptophagus* sp. Remaining taxa represented a mixture of habitats, with modest representation of foul-matter taxa such as *Platystethus arenarius* (4) and *Cercyon atricapillus* (3). This appears to have been predominantly a 'house fauna' group—as witnessed also by the fleas—but to have included a probable community of fouler material, a pattern seen in a number of the Period 5A layers.

**Context 22209:** a large area up to about 3 x 2m,

on the W side of Tenement C; it sloped to the S in its S half, and was cut by two cuts, **14555** and **14708** (whose fills, in neither case, were sampled); it comprised black, peaty, silty sandy clay loam, with 50% flecks of wood, charcoal, bone and ash.

*Sample 1393* (BS—VW): An average-sized assemblage of 42 taxa, only *Corylus* reaching an abundance of 2. One third of the taxa were scored with CHEN, nearly one fifth with QUFA (here there were not many woodland taxa that could have been brought to the site as food and three of the six taxa scored with FOOS were charred cereals—wheat, barley and rye).

*Sample 1392* (GBA): dark grey, crumbly to brittle, rather heterogeneous, humic, slightly sandy silt, with modest amounts of charcoal and some matted plant material and grey silt.

Insects (/T): A very small group was recorded by rapid scanning. There were only 20 individuals of 18 beetle species, while other remains were very rare. There was a single *Melophagus ovinus*. Beetles were typical Anglo-Scandinavian urban taxa, but none occurred at a frequency above two. Fly puparia were very rare, but a single whole *Lispe tentaculata* was noted.

In addition, a 6kg subsample was bulk-sieved after the main period of processing. Rough-sorting yielded a wide range of components, including pottery, wood (much), charcoal, hazel nutshell, leather, bone, eggshell and shellfish.

### Tenement C/D

**Context 14925:** [layer on Tenement C or D]

*Sample 1166* (Spot): This spot sample was disaggregated by J. Phipps, who noted one fragment of bird bone and some wood fragments, together with some beetle remains.

**Context 22166:** [layer, Tenement C/D]

*Sample 1385* (Spot): no action to date (sampled as a possible coprolite).

*Sample 1400* (Spot): This was perhaps a very poorly preserved faecal concretion, with a resin-like core; ‘bran’ and parasite worm eggs were not identified, however.

## Tenement D

### Structural elements

**Context 22025:** a large horizontal timber on Wall Line **14853/22059** in the NE corner of the excavation, on more or less the same line as the E wall of the front Period 5B buildings (5/7, 5/10) on Tenement D.

*Sample 1318* (Spot): This was an insect fragment found when the timber was split on removal from the site; no action to date.

### External layers

**Context 14922:** [layer on Tenement D]

*Sample 1333* (Spot): A sample consisting of 11 fragments of the sea-urchin, *Echinus esculentus*.

*Sample 1334* (Spot): A sample of avian eggshell, not examined further.

**Context 14928:** an area of about 1.4 x 0.6m, and up to 0.1m thick, in the NE corner of the excavation, abutting a wall line at the E side of Tenement D; dark brown silty, peaty clay loam, with ash and charcoal flecks.

*Sample 1153* (BS—VW): With 87 taxa, this was the second largest assemblage from the Period 5 BS samples. *Diphysium* scored an abundance of 3, whilst the following—an unusually large number—achieved a score of 2: *Corylus avellana*, *Polygonum persicaria*, *P. lapathifolium*, *Chenopodium album*, *Atriplex* sp(p)., *Brassica rapa*, *Raphanus raphanistrum* (pod segments/fragments), *Malus sylvestris* (seeds), *Genista tinctoria*, *Rubia tinctorum*, *Galeopsis* Subgenus *Galeopsis*, and *Anthemis cotula*. There were, not surprisingly, very high AIVs for CHEN (80, rank

1), SECA (46, rank 1), ARTE (29, rank 1), BIDE (23, equal rank 2), MOAR (23, rank 1), and DYES (28, rank 1), with a rather high value for FOOS (40, within the top quartile). The foodplant component included dewberry, blackberry, apple, sloe, ‘cherry’, wheat, barley and oats, the dyeplant component woad, hops and dyer’s rocket/weld in addition to the three taxa mentioned above. There is little doubt that this was a richly organic dump of dyebath and other domestic waste (probably not faecal); tentatively identified beeswax, charred ?bread and wool were also recorded from this sample.

*Sample 1138* (GBA): dark grey-brown, crumbly, humic silt, with small pebbles, sand and some dark grey silt; heavy attack by soil fauna.

Parasitic worms: Two subsamples were examined; one was barren, the other gave a single *Ascaris* egg.

Insects (/T): There were about 44 individuals of 36 beetle taxa, recording being by semi-quantitative rapid scanning. There were also ‘several’ mites and fly puparia, at least two human fleas and a single adult and puparium of the sheep ked. A quarter of the assemblage consisted of ‘outdoor’ forms, but other statistics were unremarkable in such a small group recorded by rapid scanning. There were ‘several’ *Aglenus brunneus* and three *Lathridius minutus* group; apart from two *Aphodius ?granarius* all the rest of the taxa were single specimens. The whole group was typical of Anglo-Scandinavian Coppergate but not individually closely interpretable, although an origin in redeposited floor material is possible.

A notable record was an elytral apex of the large click beetle *Ctenicera cuprea*.

Fly puparia included small numbers of *Leptocera* sp., *Stomoxys calcitrans*, and *Musca domestica*.

*Sample 1137* (Spot): A sample of avian eggshell; no further analysis undertaken.

**Context 22032:** a small strip immediately W of the large contiguous horizontal timbers **22025** (q.v.)

and **22033** in Tenement D, about 0.8 x 0.1m of greyish-brown, ashy, peaty loam, with patches of light yellowish-brown ash and traces of charcoal and wood. Excavator asks if this might be burnt turf.

*Sample 1319* (GBA): mid-dark grey-brown, crumbly to brittle, slightly clayey, very sandy silt, with traces of small limestone, and bark and twig fragments, and small clay flecks.

Insects (/T, 2kg): Recorded by a rapid inspection; a non-quantitative record was made. Preservation was a little better than normal for Anglo-Scandinavian Coppergate, and insects were quite abundant. There were numerous *Aglenus brunneus*, and 'house fauna' taxa appeared to be rather well represented. Notable finds were five larval abdominal apices which appeared to be of *Blaps* sp., and a spine-bearing segment of a *Dermestes* larva; these two taxa were clearly breeding *in situ* unless this layer included dumped material. There were also two adult *Blaps*, one hardened and darkened, the other completely pale and soft, although apparently fully expanded.

**Context 22089**: a layer in the NE corner of Tenement D, an irregular area of about 1.5 x 1.5m; mixture of pale yellow ash with charcoal flecks, flecks of very dark grey clay and black sandy clay loam.

*Sample 1351* (GBA): dry, 'ashy', unconsolidated (partly through trowelling?), light greyish- to yellowish-brown sand silt with some ?limestone fragments, wood and ?ash layers.

Plants (/M): Somewhat surprisingly, in view of the nature of the sediment, 42 taxa were recorded from this subsample. With the exception of *Oxalis acetosella* petiole abscission plates (2), all the identifiable taxa were scored with an abundance of 1, though there were scores of 2 for bark, charcoal and wood fragments. Useful groups were rather poorly represented, with only 3 taxa in each of DYES and FOOS; weeds were mostly taxa in CHEN (one third of the assemblage) and SECA. In addition, there was at least one charred grain in the flot.

Parasitic worms: Two subsamples were examined; one was barren, the other yielded a single *Trichuris* egg.

Insects (/T): Insects were not very abundant. There were small numbers of fly puparia (principally Sepsidae and *Leptocera* sp.), 'many' mites and a single *Damalinia ovis*, and about 45 individuals of 33 beetles (semi-quantitative rapid scan recording). The proportion of outdoor forms was estimated to be small (only two individuals were seen), but other statistics were of no special note for such a small group. There were 'several' *Carpelimus bilineatus* and three *Lathridius minutus* group, with only one or two of other taxa. This group was reminiscent of those from Samples 1330 and 1335.

**Context 22090**: this layer was contiguous with **22089** and immediately S of it; it was an irregular patch of black, compact, sandy silty peat, with wood and charcoal flecks and a few patches of ash, up to 4.5 x 1.2m in extent; it lay in the middle of the area of Tenement D, running from one marginal alignment to the next.

*Sample 1377* (BS—VW): Of the rather small assemblage of only 25 taxa, all were recorded at an abundance of 1. Nearly one quarter of were scored with FOOS, but overall the list was dominated by weeds in CHEN, with an unusually large proportion (20%) of grassland taxa in MOAR, though these did not form a clearly-defined group.

*Sample 1388* (BS—VW): A rather large assemblage of 45 taxa was recovered from this sample, though none achieved an abundance greater than 1. The similarity coefficient between these two assemblages was modest (32%), and this suggests the deposit was rather heterogeneous (about the same volume of sediment was sieved in each case). The assemblage from *1388* was dominated (40%) by weeds in CHEN, with quite high numbers of arable taxa in SECA. Records for both seeds and leaf epidermis of holly pushed up the woodland (QUFA) component, though woodland mosses were rather scarce. There was a record, too for *Nepeta cataria*, generally a rather rare taxon at Anglo-Scandinavian Coppergate, though recorded from all periods.

*Sample 1378* (GBA): light grey-brown, crumbly, sandy silt, with charcoal, wood, bone and some ash.

Parasitic worms: Two subsamples were examined; both were barren.

Insects (/T): This subsample gave a rather small group of insects, which were rapid-scan recorded semi-quantitatively (N = 59, S = 38). Main statistics were unremarkable in view of assemblage size. There were 'several' *Carpelimus bilineatus*, *C. fuliginosus* and *Neobisnius* sp. and three *Lathridius minutus* group. This appears to have been a rather heterogeneous assemblage dominated by the putative oxyteline association; noteworthy in view of this was the presence of two *Acritus nigricornis*, tentatively assigned to that group. There were various other arthropods, including 'many' mites, abundant fly puparia (all those identified being *Nemopoda* sp.) and a *Damalinea*.

*Sample 1389* (GBA): dark brown, crumbly, very humic silt, with some gravel, fine plant detritus, bone fragments and well-rotted wood.

Parasitic worms: Three subsamples were examined, all barren of parasite ova.

Insects (/T): A modest group of beetles (and a single bug) was recorded semi-quantitatively (N about 85, S = 50). There were 'several' mites; other remains were not very abundant. Main statistics were unremarkable, being like those of many of the Period 5A layers. There were 'several' of the following: *Cercyon analis*, *Carpelimus bilineatus*, *C. fuliginosus*, *Neobisnius* sp. and *Anobium punctatum*. There were three *Lathridius minutus* group, but no more than two of any other taxa. This group was, subjectively, of the same general kind as a good many of the Period 5A layers.

This sample yielded a rather rich assortment of fly puparia: mostly *Leptocera*, *Stomoxys calcitrans* and Sepsidae sp.

*Sample 1382* (Spot): no action to date.

**Context 22104:** a very extensive layer on Tenement D, about 6 x 5m as seen on plan; it was a black, slightly silty sandy peat, with patches of dark grey sandy clay loam, flecks of charcoal, of pale brown ash, and of reddish-brown clay, and organic matter in the form of twigs, chips and pieces of wood, and plentiful bone, cobble and limestone; the layer was only about 0.05-0.1m thick.

*Sample 1367* (BS—VW): An assemblage of 38 taxa, a little below the Period 5 average for BS samples; all were scored at an abundance of 1. Nearly half the taxa (45%) were scored with CHEN, just over one quarter (26%) with SECA, and there were rather small components of dyeplants, foodplants and a range of other taxa.

*Sample 1368* (GBA): mid-dark, crumbly, humic, slightly sandy silt, with traces of stones 2-20mm, and 60-200mm, charcoal, wood and large and small bone fragments.

Parasitic worms: There was a trace of *Trichuris* eggs in the subsample examined.

Insects (/T): The flot was subjected to a quick examination, with non-quantitative recording. There were only rather small numbers of insects, mostly representing a small decomposer group of no special character. There appeared to be only one or two individuals of all the taxa.

In addition, an 8kg subsample was bulk-sieved after the main period of processing; it has not been sorted.

**Context 22110:** a largish area of about 2 x 1.2m of black, compact, sandy silty peat, with flecks of ash and charcoal, in the NE corner of the excavation, on Tenement D.

*Sample 1369* (GBA): reddish-brown, humic, slightly sandy silt with ashy patches, wood fragments and some slight internal stratification.

Plants (/M): A moderately large assemblage of 53 taxa was recovered, of which none was scored at more than an abundance of 1. Weeds pre-

dominated, with 40% of the taxa scored with CHEN and 23% with SECA. The largest group of ‘useful’ taxa, FOOS, was no more than 8% (four taxa). The residue contained a variety of other remains, however—bones of amphibian, bird, mammal and fish, charcoal and wood (these two both scoring 2), glass, leather, oyster shell, pottery and stones.

Parasitic worms: There were three subsamples: two were barren, one had single *Trichuris* and ?*Hymenolepis* eggs.

Insects (/T): There were not many beetles and bugs (semi-quantitatively estimated by rapid scanning as 47 individuals of 26 taxa). There were ‘many’ fly puparia (those identified mostly being Sepsidae, *Leptocera* sp. and *Musca domestica*) and ‘several’ mites. Main statistics for such a group cannot be taken literally, but diversity was low ( $\alpha = 24$ , SE = 6) and there were more foul matter insects than usual (% N RF = 13). There were ‘several’ *Carpelimus bilineatus* and *C. pusillus* group, and three *C. fuliginosus*, *Leptacinus* sp. and *Neobisnius* sp. These perhaps suggest the presence of foul matter, but interpretation is not certain.

*Sample 1376* (GBA): very crumbly, unconsolidated, grey-brown, sandy silt, with bone fragments and small stones.

Parasitic worms: Three subsamples were examined; two gave single *Trichuris* eggs and the third a small number (six).

Insects (/T): Semi-quantitative rapid scanning gave an estimated 62 individuals of 31 beetle and bug taxa. There were some other remains, including ‘many’ mites and a flea. Main statistics are particularly unreliable in a small group with two ‘many’ to 15 conversions, but diversity appeared to be low ( $\alpha = 25$ , SE = 5), the outdoor component very small (four individuals) and the RT component of very low diversity (alpha RT = 10, SE = 3). The abundant decomposer taxa were *Cercyon analis* and *Lathridius minutus* group (‘several’) and *Carpelimus bilineatus* (‘many’), and there were ‘several’ *Anobium punctatum*. Otherwise, only *Carpelimus fuliginosus* and

*Neobisnius* sp. were represented by more than one individual. This group (subjectively) had affinities with many other layers of the period.

Other remains were rare, apart from modest numbers of fly puparia.

**Context 22122:** a large area of about 2.5 x 1m, towards the NE corner of the excavation, against the E shoring, immediately E of Wall line **14853/22059**; very dark grey silty clay loam, with patches of light yellowish-brown ash and charcoal flecks.

*Sample 1420* (BS—VW): An average-sized assemblage of 45 taxa, of which *Urtica urens*, *Chenopodium album*, *Sambucus nigra* and *Carex* sp(p). all scored 2. There were fairly high AIVs for CHEN (39, based on 16 taxa, 36% of the assemblage), but otherwise the AIVs were not especially noteworthy. The dyeplants comprised *Diphysium*, *Isatis*, *Rubia* and *Humulus*. The FOOS component—making up one fifth of the assemblage—included apple, sloe, ‘plum’, blackberry, wheat and ?rye.

*Sample 1419* (GBA): dark grey silty clay, with only a coarse clasts and a little organic matter.

Parasitic worms: Two subsamples were examined; there was a trace of *Trichuris* eggs in both.

Insects (/T): There were few insect remains (N = 24, S = 16), although there were nine *Carpelimus bilineatus*, some of which were pale. Other fossils resembled a random extract from, for example, *Samples 1376* or *1335*. Non-beetles included a pale human flea.

**Context 22128:** a very large area of about 2.5 x 2m, of black peaty clay loam towards the front of Tenement D, with patches of wood flecks and of red clay.

*Sample 1398* (Spot): The sample was avian eggshell; no further analysis undertaken.

*Sample 1399* (Spot): Together with small pieces of rotted leather and pig lower incisor, there were fly

puparia of which 131 were *Musca domestica*, nine *Leptocera* sp., 21 *Copromyza* sp. and 1 Sepsidae.

**Context 22154:** a large area of about 2.5 x 2m, in the NE corner of Tenement D, more or less abutting Wall line 14853, on its W side; dark grey, slightly sandy silty clay loam, with 30% ash, charcoal, and clay flecks.

*Sample 1417* (BS—VW): Of the 40 taxa recorded, *Diphysium*, *Corylus avellana*, *Atriplex* and *Rubia* all scored 2. The assemblage was unusual in having a larger component of woodland taxa in QUFA than weeds in CHEN (AIVs were 23 and 19 respectively), the former being accounted for to a large extent by taxa like *Corylus*, *Malus* and *Prunus*, which were presumably foodplants. There were also, however, both seeds and leaf epidermis fragments of *Ilex*, and the moss component included several woodland taxa.

*Sample 1416* (GBA): mid-grey, crumbly sandy silt, with bone, wood, charcoal and a small lump of clay.

Parasitic worms: Two subsamples were examined; one was barren, the other yielded a single *Trichuris* egg.

Insects (/T): The fairly small group of beetles (and one bug) included 82 individuals of 46 taxa. There were, in addition, ‘many’ mites, ‘several’ scale insects and fly puparia (mostly *Leptocera* sp.), a *Melophagus* pupa and adult, three *Pulex irritans* and ‘several’ lice (probably *Damalinia ovis*, but destroyed when the flot dried out). Diversity was estimated to be moderate ( $\alpha = 44$ , SE = 9), the outdoor component fairly slight (six individuals), and decomposers moderately abundant (% N RT = 68). There were about 13 *Aglenus brunneus*, eight *Carpelimus fuliginosus*, four *Cryptophagus* sp. and *Lathridius minutus* group and three *Cercyon analis* and *C. atricapillus*. The whole assemblage, like so many from the 5A layers, resembled a mixture of ‘house fauna’ and denizens of somewhat fouler material. This group was initially semi-quantitatively rapid-scanned then scan-recorded, and was one of the few cases where the main statistics were drastically revised and interpretation

changed as a result.

**Context 22368:** a large area of about 4 x 1.5m, in the far NE corner of Tenement D, between the shoring and Wall line 14853; a mixed deposit of black to very dark grey (with olive ‘cessy’ patches) silty, loamy amorphous peat, with lots of wood and flecks of clay and charcoal.

*Sample 1516* (GBA): heterogeneous, with lenses of olive-grey to yellowish-brown, very smooth ‘ash’ (fullers’ earth-like sediment) in a darker grey-brown silt with some wood, angular stone fragments and layers with abundant fly puparia.

Plants (/M): This was a very distinctive sample in having, amongst its large assemblage of 66 taxa, both pod remains and what are thought to be vegetative fragments of woad, the latter at an abundance of 2. This latter material comprised the last vestiges of herbaceous leaf and/or stem material—primarily spiral thickenings from xylem vessels, together with some epidermis fragments that have been shown by Tomlinson (1985) to be very like woad. Also scored at 2 were *Chenopodium album*, *Capsella bursa-pastoris* (an unusual record, this), and *Lamium* Section *Lamiopsis*. Amongst the other components, ?mortar scored 2 (perhaps this was lime?) and so too did wood fragments.

Thus, although there was quite a high AIV for DYES (19, equal rank 3), CHEN achieved an AIV of 51 (rank 6) and SECA was quite well represented at 28. The presence of (separately recorded) flowers and shoot and twig fragments of *Calluna*, and flowers and leaves of *Erica tetralix* accounts for the rather high AIV for OXSP of 13; these moorland/bog taxa were otherwise rather rare in the Period 5A deposits.

Parasitic worms: Both the subsamples examined were barren.

Insects (/T): Insect remains included ‘many’ fly puparia and mites, a larval abdominal apex of the click beetle *Athous haemorrhoidalis* and a human flea. The puparia included modest numbers of *Nemopoda*, *Leptocera*, and *Stomoxys calcitrans*

and a few *Musca domestica*. There was also a charred mite (the only record from the site, but of no real significance!). Seventy-four individuals of 56 beetle and bug taxa were noted. Diversity appeared to be very high ( $\alpha = 104$ , although  $SE = 27$ ). About a fifth of the assemblage was made up by the outdoor component. Diversity of the decomposer component was high (alpha RT = 40, though  $SE = 12$ ) and about a fifth of the individuals belonged to taxa coded 'rd'. There were four *Lathridius minutus* group and three each of *Anotylus nitidulus*, *Oxytelus sculptus* and *Atomaria* sp. This assemblage may well have been wholly background fauna, but some colonisers of indefinable organic matter may have been present.

This sample provided one of the three *Sehirus bicolor* recorded from 16-22 Coppergate. This shieldbug lives almost exclusively on white deadnettle, *Lamium album* L. A second notable record was a single *?Teretrius fabricii*, a southern species.

**Context 22384:** a very small area of about 0.4 x 0.2m, but irregular in outline, in the NE corner of Tenement D; it comprised very dark grey, silty, peaty clay loam, with very plentiful ash, wood, charcoal flecks and clay patches; to the N it was contiguous with the Period 4B floor **22259** (q.v.), the latter cut by Pit **22310** (q.v.) of Period 5A date.

*Sample 1434* (BS—VW): Though a rather large assemblage (52 taxa), nothing was recorded at an abundance of more than 1. Annual weeds predominated, though there were modest components of woodland taxa (both mosses and vascular plants) and eight foodplant taxa, including charred wheat, barley, oats and rye. There was also a record for charred bees (!).

*Sample 1432* (GBA): dark greyish-brown humic, rather sandy clay silt, with charcoal and bone.

Parasitic worms: Two subsamples were examined; one was barren, the other yielded a single *Trichuris*.

Insects (/T): A subsample was processed but dropped and lost before recording.

*Sample 1428* (Spot): This sample comprised a single *Iris pseudacorus* seed.

**Context 22412:** a large, irregular area, about 3 x 2m, just to the W of Wall lines **14853/22059**, at the centre of the front part of Tenement D; black silty, peaty loam with plentiful ash and flecks of wood and charcoal.

*Sample 1439* (GBA): dark yellowish-brown, crumbly, sandy silt with few inclusions; some charcoal present.

Plants (/M): Of the 44 taxa recorded (all at an abundance of 1), 43% were scored with CHEN, 30% with SECA and there were only small components of food- and dyeplants (four taxa in each of groups FOOS and DYES). There was a wide range of other components in the sample—charcoal (at 2), bone, eggshell, oyster shell, fish scale, and wood fragments.

Parasitic worms: A single *Trichuris* was recorded from each of two of the subsamples examined; the third was barren.

Insects (/T): There were moderate numbers of insects, which were recorded by semi-quantitative scanning (N = 56, S = 34). Diversity was moderate ( $\alpha = 37$ ,  $SE = 9$ ). Other statistics were unexceptional. A large part of the assemblage was made up by the 'many' *Aglenus brunneus*, while there were 'several' *Anobium punctatum*, but no other taxa at a frequency above two. This may represent a random extract from a house floor group rather like some others from the Period 5A layers, an interpretation supported by the three typical 'house' taxa at a frequency of two. Other arthropods included 'several' mites and fly puparia.

#### Pit fills on Tenement D

**Cut 22045:** described as post-pit, though the cut was about 1m across and 0.4m deep. It lay a few metres E of Cut **14891**, and contained one fill.

**Context 22044:** mixed fill of dark greyish-brown, ashy, silty clay loam with ash and clay traces.



**Sample 1324 (BS):** The assemblage of 72 taxa was the fifth largest of those from the 98 BS samples from Period 5, and the second largest of the 29 of these that were from Period 5A deposits.

Despite the large number of taxa, only *Chenopodium album* and *Atriplex* sp(p). scored 2; however, there were large AIVs for BIDE (19, equal rank 5, one tenth of the assemblage), CHEN (56, rank 6, 24 taxa, one third of the assemblage) and SECA (34, equal rank 6, just over one-fifth of the assemblage). Taxa associated with wet habitats were somewhat more abundant than in other Period 5 BS samples—the reedswamp and intermediate fen groups PHRA and SCCA both achieved high AIVs, though the values are small and based on rather few taxa.

The foodplant component of this assemblage was quite large (AIV 37, 18%), but dyeplants were not especially well represented. Foods included apple, sloe, ‘plum’, ?bean, pea (charred seeds), blackberry and charred grains of bread/club wheat, rye, barley and oats.

**Cut 22310:** a large pit about 1.75m across and 1m deep, at the very front of the site, within the outline of the wicker building on Tenement D; contained a series of about seven fill contexts, of which four were sampled.

**Context 22358:** the second-to-lowest context; very dark grey, sandy, silty, organic layer with 75% wood and other organic fragments.

**Sample 1421 (GBA):** dark brown, slightly clayey humic silt.

Plants (/M): There was an assemblage of 68 taxa from this subsample, the eighth largest of the 85 small subsamples examined from Period 5 deposits. Most notable was the component of woodland moss and other woodland taxa in groups LIGN (AIV of 16, equal rank 7), SLIT (14, rank 6), QUFA (26, rank 4) and QUER (11, equal rank 2), amongst which petiole abscission plates of *Oxalis* (wood sorrel) were present at an abundance of 2. There were also seeds of *Oxalis* and seeds and leaf

fragments of *Ilex*. The remainder of this component was more likely to have arrived as food remains—it included *Corylus*, *Prunus spinosa* and *Sambucus nigra*.

Weeds in group CHEN were quite well represented (the AIV of 40 was nearly one SD above the period mean), with *Atriplex* sp(p). at an abundance of 2. The rather high AIV for NACA was largely a function of the separate records for *Calluna* seeds, capsules, shoot and twig fragments (the presence of *Erica tetralix* leaves indicates probable exploitation of wet peatland, too). With an AIV of 17 (nearly 1 SD above the period mean for this parameter), MOAR was rather prominent, though the eight taxa contributing to it did not form a very coherent group: some were from wetland, some heath/moor and some weedy habitats.

The useful plants in FOOS and DYES were not especially abundant; there was a trace of ‘bran’, but no other evidence of cereals.

Parasitic worms: The single subsample gave no eggs.

Insects (/T): This subsample was recorded semi-quantitatively by rapid scanning, and it was estimated that 84 individuals of 58 beetle and bug taxa were present. There were also ‘many’ mites, ‘several’ fly puparia (mainly *Nemopoda* sp.) and a variety of other remains, including a human flea. Diversity, both of the whole assemblage and of the decomposer component, was estimated to be high ( $\alpha = 82$ , SE = 18; alpha RT = 54, SE = 15). Other statistics were unremarkable in an assemblage of this size. There were ‘several’ *Carpelimus fuliginosus* and *Lathridius minutus* group, five *Cercyon analis*, and three each of *Oxytelus sculptus* and *Neobisnius* sp.; other taxa were present in ones and twos. This appears to have been a randomly accumulated group with some colonisers of organic material *in situ*.

**Sample 1422 (Wood):** Of the 20 pieces of wood examined from this sample, 15 were willow (diameter 12-26 mm, mean ring count 9.2, SD = 6.4), four were birch (12-19 mm, 5.3) and one was hazel (17 mm, 15 rings). The willow, at least, does

not appear to have been cut from managed woodland, to judge from the large variations in size and ring count. All but two of the specimens were moderately strongly compressed; the remainder were slightly compressed.

**Context 22309:** immediately overlying **22358**; very dark greyish-brown, ashy sand, with ash, charcoal, wood and patches of black cess and cobble and limestone fragments.

*Sample 1415* (BS—VW): A total of 64 taxa made up this assemblage, one of the largest (rank 10) from the BS samples from Period 5. Three taxa achieved an abundance score of 2: *Diphasium*, *Rubia*, and *Corylus* (nutshell). Reflecting these scores for the dyeplants, the AIV for DYES was 19 (equal rank 4 within the period—*Isatis* and *Genista* were also present); other AIVs were mostly rather unremarkable except, however, for the value for QUFA which at 27 was equal rank 3. It was based on 13 (20%) of the vascular plant taxa, including *Ilex* seeds and leaf fragments, but *Oxalis* was not recorded. A modest component of probable woodland mosses was also present.

*Sample 1414* (GBA): mid reddish-brown, very crumbly, very sandy silt to silty sand, with small stones/gravel, charcoal, eggshell, coarse plant detritus, pottery and ?ash.

Parasitic worms: Two subsamples were examined; one gave a single *Trichuris* egg.

Insects (/T): There were only 46 individuals of 38 beetle taxa, all at frequencies of two or less, apart from an *Atomaria* species and *Lathridius minutus* group, of which there were three each. This assemblage, like the group from subsample *1407/T*, seems to have originated in a very random way, perhaps with a component from a house floor (several ‘house fauna’ taxa are present in the species list); inasmuch as the statistics can be trusted, this is supported by the high diversity of the whole assemblage and of the decomposer component ( $\alpha = 101$ , SE = 38; alpha RT = 48, SE = 19) and proportionately large OB component (% N OB = 17), while the presence of a house fauna group is supported by % N RD = 28.

Other remains were not very abundant, but included ‘several’ fly puparia and homopteran nymphs, a sheep ked adult and puparium, and a human flea.

*Sample 1412* (Spot): This sample consisted of fragments of calcareous red marine alga, *Corallina officinalis*, probably introduced as an epiphyte on marine mollusc shells (especially oyster).

*Sample 1418* (Spot): A sample of bird eggshell; no further analysis undertaken.

**Context 22267:** immediately overlying **22309**; very dark greyish-brown, ashy sand, with ash, charcoal and wood flecks and 20% cobble and limestone fragments.

*Sample 1406* (BS—VW): A sample yielding an assemblage of 62 taxa (similar to that from *1415*, see above). Several taxa achieved an abundance of 2—*Corylus*, *Humulus*, *Atriplex* sp(p). *Chenopodium album*, and *Rubia tinctorum*; the two weed taxa in this list account in part for the high AIV for CHEN (51, equal rank 11, 35% of the taxa), but the AIVs for FOOS and DYES (to which the other two taxa belong) are not especially large. However, *Corylus* also contributes to the woodland group QUFA and this reaches its second highest AIV of 29, based on 12 taxa (nearly one fifth of the assemblage). *Oxalis* and *Ilex* were again recorded, though many of the ‘woodland’ taxa are, like *Corylus* also scored as foodplants (*Malus* seeds and endocarp, *Crataegus monogyna*, *Prunus spinosa* and *P. domestica*). There was a small woodland moss component, the taxa familiar from many other samples.

There were also traces of remains of bees and snails in this sample and a single *Melophagus ovinus* puparium.

T. P. O’Connor recorded molluscs from this sample as follows: *Cepea* sp. (3), *Cochlicopa lubrica* (1), *Discus rotundatus* (1), *Oxychilus cellarius* (1) with one fragment of mussel and many oyster shells (and also eggshell fragments); he also recorded traces of remains of the calcareous red alga *Corallina officinalis*, probably arriving as an epiphyte on the marine shells.

*Sample 1407* (GBA): light brown sandy silt with *Calluna/Genista*-like twig fragments, bark, wood and gravel [*Genista* stem/twig fragments were re-

corded in the BS sample (*q.v.*), but of *Calluna*, only flowers were observed].

Parasitic worms: Two subsamples were examined; both were barren.

Insects (/T): Insects were relatively few, but included ‘many’ fly puparia (several *Nemopoda* sp. and a few *Leptocera* sp.) and beetle larvae, a sheep ked and a human flea. There were 36 individuals of 31 beetle taxa. Main statistics were unreliable in view of assemblage size and no species was represented by more than two individuals; the assemblage appeared to be a small random group of typical Anglo-Scandinavian forms, and may have had mixed origins.

**Context 22266:** immediately overlying **22267**; black, silty, sandy peat with organic fragments, ash and charcoal flecks.

*Sample 1404* (GBA): rather heterogeneous dark brown, dark grey-brown or reddish-brown slightly clayey sandy silt with much plant detritus, and fragments of pottery, bone, wood and moss.

Plants (/M): The equal fourth highest assemblage from this series of samples from Period 5 (74 taxa), there were abundance scores of 2 for *Calluna* flowers, shoot fragments and twig fragments, and for *Rubia tinctorum*. Amongst the other components, bark and charcoal scored 2, as did fly puparia, wood chips and wood fragments. The high scores for *Calluna* explain the large AIVs for NACA (21, equal rank 6) and OXSP (15, equal rank 4). There were few other peatland taxa, however (the presence of *Erica tetralix* leaves points to wet acid peatland).

By far the most important plant groups in the assemblage were annual weeds in groups CHEN and SECA, though with a very high AIV of 19 (rank 2) for ARTE (perennial nitrophile weeds). Woodland mosses were quite well represented but other woodland taxa very poorly so. Foodplants were not prominent.

Parasitic worms: There were traces of *Trichuris* eggs in the subsample examined.

Insects (/T): There were modest numbers of insects which, however, only included 43 individuals of 31 beetles. Main statistics were obviously not very reliable, but perhaps hinted at a mixed origin for the insects. Only *Anobium punctatum* (5) and *Lathridius minutus* group (4) were represented by more than two individuals. This group may have included invading decomposers, but a redeposited or background origin seems likely. There was quite a rich assemblage of puparia—modest numbers of Sepsidae and *Leptocera* sp., with a small no of *Musca domestica* and single puparia of *Stomoxys calcitrans* and *Paregle radicum*. These, if not redeposited, suggest that there was some opportunity for insect colonisation. Other remains were also varied and included ‘many’ mites, ‘several’ beetle larvae (these also suggesting that development of an invertebrate population may have been initiated), and ‘several’ scale insects, a sheep ked, a sheep louse, a pig louse, a human louse and a human flea.

**Cut 14891:** a modest pit, about 1.1m across and 0.45m deep, though these must be minimum dimensions since the put was truncated at both sides. There were three fills, of which the middle (thickest) one was sampled.

**Context 14874:** black, very silty sandy loam, with wood flecks and sporadic patches of what may be cess (green silty material).

**Sample 1125 (BS—VW):** The sixth largest assemblage from a Period 5 BS sample was recorded here: 71 taxa; only *Chenopodium album* and *Rubia tinctorum* scored an abundance of 2, however. There were large components of foodplants (AIV 44, rank 6, more than one-fifth of the assemblage), of weeds in CHEN (57, equal rank 4, 35% of the assemblage) and SECA (34, equal rank 6, 23%) and ARTE (19, rank 9) and especially of woodland taxa in QUFA (30, rank 1, 21%). The other groups were of little importance. A good proportion of the taxa scored in QUFA were also probable foodplants, but *Oxalis* (seeds) and *Ilex* (leaf fragments and seeds) were surely brought for some other purpose, or incidentally, perhaps with leaf litter or woodland moss.

**Sample 1114 (Spot):** A sample of bird eggshell; no further analysis undertaken.

**Cut 22223:** a substantial pit, cut into Period 4B deposits; it was about 2m across and 1m deep and lay towards the front of Tenement D, within the outline of the Period 4B wicker building. At least eleven fill contexts were recorded in the field, seven of them having been sampled.

**Context 22382:** the basal context, a very dark grey, peaty, silty, clay loam, with a few olive, ‘cessy’, organic patches, flecks of ash and clay, and lots of wood, twigs and charcoal.

**Sample 1431 (BS—VW):** There was a rather modest assemblage of 35 taxa from this sample, all with an abundance of 1. Nearly one third of the taxa were scored in group CHEN, a little over one-fifth in FOOS and one-fifth in QUFA (the latter group was very largely composed of probable foodplants). Dyeplants were not especially prominent, and there were small components of other useful plants and a range of vegetation types was represented by small numbers of taxa.

Parasitic worms: Two subsamples of faecal concretion were examined; both gave modest numbers of *Trichuris* eggs, the majority retaining both polar plugs.

**Sample 1430 (GBA):** mid-dark grey, stiff, sandy clay silt with inclusions of wood, limestone, ash, oyster shell, a yellow deposit or precipitate, and patches of ‘natural’ clay.

Parasitic worms: The single subsample examined was barren.

Insects (/T): There were 63 individuals of 44 beetle species together with a few other arthropods, including ‘several’ fly puparia (those identified being *Nemopoda* sp.) and mites, a human flea and a sheep ked. There were four *Anobium punctatum* and *Lathridius minutus* group, and three each of *Cercyon analis*, a large *Philonthus* (probably *P. politus*) and *Atomaria* sp. Main statistics were mainly uninformative, although diversity was quite

high ( $\alpha = 64$ , SE = 17; alpha RT = 32, SE = 11). Subjectively, this was a similar group to that from subsample 1425/T (below), with hints of background fauna and dumping from a house. There was charcoal, again suggesting the presence of redeposited material.

**Context 22376:** immediately above 22382, a dark olive-grey, peaty silt with olive organic patches, patches of light grey ash and lots of wood/twigs and charcoal flecks.

*Sample 1424* (BS—VW): Another assemblage with a sum of taxa (37) somewhat below the period mean. The key to this deposit lies in the score of 3 for faecal concretions and of 2 for ‘bran’; this was evidently largely faecal material, presumably reworked. With it, however, was a range of plant taxa representing weed and wasteland communities and woodland (mainly through the foodplants like apple, sloe and ‘plum’). Other foods included *Vaccinium* (seeds and tentatively identified berry fragments), and there were probable food flavourings in the form of dill, summer savoury and hops.

*Sample 1425* (GBA): varicoloured, highly organic, more or less laminated silt with faecal concretions, and ?bracken and ?ash.

Parasitic worms: Two subsamples were examined; one gave quite large numbers of *Trichuris* and a small number of *Ascaris*, the other *Trichuris* only, in moderate numbers. Some eggs were measured.

Insects (/T): There were 66 individuals of 46 beetle species. Main statistics were mostly undistinguished, bearing in mind the size of the assemblage, although 21% of the individuals belonged to taxa coded ‘rd’. There were seven *Lathridius minutus* group, five *Ptenidium* sp., three *Anobium punctatum* and *Atomaria* sp., and one or two individuals of the remaining taxa. There were two individuals of a large *Philonthus* species (one of which was charred). This assemblage was surely background fauna plus a few rapid invaders, though probably with some dumped material (witnessed by the charred *Philonthus*). Dumped material may have originated in or by a structure.

Non-beetles were abundant, and included ‘many’ puparia (including small numbers *Leptocera* sp., *Tephrochlamys* sp. and *Musca domestica*), and ‘several’ beetle larvae and Syrphidae larval spiracular processes. There was also a single human flea.

**Context 22360:** immediately overlying 22376, a very dark grey, compact, silty, very organic material with reddish-brown peat.

*Sample 1423* (GBA): dark brown, crumbly, organic, slightly sandy silt with coarse plant detritus, including *Corylus* nutshell, bark and wood (?chips).

Plants (/M): One of the larger assemblages from this series of sample (65 taxa), with *Diphasium complanatum*, *Chenopodium album*, *Thuidium tamariscinum* and *Pseudoscleropodium purum* all scoring an abundance of 2. Though the largest single component was weeds in group CHEN (one fifth), the AIV of 29 was by no means large. The AIV for QUFA (26, based on 12 taxa) was, however, high (rank 4) and the AIV of 11 for QUER (several taxa shared with QUFA) was equal rank 2 within the values for that group. These last two groups were inflated by the presence of *Oxalis* seeds, hairs and petiole abscission plates, *Stellaria holostea* stem fragments, and *Ilex* seeds and leaf fragments. There was a large component of woodland moss besides the *Thuidium*; the AIVs for LIGN, SLIT and WOOF were all very high (rank 3 in each case) and the heathland/moorland group HEMO achieved its fourth highest AIV (9, based on 4 taxa) in this assemblage. Mosses in the last group might have been brought with heather, of which small amounts of seeds, flowers, shoot and twig fragments were recorded.

Other components of the sample included moderate amounts of bark, charcoal and wood fragments, together with wood chips, bone, eggshell and eggshell membrane, leather, and oyster shell: it was evidently rich in occupation debris of various kinds, with no one component predominating.

Parasitic worms: Two subsamples were examined; one was barren, the other gave a single *Trichuris*

egg.

Insects (/T): Preservation was excellent. About 71 individuals of 48 beetle and bug taxa were rapid-scan recorded semi-quantitatively. There were also ‘many’ mites, ‘several’ fly puparia and beetle larvae, and a human flea. Diversity was estimated to be quite high ( $\alpha = 65$ , SE = 15), and nearly a quarter of the individuals belonged to taxa coded ‘rf’. The most abundant taxon was *Platystethus arenarius* (‘several’), with five taxa at a frequency of three and one or two individuals of the remaining species. This was probably a mixture of invaders of foul matter with other, randomly incorporated, remains.

**Context 22270:** exact position uncertain, but lay between **22339/22340** (the latter immediately above **22360**) and **22256/22271**; dark brown to dark olive-grey compact peat.

*Sample 1409* (GBA): dark brown to reddish-brown, silty matted and compressed organic detritus with small twigs of ?*Calluna/Genista*, moss and wood.

Plants (/M): Of the 61 taxa in this rather large assemblage, several taxa scored an abundance of 2: *Genista* stem fragments, *Oxalis acetosella* petiole abscission plates, *Calluna* flowers, shoot fragments and twig fragments, *Sambucus nigra* seeds and the mosses *Pseudoscleropodium purum*, *Eurhynchium striatum* and *Hylocomium splendens*. At an abundance of 3 were stem fragments of *Stellaria holostea*, hairs of *Oxalis* and the moss *Thuidium tamariscinum*. Not surprisingly, there were very large AIVs for QUFA and QUER (the highest for Period 5 and well above the next highest value in each case); the AIV for woodland margin/hedgerow vegetation, RHPR, was also rather high (18, equal rank 3). These abundant, largely woodland, mosses were responsible for the very high AIVs for LIGN, SLIT and WOOF (all at rank 1 for this parameter).

The source of the woodland component—or at least of a part of it—may have been oak-birch wood on an acid substrate; *Oxalis acetosella* tends to favour acid soils and there were traces of oak leaf

tentatively identified as *Quercus petraea* by P. R. Tomlinson. Birch was represented by fruits, female catkin scales, leaf fragments and buds/bud-scales. Besides the woodland component, the heathland/moorland group (NACA) achieved a very high AIV (27, rank 3), though largely accounted for by the separate part taxa of *Calluna*. *Erica tetralix* leaves suggest wet peatland was one source of imported materials. Weeds were rather poorly represented, as were foodplants, and there was a rather modest group of dyeplant remains, the largest contributor being *Genista*. Both rachis and pinnule fragments of bracken were recorded from this sample; imported bracken might have been brought from woodland on acid soils, too.

Parasitic worms: Two subsamples were examined; one was barren, the other yielded a single *Trichuris* egg.

Insects (/T, /1): Recording of the /T subsample was by a semi-quantitative rapid scan. The flot was large and included moss and wood fragments. There were ‘many’ fly puparia and mites, a human flea and ‘several’ ants. Beetles and bugs were not very numerous—about 60 individuals of 36 taxa. Diversity was estimated to be fairly low ( $\alpha = 38$ , SE = 9), while the outdoor component was substantial (over a fifth of the individuals). Foul matter taxa were relatively abundant (six taxa accounting for about a quarter of the assemblage). Decomposer diversity was estimated to be low (alpha RT = 14, SE = 4). There were ‘several’ *Cercyon analis* and *C. atricapillus* and three *Acrotrichis* sp. and *Platystethus arenarius*; in contrast there were also ‘several’ *Anobium punctatum*. Clearly there was foul matter and dead wood; in this case there was relatively little evidence for the origin of woodworm in a dump derived from a floor, as other ‘house fauna’ taxa were poorly represented.

There was not time to record material from the /1 subsample fully, but the flot was inspected quickly. Invertebrates included ‘several’ beetle larvae and a small mixed group of beetles dominated by decomposers; there was perhaps a tendency towards foul matter. There was also a very small ‘house fauna’ group. A notable record was a single

individual of the longhorn beetle *Grammoptera ruficornis*, the only specimen from the site. *G. ruficornis* passes its immature stages in slender twigs of various broadleaved trees. It probably exploited wattle at Coppergate.

**Context 22269:** exact position uncertain, but lies between **22339** and **22313**; very dark grey, silty, peaty, clay loam, with patches of olive-grey cess and flecks of ash and charcoal.

*Sample 1413* (Spot): A sample consisting of a small cache of elderberry (*Sambucus nigra*) seeds.

**Context 22313:** between **22269** and **22271**; reddish-brown, compact, silty organic material with 30% wood flecks.

*Sample 922313* (Spot): A spot find (sf 7511), comprising resin-like, vesicular charred material, perhaps food remains; no further analysis undertaken.

**Context 22256:** the uppermost sampled fill, and probably the second-to-uppermost fill; very dark greyish-brown silty, peaty loam, with patches of dusky red peat, olive 'cessy' patches, pale yellow ash and some charcoal flecks.

*Sample 1405* (BS—VW): Only *Chenopodium album* and *Atriplex* sp(p)., of the 39 taxa recorded from this sample, achieved an abundance of 2. Of the rest, most were weeds of some kind, with a modest component of woodland taxa in QUFA. Dyeplants and foodplants were not especially well represented. This deposit seems likely to have formed by gradual accumulation of occupation debris and is perhaps post-use accumulation.

*Sample 1402* (GBA): dark grey, crumbly, somewhat heterogeneous, humic, slightly sandy silt with slightly layered woody and herbaceous detritus.

Parasitic worms: The single subsample examined gave two *Trichuris* eggs.

Insects (/T): The flot was large and recording would have taken an unacceptable amount of time

as the material was encountered late in the project. There were 'many' fly puparia and mites, and a very rapid inspection suggested the presence of a small group (probably less than 30 individuals) of typical Anglo-Scandinavian decomposer beetles, with no strongly-marked ecological group.

*Sample 1401* (Spot): This was a sample rich in root fragments of madder, *Rubia tinctorum*; these were presumably the 'dusky red peat' observed on excavation.

### Other cut fills on Tenement D

**Cut 22055:** the cut for a construction trench on the W side of timber Alignment **14853**.

**Context 22052:** very dark grey, peaty, silty loam with wood, charcoal, ash and numerous limestone fragments.

*Sample 1331* (GBA): mid grey-brown, crumbly, very heterogeneous sandy clay silt with patches of 'natural' clay, bone, plant detritus and ash lenses.

Plants (/M): There were 53 taxa in the assemblage from this subsample. *Chenopodium album* and *Rubia tinctorum* alone scored an abundance of 2 and there were modest amounts of charcoal and large amounts of wood fragments. Probable food remains included 'bran', apple endocarp, raspberry and celery seed, but just over one-third of the taxa scored in CHEN and nearly one-fifth in SECA, so the assemblage may be seen as largely having formed without deposition of identifiable organic materials.

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

Insects (/T): The material was recorded by semi-quantitative rapid scanning, about 62 individuals of 29 beetle and bug taxa being present. Preservation was good and insects made up a large proportion of the flot. Diversity was estimated to be low ( $\alpha = 21$ , SE = 5) and there were very few outdoor individuals (in fact, two; one of these was *Aphodius granarius*). Decomposers were

proportionally very important (% N RT = 87) and diversity of this component low (alpha RT = 13, SE = 3). There were 'many' *Carpelimus bilineatus* and *Aglenus brunneus* and 'several' *Lathridius minutus* group, other species all being represented by single individuals. It appears that three species characteristic of 'house' assemblages managed to establish themselves, but that the range of habitats was limited. It is possible, however, that the entire assemblage was introduced in redeposited material. There were 'several' mites and a sheep ked, and fly puparia which included 10 Sepsidae and a *Tephrochlamys* sp.

*Sample 1332* (Spot): A lump of soft Magnesian Limestone showing the very typical micro-structure with ooliths dissolving at their centres (= sf 7111, 7112).

*Cut 22481*: (no section shows this cut; plans not available) an elongate cut towards the front of the site, within the outline of the front wicker building on Tenement D.

**Context 14883**: brown, sandy, ashy, slightly silty peat, with 50% wood chips.

*Sample 1147* (BS—VW): The assemblage from this sample comprised 54 taxa, rather above both period and sub-period means for this parameter. The only taxa present with an abundance of 2, however, were *Urtica urens* and *Chenopodium album*. Somewhat inflated by these two records, there was a high AIV for CHEN (56, rank 6, 43% of the assemblage) and the value for SECA (30) was well within the top quartile of values for Period 5 as a whole. For the rest, however, there was a mixture of food- and dyeplants, and taxa indicating woodland, peatland, and wetland, though none formed a particularly prominent component. There were traces of ?charred bread from the residue.

*Sample 1128* (GBA): no action to date.

### *Period 5A deposits not accurately located*

**Context 14801**: a sporadic line of wicker work exposed in the base of Period 5B Gully *14723*; at least 6.5m long as seen on plan.

*Sample 1553* (Wood): A total of 32 pieces of hazel roundwood was examined; their diameter range was 7-22 mm and they had a mean ring count (for the 30 pieces where this could be ascertained) of 8.2 rings (SD = 1.9), perhaps indicative of material from managed hazel coppice. The material exhibited the complete range of degrees of compression, though rather more than half fell in the category 'moderately strongly compressed'.

*Sample 1647* (Wood): sample not examined.

**Context 14861**: a sample of roundwood, though recorded elsewhere by excavator as 'a post'.

*Sample 2229* (Spot): The eleven pieces of hazel roundwood in this sample had a diameter range of 17-29 mm, and a mean ring count of 8.4 (SD = 0.7); this material might well have originated in managed woodland. The material was mostly either uncompressed or moderately strongly compressed.

**Context 22411**: alignment

*Sample 1435* (Spot): There were 15 pieces of willow roundwood and four of oak in this sample. The former had a diameter range of 18-31 mm and a mean ring count of 10.4 (SD = 3.0), whilst the figures for the latter were 167-26 mm and 7 rings. Ten specimens were recorded as uncompressed, the rest being either slightly or moderately strongly compressed.

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