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

Part 2: Periods 4A and 4B

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 second part of the Anglo-Scandinavian sequence (Periods 4A: late 9th/early 10th century - c. 930/5; and 4B: c. 930/5-c. 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 (PERIODS 4A AND 4B);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 2: Periods 4A and 4B

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 Periods 4A and 4B

This period was divided into two parts; Period 4A, dated late 9th/early 10th century—*c.* 930/5, saw the realignment of Period 3 fences to enduring property lines, whilst in Period 4B (*c.* 930/5—*c.* 975), a series of post-and-wattle structures was erected along the supposed Coppergate street frontage), of which the

best-preserved were on Tenements C and D, the westernmost two plots. These buildings contained substantial series of floor and other internal deposits (though largely robbed from the Tenement A building during the construction of the Period 5B 'sunken buildings'). Behind the buildings there were yards delimited by tenement boundaries in the front half of the site (to about grid 30N). These areas had considerable net build-up of often richly organic material, punctuated by pits and other cuts, whose excavation doubtless contributed to the surface build-up. There were similar deposits in the rear half of the site. This material is dealt with in a separate section since certain allocation to a tenement would be unwise; these have been grouped as 'Tenement R' for the purposes of discussion and analysis but there is no implication of separate ownership or usage.

Period 4A

Structural deposits

Context 31192: alignment on the eastern side of Tenement B, perhaps a structural element, such as an internal partition.

Sample 1984 (Wood): Nine fragments of hazel (*Corylus*) and two of willow (*Salix*) were examined; the former ranged in diameter from 6 to 12 mm, the latter 8 to 13 mm, and their mean annual ring counts were 4 and 5 respectively. Five of the hazel rods and both of the willow were moderately strongly compressed; the remaining hazel rods were uncompressed.

Context 25415: alignment/fence, outside line of subsequent (Period 4B) 'west wicker building'.

Sample 1901 (Wood)—a total of 47 hazel and six ash (*Fraxinus*) rods were examined; the range of size for the former was 5-24 mm (they were, with one exception, moderately strongly compressed) and their mean annual ring count was 9.9 (SD 2.7), whilst for the latter the figures were 8-20 mm (all were moderately strongly compressed) and 11.2 (3.4); such statistics do not seem to suggest this was obtained from managed woodland.

Context 30284: collapsed or laid wicker on the east side of Tenement D, towards the front.

Sample 2007 (Wood): Forty-three pieces of wood in this sample were examined; the 23 pieces identified as oak (*Quercus*) ranged in diameter from 12 to 35 mm, with a mean annual ring count of 12.1, whilst the 20 pieces of willow were in the range 12-36 mm with a mean ring count of 12.3. The similarity of the figures for diameter suggests the choice of wood of a specific size for the task; the similarity in mean ring count may indicate that both oak and willows had been managed to provide wood (though the standard deviations for the two means were, respectively, 2.9 and 0.98 show that this is, in fact, rather more likely for the willow than the oak). Almost all the material was moderately strongly compressed.

'Layers' of Period 4A

'Tenement A'

Context 26228: a layer, about 3.12m x 1.86m in extent, of very dark grey silty loam, with wood flecks and occasional flecks of brown and grey clay; Tenement A/B.

Sample 1696 (GBA): mid-dark grey-brown, crumbly, humic sandy silt with traces of stones 2-6mm and charcoal. This sample had evidently been trowelled during excavation and there had been some decay in store—it had a very crumbly texture.

Plants (/T): Perhaps not surprisingly, there was a small assemblage of taxa (25), the AIVs all being small for their group. There was a small component of foodplants, including the flavourings *Coriandrum sativum* (coriander), *Apium graveolens* (celery seed) and cf. *Anethum graveolens* (?dil), and traces of charred cereals: bread/club wheat, rye and oats.

The residue was quite rich in bark and charcoal fragments, but fragmentary wood was the most abundant component.

Parasitic worms: The single subsample examined was barren.

Insects (/T): A small group of beetles was recovered (N = 28, S = 22), and there were few other insects. Preservation was quite poor. There were three *Anotylus complanatus* and *Aphodius granarius*, and only one or two individuals of the remaining taxa. This may have been entirely background fauna, although there may have been foul decaying matter nearby. 'Several' mites and a larval apex of the click beetle *Athous haemorrhoidalis* were noted among the other invertebrates.

'Tenement B'

Context 26610: a thin layer in Tenement B, towards the street frontage; very dark grey silty loam with charcoal, limestone and patches of light reddish-brown clay.

Sample 1765 (Spot): a small cache of unidentifiable fish fin rays.

Context 26968: a rather more substantial layer than **26610**, which it underlay (therefore also in Tenement B); it was at most 0.18-0.19m thick (as recorded on the section drawing) and consisted of very dark grey clay loam with some ash and a little charcoal.

Sample 1830 (Soil): mid-dark grey-brown, crumbly, slightly sandy clay silt with moderate amounts of inclusions of buff clay; no further analysis undertaken.

Context 27232: a small ashy patch at the edge of Context **26808** (not sampled), and overlying **31315**, in the north-east corner of Tenement B; yellowish-brown ash with strong brown ash and some charcoal.

Sample 1993 (Chemical): mid pinkish grey-brown, crumbly, silty sand with abundant charcoal; no further analysis undertaken.

Sample 2345 (GBA): one of a series of samples (2342-52) from a column of sediment through Period 3 and 4A deposits; mid grey-brown, crumbly, slightly silty sand, with traces of pot and inclusions of fine grey-brown silt. (The difference in lithology might make one question whether this was really part of **27232**.)

Plants: not recorded, but the flot from the /T subsample contained some charred cereal grains.

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

Insects (/T): A small assemblage of beetles was recovered (N = 46, S = 31). Main statistics can only be regarded with caution, and the presence of rather small numbers of three oxytelines which were perhaps common 'background' elements makes the low value of α RT suspect. There were 'many' Diptera puparia, including 10 *Leptocera* sp., and 'several' mites.

Context 27234: abutted and overlay Context **27232** in Tenement B and respected alignment **27376**; a more extensive layer than **27372**, consisting of very dark greyish-brown silty clay loam, with wood chips and charcoal, limestone fragments and small blobs of light brown clay.

(It is most convenient to consider the plants from the three GBA samples together; they were taken at the following depths through the context, as part of a series of samples (2342-52) from a sediment column: 2344—bottom to +0.10m; 2343—+0.10+0.20m; 2342—+0.20+0.30m.)

Sample 2342 (GBA): dark grey-brown, crumbly, sandy silt with abundant coarse and fine herbaceous detritus, traces of 2-6mm stones and small limestone fragments, and pinkish natural ('clay') silt.

Plants: see below.

Parasitic worms: The subsample examined was barren.

Insects (/T): Preservation was not very good. A modest number of beetles was recorded, the 36 taxa being represented by 54 individuals. The main statistics were unexceptional. There was nothing in this group to suggest that this was anything but background fauna or initial colonisers; even fly puparia and mites were rare. There were similarities to the fauna of subsamples from Samples 2343 and 2344, however (see these).

Sample 2343 (GBA): mid grey-brown, crumbly, humic silt with abundant fine herbaceous detritus, and traces of stones 2mm-2cm, charcoal and shellfish, with moderate amounts of burnt and unburnt mammal bone.

Plants: see below; in addition some charred cereal grains were recorded from the /T2 flot.

Parasitic worms: A single *Trichuris* egg was recorded from one of the two subsamples examined; the other subsample was barren.

Insects (/T1, /T2): Preservation in the /T1 subsample, in contrast to that in the subsample from Sample 2342, was excellent, and 151 individuals of 69 beetle and bug taxa were present. Main statistics were unexceptional apart from a high value of % N RT (70). The first three ranks of abundance were occupied by Oxytelinae—*Carpelimus bilineatus* (14), *Anotylus complanatus* (13) and *A. rugosus* (9); the other more abundant taxa were *Xylodromus concinnus*, *Anotylus nitidulus* and an aleocharine (all 7), *Cercyon analis* (6), and a *Cryptophagus* species (5). The overall composition of the assemblage suggested that there was a breeding community of species associated with decomposing matter. This was probably either mixed in nature, or changing with time, although it is conceivable that most of the recorded taxa could have co-existed in moist but well-drained plant remains. There were ‘several’ fly puparia (mostly Sepsidae sp.) and mites, but few other remains.

The /T2 subsample was recorded non-quantitatively; it provided a human flea, ‘many’ fly puparia (mostly Sepsidae sp.), a small beetle assemblage, probably much like that in the /T1

subsample, ‘many’ mites and a few other arthropods.

Sample 2344 (GBA): mid grey-brown, crumbly, humic, sandy silt or amorphous organic material, with traces of charcoal and wood fragments.

Plants: see below.

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

Insects (/T1, /T2). From the first subsample 106 individuals of 46 beetle and bug taxa were recorded. The overall flavour of the assemblage was much like that from Sample 2343, although there were differences in detail. Oxytelines were even more important—*Carpelimus bilineatus* (17), *Anotylus complanatus* (16), *Anotylus rugosus* (8), *Oxytelus sculptus* (5) and *Anotylus nitidulus* (4); there were also four *Omalium* sp. These and many of the rarer taxa seem likely to have bred in the deposit. This group was rather reminiscent of a number recorded from Anglo-Scandinavian pits at the site. Other remains included ‘several’ mites.

Subsample /T2: This assemblage represented a minor variation on the theme established by Sample 2343. There were 114 individuals of 49 beetle and bug taxa, Main statistics were again essentially similar to those for 2343, and the most abundant taxa were *C. bilineatus* (18) and *A. complanatus* (11). There were six *Cercyon haemorrhoidalis*, perhaps hinting at rather fouler conditions, and six *A. nitidulus*. *Oxytelus sculptus* and *Lathridius minutus* group were both represented by five individuals, and *Neobisnius villosulus* by four. Again, there were ‘several’ mites.

The record of a single *Tipnus unicolor* is notable.

Plants from Samples 2432-4 (three /T subsamples, one from each sample): The three assemblages examined all gave numbers of taxa at or rather below the mean for Period 4A (34, 46, and 43). None of the AIVs was unusually large, either, so they can be seen as very much ‘average’ samples. They were also rather similar assemblages in terms

of their composition—similarity coefficients between the pairs of lists of taxa were as follows (figures for reduced lists based on taxa without regard to parts recorded are given in parentheses): 2342/2343—40% (40%); 2342/2344—31% (32%); 2343/2344—41% (44%). These are quite high values for this kind of coefficient—of a similar size to empirical data from analyses of replicate subsamples of Anglo-Scandinavian deposits from this site.

For the most part, taxa were recorded in small amounts (abundance score 1), except for *Urtica urens* (scored 2 in 2342), *U. dioica* (2 in 2344), *Chenopodium* Section *Pseudoblitum* (3 in 2342), *C. album* (2 in 2342 and 2344) and *Carex* sp(p). (2 in 2343). Except for *Carex*, these are all weed taxa that tend to produce large numbers of propagules. The AIVs across the three subsamples are rather consistent (there is a much larger AIV for FOOS for 2343 and 2344 than for 2342), with the same five groups present as the first five ranked ‘vegetation’ groups in each list. With the exception of *Reseda luteola* in 2344, dyeplants were not recorded from this context; this taxon is, in any case, quite likely to have been an urban weed.

Other common components of the deposits were wood fragments, charcoal, mammal bone, fly puparia, baked clay/daub and tile fragments.

Context 31315: a layer in Tenement B—the basal part of the deposits assigned to Period 4A, overlying Context **31383** of Period 3. Black, slightly clayey silt with some small wood chips and charcoal. Sample 2346 is part of a column sequence (2342-52).

Sample 2002 (GBA): mid-dark grey-brown, crumbly, slightly clayey, sandy silt, with traces of shellfish fragments.

Plants (/T): This subsample gave a small assemblage (only 29 taxa), more than half of them annual nitrophile weeds (CHEN); unusually for this site, there were modest numbers of *Reseda luteola* seeds (abundance score 2), but this plant is perhaps as likely to have been growing as an urban weed as it is to have been used as a dyeplant. Other

more probably useful plants included hemp and barley.

Parasitic worms: The two subsamples examined were both barren.

Insects (/T): Only a rather small assemblage of beetles and bugs was recorded (N = 71, S = 50). Diversity was high (though with a large standard error: $\alpha = 75$, SE = 18) and the outdoor component large (almost a quarter of the individuals). Foul matter species were rather abundant, though of course not much confidence can be placed on small percentages in an assemblage of this size (% N RF = 10). Apart from Diptera (there were ‘several’ fly puparia) there was little evidence that insects bred. There may have been a component of colonists, but much of the assemblage may have been background fauna. There were ‘several’ mites.

Sample 2346 (GBA): no action to date.

‘Tenement C’

Context 30038: a layer of black, very silty clay loam, slightly sandy in places, with 5% each of wood chips, clay flecks and charcoal.

Sample 1917 (Spot): This vegetable material had a distinctive pungent smell akin to that of celery (*Apium graveolens*) or lovage (*Levisticum officinale*) and consisted of straw-like fragments. Examination of these remains by P. R. Tomlinson failed to lead to a positive identification, though it was possible that some of the fragments were from dicotyledonous plants, others perhaps from grass culms or leaves. It should be remembered that many of the fruits of *Apium graveolens* and *Anethum graveolens* isolated from BS samples from this site retained a distinctive smell when crushed. Perhaps this sample, too, contained (vegetative) remains of these plants.

‘Tenement D’

Context 25232: layer, in N corner of excavation.

Sample 1818 (GBA): dark brown to grey-brown, somewhat heterogeneous, crumbly, humic, sandy clay with some grit, wood, bone and limestone fragments, charcoal, and ash patches.

Plants (/M): With 58 taxa, the assemblage from this 0.5 kg subsample was well above the mean for the Period 4 samples as a whole, though none of the AIVs was especially high. Several taxa scored an abundance of 2—including *Apium graveolens*, *Corylus avellana* and *Rubia tinctorum*, amongst the useful plants, together with the weeds *Urtica dioica* and *Chenopodium album*. Charcoal and mortar also scored 2, but there was clearly a preponderance of wood fragments (score 3), including some fragments separately recorded as wood chips.

Overall, this assemblage gives the impression of comprising materials from a variety of sources, none in great quantity except wood fragments—some of which might be from working of wood. This sample also yielded modest numbers of fly puparia of *Leptocera* sp.

Insects (/T): A small (N = 40, S = 31) assemblage of beetles and bugs was recovered, and other invertebrates were rare in the flot. The assemblage had the appearance of a random extract of an 'averaged' Coppergate fauna.

Context 25987: a rather extensive layer, up to 0.2m thick, of very dark grey, peaty, slightly silty sediment with large wood flecks and a little charcoal, and lenses of grey clay and ash.

Sample 1874 (GBA): dark grey-brown, crumbly, rather heterogeneous sandy silt/herbaceous detritus, with traces of stone 2-6mm, wood fragments and large bone fragments.

Plants (/T1, /T2): Both subsamples were examined for plant remains and they gave assemblages very similar in size (60 and 63 taxa, respectively). Comparing taxa on the basis of parts recorded gives a similarity coefficient of nearly 56% (very high for assemblages of this kind); comparing taxa regardless of parts recorded, this parameter is increased to over 57%. Both subsamples yielded a

diverse assortment of taxa (though almost always only trace amounts—abundance score 1) with foodplants and annual nitrophile weeds the largest groups in both cases. Other groups proportionately well represented were weeds of trampled places (group PLAN, its AIV of 11 for subsample /T2 being the sixth highest for the AIVs for the Anglo-Scandinavian assemblages from the site as a whole), SCCA, BOGS and OLIT, though the numbers of taxa contributing to these groups was always rather small. Thus BOGS was represented in both subsamples merely by *Sphagnum* leaves (abundance score 2, indicator score 3, giving an AIV of 6). There was a wide range of other moss taxa, too, most representative of the large branching kinds found on bark, including tree boles, in woodland floor habitats and on open and shaded rocks (groups LIGN, WOOF, OLIT and SLIT).

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

Insects (/T1, /T2): A modest group of beetles was recovered (77 individuals of 50 taxa) from the /T1 subsample. Whole-assemblage diversity was quite high ($\alpha = 61$, SE = 13) and that of the decomposer component at an intermediate level ($\alpha_{RT} = 22$), offering no clear evidence of a breeding community. While the range of taxa present was not unusual, two taxa which are rarely dominant were present in the upper ranks, *Acrilus nigricornis* and *Trox scaber* (both four individuals). The significance of this assemblage is uncertain; it may have been background fauna, but seems more likely to contain a component from within a structure—four human fleas were recorded, for example. There were also 'several' fly puparia and 'many' mites.

In addition, a 10kg subsample was bulk-sieved after the main period of processing; the residue and washover were not sorted, however.

Sample 1894 (Spot): no action to date.

Context 25994: a layer of modest extent, consisting of compact, very dark grey silty clay loam with much charcoal and a little ash.

Sample 1877 (Spot): This spot find was part of a charred apple (*Malus sylvestris*). Approximately half the fruit remained; the outer skin was preserved on one side, the other revealed a vertical section through the centre of the core, with endocarp clearly visible and one seed fused against it on one side of the mid-line. The minimum dimensions of the fruit were: height—22.7mm, width 25.5mm (Clapham *et al.* 1962 give the size of wild crab apple in Britain as at least 20 mm).

Context 30039: a layer of very dark grey peaty clay loam with plentiful wood flecks; it contained ‘wicker’, presumably coarse brushwood.

Sample 1905 (BS—VW): Only twenty taxa (half the mean for BS samples from Period 4) were recorded from the washover and rough-sorting; Traces of the dyeplant *Rubia tinctorum* were present (hop achenes were also present and might indicate the use of this plants as sources of yellow dye), but the largest group was foodplants (seven taxa, including hazelnut, apple, sloe, and ‘plum’).

Sample 1904 (GBA): mid-dark grey-brown, crumbly, humic sandy silt/amorphous organic material, with traces of small limestone fragments, wood, large bone fragments and pottery. (Described on a separate occasion as a ‘reddish-brown sandy silt, with leather fragments, wood, bark, charcoal and ashy inclusions’.)

Plants (/T2—one of three test subsamples): A smallish assemblage (33) taxa was obtained from this subsample, with only *Chenopodium album* scoring an abundance of 2. Nearly 40% of the taxa were scored in the annual nitrophile weed group CHEN, more than a fifth in the cornfield weed group SECA. A mere five taxa (15%) were basic foodplants (including hazelnut, and charred field bean and bread wheat); other ‘useful’ plants included celery seed, hops, hemp and perhaps also white horehound (*Marrubium vulgare*). Wood fragments made up a large proportion of the residue from this subsample, along with modest amounts of charcoal, leather and mammal bone, and also of small, black spherical structures thought to be resting-bodies (sclerotia) of a soil-living fungus, *Cenococcum*.

In addition, the >2mm fraction of the /T3 subsample was examined and recorded as a ‘spot’ sample. It gave a rather similar assortment of components to the coarse fraction of the /T2 subsample, and included some Leguminosae pod fragments that may have been from dyer’s greenweed (*Genista tinctoria*).

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

Insects (/T1, /T2): The first subsample was recorded by rapid scanning. In contrast to subsample /T2 it gave only a few insect remains—about 17 individuals of 12 beetle and bug taxa, ‘many’ fly puparia (*Nemopoda* and *Leptocera* sp.), and ‘several’ mites. This group was, however, quite distinctive, being dominated by taxa placed in the subjectively-recognised ‘oxyteline association’: *Carpelimus pusillus* group (several), *C. ?bilineatus* (3), *Neobisnius* sp. (3), and single individuals of two other taxa. These species probably co-existed in ‘muddy’ organic matter in pits at Coppergate.

There were also two human lice (*Pediculus humanus*), a single human flea (*Pulex irritans*), three sheep ked (*Melophagus*) adults, and one puparium. This was probably a dilute group similar to that from the second subsample. A record of the bug *Gampsocoris punctipes* is noteworthy.

Subsample /T2: there was a modest assemblage of beetles—81 individuals of 30 taxa—but almost half were *Carpelimus pusillus* group (37 individuals). The only other species present at a frequency of more than three was *Carpelimus bilineatus*. Diversity was depressed by these species ($\alpha = 17$, SE = 3), and other statistics were similarly distorted. The diversity of the decomposer component would have been extremely low if *C. pusillus* group had been included; these waterside creatures probably bred in moist organic matter on the site, and it appears quite likely that the layer was exposed for long enough for a population of the rather specialised *Carpelimus*, species and perhaps *Neobisnius* sp. (three individuals, found in somewhat similar habitats) to build up. The remainder of the assemblage was probably a

mixture of background fauna and invading decomposers which failed to establish large populations before the layer was sealed or conditions changed radically.

There were ‘several’ fly puparia and mites, an adult *Melophagus ovinus*, two *Damalinia ?ovis* and single *Haematopinus apri* and *D. bovis*, as well as five *Pulex irritans*, these fleas perhaps offering a hint that the material had been originally cleared from a building, while the mixture of animal lice offers rather slighter evidence that stock passed through the site.

Sample 1935 (Wood): Two pieces of wattle/wicker identified as birch (*Betula*) and 48 of hazel were examined; the former had a diameter range of 13-25 mm and a mean count for annual rings of 8.5, whilst the figures for the latter were 4-29 and 6.1 (SD = 2.2). All the material was moderately strongly compressed.

Sample 1936 (Wood): From this sample, 21 pieces of hazel rod were examined; they had a diameter range of 11-36 mm and a mean annual ring count of 6.6 (SD = 1.3). Again, all were moderately strongly compressed.

Context 30133: a mixture of ash and charcoal.

Sample 1926 (Chemical): dark grey, crumbly, silty sand with abundant charcoal (including twigs); no further analyses undertaken.

Context 30153: a layer of dark grey-brown, sandy ash with a little charcoal.

Sample 1925 (Chemical): light-mid yellowish grey-brown, crumbly, silty fine sand, with traces of charcoal, wood fragments, and (?burnt) mammal bone; no further analyses undertaken.

Context 30191: greyish-brown, compact fine ash with a little charcoal.

Sample 1943 (Chemical): light yellowish-grey, crumbly, silty fine sand with traces of charcoal; no further analyses undertaken.

Context 30192: olive, ‘cessy’, amorphous peat with a little wood flecking; abuts Fence **30440** (?**30439**), containing stakes **30214**, **30216**, **30217**; surrounds **30191** as seen in plan.

Sample 1937 (GBA): mid yellowish grey-brown, crumbly, somewhat heterogeneous, humic clay silt with abundant coarse woody and herbaceous detritus and some pinkish ‘natural’ clay.

Plants (/T): The assemblage was rather small (34 taxa) and there was little evidence of ‘cessy’ material, unless the concretions, scored at an abundance of 2, were faecal. Certainly there was little evidence of foodplants, the AIV of 6 for the foodplant group FOOS being one of the lowest for this series of samples (this was one of only five assemblages where this AIV was more than one standard deviation below the mean). Unlike most of the Period 4A samples, there was a modest component of dyeplants—with *Genista* stem fragments and *Humulus* achenes both scored at 2, and woad (*Isatis tinctoria*) pod fragments also recorded; indeed, the DYES group was the largest of the ‘useful’ groups in terms of its AIV in this subsample and the largest value for this parameter from the Period 4A samples as a whole (but rather small compared with the data for Period 4B samples).

Amongst the other useful plants, both hemp achenes and flax capsule fragments were recorded.

Charred grass caryopses and waterlogged spikelets/fragments were also present (the former with an abundance of 2), and *Danthonia decumbens* was identified separately: perhaps some evidence of turf?

Parasitic worms: No eggs were recorded from the subsample examined.

Insects (/T): Only a small group of beetles (and a single bug) was recovered (N = 42, S = 33), although there was a variety of other invertebrates including ‘many’ puparia and mites, ‘several’ aculeate hymenoptera, a puparium of *Melophagus ovinus*, a single sheep louse (*Damalina ?ovis*) and two honeybees. There was also a single flea.

Diversity of the beetle and bug assemblage was high ($\alpha = 70$, although $SE = 25$), and other statistics undistinguished, so this component of the insect fauna may have been of ‘background’ origin and/or invading individuals. Only *Anotylus nitidulus*, a *Cryptophagus* species, and *Lathridius minutus* group were represented by more than two individuals—there were three in each case. The mites and flies, however, seem likely to have exploited the layer.

Context 30194: black structured peat with plentiful wood, extending fully under **30192** (*q.v.*) and abutting horizontal timber **30283**.

Sample 1944 (GBA): dark grey-brown, crumbly, humic, slightly clayey silt with abundant coarse and fine woody and herbaceous detritus and traces of wood, large bone and leather fragments.

Plants (/T): This subsample of richly organic material yielded an assemblage of 60 taxa—well above the mean for this series of samples. However, amongst the identifiable plant remains, only *Genista tinctoria* stem fragments were recorded at an abundance of 2; other moderately abundant components were charcoal, fly puparia and mammal bone, whilst wood fragments scored 3 and wood chips 2. This was one of the richer Period 4A samples in terms of its dyeplant content; other well represented groups were mosses, especially groups LIGN, SLIT and WOOF (mosses living on various substrates, primarily from woodland habitats), though their AIVs were not particularly large in the context of Period 4 as a whole, and all were recorded in small amounts. Only a very small foodplant component was present—including *Malus* endocarp and *Apium graveolens*.

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

Insects (/T): Forty-eight beetle and bug taxa were recorded, with 79 individuals; there were also ‘many’ fly puparia and mites, ‘several’ beetle larvae and syrphid fly larval spiracular processes, three *Melophagus ovinus* and single specimens of *Damalinea ?ovis* and *Pulex irritans*, together with

a variety of other insects. There was nothing unusual about the main statistics, except perhaps in that diversity and the proportion of outdoor individuals were a little high ($\alpha = 52$, $SE = 11$; % N OB = 16). However, the greater part of the latter was accounted for by two ‘d’ taxa: *Platystethus cornutus* group (7) and *Anotylus nitidulus* (4). The other more abundant species were *Anotylus complanatus* (6), *Cercyon analis* and *Lathridius minutus* group (both 4) and *Xylodromus concinnus* (3). This group may have been of mixed origin, perhaps including remains brought in dumped material, subsequent colonists and background fauna.

Context 30295: layer of dark brown, coarse sandy ash with burnt daub and charcoal.

Sample 2009 (Chemical): rather heterogeneous—there were two major components: light yellowish-brown, compacted, silty clay, and mid-grey, plastic to crumbly, slightly humic clay silt; in addition, there were traces of 2-20mm stones, charcoal, wood fragments and shellfish. No further analyses were undertaken.

Context 30296: a layer of very dark grey, slightly sandy, peaty clay loam with large wood and charcoal fragments.

Sample 2016 (Spot): This was a mat of moss and other vegetable debris, about 50 x 50 x 10mm in size. The moss mainly consisted of large shoots up to 40mm, with short branches, mostly the fen/marsh taxon *Calliergon giganteum*. There were small numbers of shoots of *C. cuspidatum* and *Drepanocladus cf. revolvens*, species which accord with the ecological implications of *C. giganteum*. The seeds present were also waterside/fen taxa—*Menyanthes trifoliata*, *Cladium mariscus* and *Cicuta virosa*. The last of these is now a very rare umbellifer of waterside habitats though it was recorded from one other deposit at Coppergate, a Period 5B yard layer, and from 6-8 Pavement, York (Hall *et al.* 1983).

Context 30342: very dark grey-brown amorphous ‘cessy’ peat layer.

Sample 2014 (GBA): mid grey-brown, crumbly, humic, sandy silt/amorphous organic material with a few fibres.

Plants: A small amount of this material was examined by P. R. Tomlinson in response to the excavators' enquiry as to whether it was 'manure'. She reports that this was 'an organic soil and not much recognisable plant [material]'. Perhaps some considerable decay had taken place between sampling in 1980 and subsampling in the laboratory in 1984 and 1986.

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

Insects (/T1, /T2): The first subsample gave a rather small group of beetles and bugs—63 individuals of 41 taxa. Over a quarter were 'outdoor' (oa or ob) forms, which included six *Helophorus* sp. water beetles, the most abundant taxon. There was little to suggest that any species bred (other than flies, with 'several' puparia; there were also 'several' unidentified insect larvae). There was, however, a single resting egg of a water flea which, together with the *Helophorus*, suggests that there was open water, or that water containing invertebrates was disposed of here. There were also four human fleas, and these together with some of the more abundant beetles may indicate dumping from a house.

Subsample /T2 was not examined apart from a rapid inspection of the flot within its jar; it contained a few insects.

Context 30352: extensive layer, about 0.4m thick, of very dark grey, silty, very peaty loam, with 40% wood flecks; perhaps a dump for levelling (it spread across complex Period 3 stratigraphy).

Sample 1905 (BS—VW): Only 20 taxa (half the mean value for this parameter for the BS samples from Period 4) were recorded from the washover and rough-sorting; Traces of the dyeplant *Rubia tinctorum* were present (hop achenes were also recorded and these might indicate the use of this plants as sources of yellow dye), but the largest

group was foodplants (seven taxa, including hazelnut, apple, sloe, and 'plum').

Sample 2017 (GBA): dark grey-brown, crumbly, layered, humic clayey, sandy silt with coarse woody detritus and traces of large bone fragments.

Plants (/T): The assemblage from this subsample was very large (79 taxa, the third largest assemblage for the Anglo-Scandinavian GBA subsamples from this site as a whole) and several taxa scored an abundance of more than 1—*Corylus avellana*, *Humulus lupulus*, *Polygonum persicaria*, *Chenopodium album*, *Atriplex* sp(p)., *Apium graveolens*, *Anthemis cotula* (including charred achenes at abundance 1), *Lapsana communis* and waterlogged cereal glume-bases all scored 2. Amongst the other components, wood fragments also scored 2. Particularly well-represented groups were—not surprisingly, in view of the list above—weeds in CHEN (AIV 60, rank 7 in the Period 4 subsamples from GBAs) and BIDE (21, rank 7), and SECA (40, equal rank 4) but, unusually for Period 4A, wetland/grassland taxa of groups MOAR (25, rank 8) and PHRA (8, rank 4) were rather conspicuous. With four taxa (*Humulus*, *Diphysium*, *Rubia* and *Genista*), the dyeplant group DYES achieved a high AIV for the Period 4A samples (but rather low compared with Period 4 samples as a whole). The FOOS and FOOS AIVs were very high, too—that for FOOS was 38 (rank 3), that for FOOS was 15 (equal rank 3). There was a clear component of edible fruits—*Malus* (both seeds and endocarp), *Crataegus monogyna*, *Prunus spinosa*, and *Vaccinium*. Another potential foodplant was linseed (*Linum usitatissimum*), of which capsule fragments were also recorded. The flavouring group, FOOS, comprised *Apium graveolens*, *Satureja hortensis* and *Humulus lupulus*.

The cereal glume-bases are somewhat unusual in the context of these samples from Anglo-Scandinavian Coppergate; they are perhaps most likely to have originated in cereal threshing.

Quite a wide range of mosses was present—13 taxa, scoring especially in groups LIGN, SLIT and OLIT (probably mostly from woodland habitats);

the relatively high AIVs for groups DUNS and FENS are somewhat misleading—these groups never have more than a very few taxa at this site.

Despite the large component of foodplants, there is no other evidence for the presence of faeces in this layer and the material must be seen as domestic waste of other kinds. Fish bone and scales, mammal (some burnt) and bird bone and mussel shell and bird eggshell fragments were all recorded from the residue.

Parasitic worms: Single eggs of *Ascaris* and *Trichuris* were recorded from the subsample examined.

Insects (/T): A rather small group of beetles and bugs was recovered: 55 taxa and 67 individuals. Diversity was high and the outdoor component large ($\alpha = 142$, SE = 44; % N OB = 34) and decomposers formed a relatively small part of the assemblage (% N RT = 49). These statistics, together with the fact that the first five ranks of abundance were occupied by Oxytelinae in small numbers, strongly suggest a ‘background’ origin for the fauna. Inspection of the remainder of the species list suggests that diversity was high ecologically as well as mathematically.

A variety of other invertebrates were present in small numbers, including two fleas, a *Daphnia* ephippium, a probable *Melophagus ovinus*, a small sponge fragment, and a probable cimicine bug which was, however, not the human bedbug.

Context 30883: layer of approximately 50% each of strong brown silty sandy clay and very dark grey clay loam.

Sample 2179 (Chemical): light-mid grey-brown, crumbly, sandy silt; no further analysis undertaken.

Sample 2180 (Chemical): taken for Dr J. Hunter, University of Bradford.

‘Tenement R’

Context 30000: a layer in the front (north-western) fifth of the site, in Tenement C, comprising a thick deposit of black silty, slightly sandy clay loam with 5% charcoal flecks, 5% wood chips and 5% red (burnt) clay.

Sample 1883 (Spot): a group of partly-charred cultivated oat (*Avena sativa*) spikelets with hairs still visible on the caryopses; all the grains were still enclosed in their spikelets, the flower parts well preserved.

Not yet located

Context 30351: fenceline containing some wicker/wattle.

Sample 2034 (Wood): A total of 21 pieces of hazel from this structure were examined; their diameter ranged from 13-27 mm and their mean annual ring count was 4.6 (SD = 0.7). The material showed a fairly even spread in the range of compression (classes 0-3 on a four-point scale), that is there were no strongly compressed specimens.

Cuts of Period 4A

Tenement A

Cut 27920: a steep-sided, flat-bottomed pit, about 1.3m deep and 1.9m across containing about five separately identified fill layers.

Context 27943: the basal fill; dark olive grey, mixed amorphous/structured peat.

Sample 1928 (BS—VW): This was described in the laboratory as ‘crumbly to slimy greenish to grey-brown silty ‘peat’ with some greenish-olive ?grass-matted concretions’. Examination of a smear of the greenish vegetable matter gave evidence of *Ascaris* and *Trichuris* eggs and wheat/rye ‘bran’.

The plant macrofossils assemblage of 62 taxa was one of the top 10% for Period 4 BS samples, judged by this parameter. There was a large

component of foodplants—reflected in an AIV for FOOS of 53, the second highest for the Period 4 BS samples, and in an AIV of 18 for FOOS (the highest by a margin of 5 units). Weed taxa were also well-represented, especially groups BIDE (equal fourth highest for this series), CHEN (equal third) and SECA (equal sixth); abundance scores of 2 for taxa like *Polygonum hydropiper* and *Chenopodium album* go some way to accounting for this, though the number of taxa in these groups was also proportionately large. Together with the foodplants—which included *Malus* (both seeds and endocarp at an abundance of 2), *Prunus spinosa* (also 2) and a range of other fruits ('plum', hawthorn, blackberry, ?bilberry), as well as five 'flavourings' (coriander, dill, celery seed, summer savory and hops)—traces of faecal concretion were recorded and 'bran' was scored at an abundance of 2.

Despite the description of 'grassy' material from this sample, the grassland component of the plant macrofossil assemblage was not especially large (the AIV for MOAR was 14, one of eight assemblages from the site with this value for the parameter, seventh in rank order for the Period 4 samples). It may be that the 'grassy' material represented decayed straw rather than hay, therefore.

Five taxa scored in the dyeplants groups DYES were also recorded from this sample, but gave an AIV of only 13, only a little above the mean for the Period 4 samples.

Large hypnoid mosses were well-represented in this assemblage, with *Neckera complanata* and *Thuidium tamariscinum* both recorded at an abundance of 2. They are very likely to have been used for toilet purposes.

Parasitic worms: Two subsamples were examined; both gave rather high counts of *Trichuris*, with much better preservation in one subsample than the other. Some eggs were measured.

Sample 1927 (GBA): richly organic, black to brown to olive silt. Very humic. Patchy on

centimetre scale with felted plant material, twigs, micaceous sandstone and bone.

Parasitic worms: Modest numbers of *Trichuris* eggs, most of them entire, were recorded and some measured.

Insects (/T): Recording was by rapid scanning. The flot was quite large and contained moss and abundant fly puparia (mostly *Leptocera* sp. and Sepsidae sp.) and other insects, including 'several' beetle larvae (indicating the presence of a breeding population; unfortunately the remains could not be identified), three *Pediculus humanus* and body segments of a flea. There were also 'many' mites. Preservation was very good, although the number of adult beetles was small (S = 41, N = 46). Almost a quarter of these were 'outdoor' forms (% N OB = 24), and diversity was measured by Fisher's α was high, although with a very large standard error ($\alpha = 177$, SE = 81). The decomposer component was fairly small and of quite high diversity (% N RT = 59, α RT = 59, though SE = 37). No species was represented by more than two individuals, and it seems likely that this layer was soon rendered unsuitable for the colonisers represented by the larvae.

Context 27921: immediately overlying 27943; black peaty clay loam with a few wood fragments.

Sample 1921 (Spot): This sample was a small pad of matted moss with a matrix containing *Triticum/Secale* 'bran' and *Trichuris* eggs. The mosses were typical large hypnoid taxa commonly associated with faecal (and other) deposits at this site—*Thuidium tamariscinum* (the bulk of the sample), *Neckera complanata* (a little) and *Hypnum cupressiforme* (a single fragment). All these taxa were also recorded from the sample from the context (27943), underlying 27921.

Tenement B

Cut 26808: 'scoop', perhaps a pit truncated by a Period 5B building.

Context 26635: the lowermost fill; black silty loam with many wood chips.

Sample 1722 (BS - V): Rough sorting yielded small amounts of hazelnut, *Prunus* stones, moss and wood fragments, together with mammal and fish bone, fish scale, shellfish, bird eggshell, pottery, slag, and tile.

Sample 1725 (BS—VW): The modest assemblage of 24 taxa was dominated by weeds of group CHEN and by foodplants in FOOS, though their respective AIVs were not especially large. The dyes group comprised only *Diphysium* and *Humulus*, with an AIV very low for the Period 4 samples as a whole.

Sample 1727 (GBA): no action to date.

Sample 1745 (Spot; for 14C dating): This small sample of moss comprised leafy stems of *Campylium stellatum* and *Calliergon cuspidatum*, with a few *Sphagnum* leaves. Whilst this last taxon is likely to have originated in fossil peat or a living acid peat bog surface, the two other mosses are most probably from a fen or marsh habitat. The sample was not large enough for dating by radiocarbon assay at the time of examination.

Context 26427: immediately overlying **26635**; mixture of dark grey silty loam with dark grey-brown ash and some charcoal.

Sample 1718 (GBA): no action to date.

Context 26611: immediately overlying **26427** and possibly intercutting Cut **26808** from the north; very dark grey, slightly peaty silty loam with many wood fragments.

Sample 1719 (GBA): no action to date.

Tenement B/C (boundary area)

Cut 31154: one of a series of pits with at least two posts to either side (suggesting that they originally lay under a wooden superstructure).

Context 31167: the second-to-lowest layer; black gritty silty clay with some very black organic mix.

Sample 1981 (GBA): mid-dark grey-brown, plastic, somewhat heterogeneous slightly sandy, silty clay with traces of charcoal, wood and small bone fragments and pottery.

Plants (/T): The assemblage from this 1 kg subsample was quite small (27 taxa), only *Chenopodium album* reaching an abundance of 2. Weed taxa in groups CHEN and SECA predominated, a very modest component of foodplants and traces of dyeplants; hemp was also recorded (this plant was present in 53 of 150 Period 4 contexts examined for plant remains, always in trace amounts) and there were traces of faecal concretions. If this deposit had originally consisted primarily of faeces, there was certainly very little surviving at the time of the analysis.

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

Insects (/T): The flot was moderately large and included abundant plant fragments, many seeds, and charcoal. There were 'several' puparia and mites, two *Pulex irritans*, and a few other invertebrate remains. Eleven beetle taxa were represented by single individuals, all typical of the Anglo-Scandinavian urban fauna. This layer may have been sealed rapidly—or have formed in winter.

Context 31161: overlying **31167** and separated from it by a thin, unsampled layer (**31206**); mixture of olive-yellow structured peat (cess) with amorphous peat layering (a 'classic' cess pit fill description).

Sample 1980 (GBA): dark grey-brown, crumbly to layered, somewhat heterogeneous humic silt with abundant amorphous organic material, coarse and fine herbaceous detritus and pads of moss; traces of wood and small bone fragments and ?faecal concretions present.

Parasitic worms: Two subsamples have been analysed; both gave quite large numbers of

Trichuris and rather large proportions of *Ascaris*. Some *Trichuris* were measured.

Insects (/T): Only 32 individuals of 17 beetle taxa were present, but preservation was recorded as a little better than normal at the site. A large proportion of the assemblage was accounted for by the RF component (over a third—including four *Cercyon terminatus*, three *C. haemorrhoidalis* and two *C. unipunctatus*). Other ecological groups were poorly represented and many of the rarer taxa may have co-existed with the three *Cercyon* species. This deposit must have included foul material.

Fly puparia from this subsample included modest numbers of Sepsidae, but a very large number (199) of Limosininae spp., a group associated with decaying matter of various kinds. There were also ‘many’ mites, ‘several’ beetle larvae and various other arthropod remains in smaller numbers.

Cut 27491: pit, at least 2m minimum width and 0.85m minimum depth; fills of first cut seem to have been cut into again, almost to base, and a later recut apparently also took place.

Context 27490 (=27611): basal layer, perhaps partly the basal fill of the original pit and of the later recut.

Sample 1851 (GBA): no action to date.

Context 27440: above 27490=27611; dark olive grey silty loam, with some fibre content.

Sample 1875 (Spot): a very large number of fly puparia, the vast majority being *Musca domestica* (nearly 700 counted), with two *Leptocera* sp. and one *Sphaerocera* sp.

Context 27683 (originally 27445): thin layer between 27440 and latest recut fill 25759; black gritty silt with charcoal and some wood chips.

Sample 1847 (GBA): no action to date.

Context 25759: fill of uppermost part of pit, in last recut (separately numbered as Cut 25760); black, very silty, sandy clay, with 5% charcoal, 5% small wood chips, and a few small patches of weak red clay.

Sample 1827 (Spot): a small lump of the large, branching moss (*Antitrichia curtispindula*) with *Triticum/Secale* ‘bran’ and *Ascaris* eggs and fly puparia—almost certainly moss used as toilet tissue.

Tenement C

Cut 25997: rectangular cut (scoop) about 0.2m deep and 1.5m across, along very north-western edge of excavation.

Context 25996: compact, black silty peat with a few wood chips.

Sample 1885 (GBA): dark grey, plastic to crumbly amorphous organic material with traces of internal stratification.

Insects (/T): There were modest numbers of insect remains, including 56 beetles of 25 taxa, seven fly puparia, an individual of *Damalinia ?ovis*, three of *Haematopinus apri* (pig louse) and one sheep ked. Diversity was low ($\alpha = 18$, SE = 4), depressed by the presence of 25 *Carpelimus pusillus* group and seven *Neobisnius* sp., some of the latter being pale and thus presumably autochthonous. Of the other beetles, only *Anotylus complanatus* (2) was represented by more than a single individual. Assemblages of this kind probably indicate moist, muddy, organic-rich exposed surfaces, but there remains a suspicion that under some circumstances populations of some taxa, including *C. pusillus* group, may continue to breed long after burial.

Tenement D

Cut 25309: a ‘scoop’, filled with dark greyish-brown fine silty ash, about 0.15m deep and 0.80m across, in the further northern corner of the excavation area.

Context 25239:

Sample 1635 (Chemical): light-mid yellowish grey, crumbly, silty fine sand with traces of charcoal; no further analysis undertaken.

Period 4B

The deposits from this period are, as far as possible, dealt with according to the Tenement (A-D, west to east) from which they were recorded (with deposits south of site grid 30N being grouped as ‘Tenement R’ at the end of this section). Note that a group of samples, mainly of wood, from fences and alignments, and some material from post-holes, which have not been related to specific tenements (or which form boundaries between them) are considered at the end of this report.

Within the discussion of each of the tenements A-D, the structure and deposits within it are considered first, followed by the alleyways between buildings, and then the yards to the rear. Within each group, surface deposits are described first, then fills of cut features.

Tenement A

This, the westernmost plot, was cut by the N-S shoring and was thus only partly excavated; it had been extensively robbed by later (Period 5) activity.

Deposits associated with structure on Tenement A*Floor deposits*

Only two contexts designated as floors were sampled; neither has been analysed (since they were only identified as floors at a very late stage in the project).

Context 23428: a long, narrow area of floor in Tenement A, up to 3.95 x 0.3, and up to 0.08m thick; dark grey to dark greyish-brown silty clay

loam, with patches of amorphous peat and dark grey and light olive-brown ash.

Sample 1426 (GBA): mid-dark grey-brown crumbly to slightly brittle (working plastic), very humic slightly sandy clay silt.

Plants (/T3, 3kg): There was a rather small residue of which about 40% by volume was charcoal and some uncharred organic material, the rest sand and gravel with some bone. A rather large assemblage (56 taxa) of identifiable plants was recorded, though with only elder and fat hen seeds reaching 2 on the four-point abundance scale used for this set of samples. Overall, annual nitrophile weeds were by far the largest group represented, with some cornfield weeds and a smallish foodplant component and remains of some woodland and wetland plants—this was an assemblage with a high diversity of origins to judge from the number of groups.

Insects (/T3; 3 kg): A substantial group of beetles and bugs was recovered, 190 individuals, but these included only 45 taxa. Diversity was thus low ($\alpha = 19$, $SE = 2$). The abundant taxa were *Aglenus brunneus* (63), *Acrilus nigricornis* (22), *Xylodromus concinnus* (19), *Carpelimus pusillus* group (13), *Crataraea suturalis* (10), *Neobisnius* sp. (7), and *Carpelimus bilineatus* and *Leptacinus* sp. (5 each). These, and many of the less abundant species, form an ecologically coherent group which probably exploited fairly open-textured, rather damp, nutrient-rich material on the floor of the building. There was no characteristic ‘house fauna’ group, although the species listed include some which are typical of such associations, and some other house fauna taxa were present in small numbers. These doubtless lived in the structure. The churchyard beetle (*Blaps* sp.), of which there was a single adult, was also represented by four tentatively-identified larval abdominal apices.

Why this characteristic insect assemblage should occur with annual nitrophile weeds inside a structure is not clear. There were a few terrestrial ‘outdoor’ taxa which might have been associated with a stand of such weeds, but all were insects which were present in numerous other samples

from Coppergate. It seems probable that the weed seeds and insects had quite separate origins.

Acritus nigricornis was exceptionally abundant in this assemblage: it has normally been recorded in ones and twos at Coppergate, with only about 20 cases where more than five were found.

Context 31165: layer of very dark grey clay loam, with charcoal flecks and many wood fragments, about 1.9 x 0.4m, and up to 0.04m thick, abutting **27098** and **31120**, Tenement A, and ?respecting rear wall of Tenement A wicker building (therefore probably a floor).

Sample 1983 (GBA): strong brown crumbly to soft (working just plastic), amorphous organic sediment with some structure locally, and wood fragments present.

Plants (/T3, 2kg): The rather large residue was dominated by fine to coarse bark fragments with only a little sand and gravel and a rather high concentration of fruits and seeds. The wood fragments present showed what appeared to be recent decay.

Particularly noticeable in this subsample were abundant fruits of spike-rush (*Eleocharis palustris* sl) and moderate numbers of nutlets of bog-rush, *Schoenus nigricans*. They account for the unusually high scores for the groups MOAR, PHRA, and SCCA for this large assemblage of 69 taxa. The reason for such remains being so abundant is difficult to explain unless they arrived with cut wetland vegetation, perhaps in animal dung from beasts grazed in fen meadows or other wet grassland habitats. The moderate numbers of cow parsley (*Anthriscus sylvestris*) fruits recorded may perhaps also be counted as part of a 'hay' component.

Otherwise, weeds predominated in this assemblage and there were small numbers of food and dyeplants. Overall, though, there was a great diversity of plants suggesting a variety of origins for the deposit.

Insects (/T3; 2kg): A fairly large assemblage of beetles and bugs was recovered (N = 187; S = 45), together with abundant fly puparia, mites, syrphid larvae, and proctotrupoid wasps, and smaller numbers of other insects. Like the assemblage from Context **23428**, this was not a typical 'house fauna' group, although such elements were present, and it seems likely that conditions were a little more moist than was generally the case at Coppergate. The most abundant beetle taxa were *Lathridius minutus* group (31), *Anotylus complanatus* (16), *Cercyon analis* and an *Atomaria* sp. (11 each), *Anotylus nitidulus* (9), *Carpelimus bilineatus* (7), and *Xylodromus concinnus* (6). The rarer taxa also suggested house fauna elements mixed with species favoured by fouler conditions, and it seems likely that the litter on this floor was not always in a state which would be pleasant for domestic occupation. There were 'several' human fleas but no lice.

There was no invertebrate component likely to have been brought in cut wetland vegetation, but the presence of undried plant matter on a damp floor may have created conditions favourable for the component of the insect fauna associated with fouler conditions. The insects did not, however, suggest dung or stable manure.

Context 31195: a layer of very dark grey peaty loam, with a few charcoal flecks and many wood fragments, exactly underneath **31165** and in same orientation; 2.2 x 0.7m, and up to 0.04m thick

Sample 1988 (GBA): dark grey-brown layered slightly silty woody and herbaceous detritus with wood chips present.

Plants (/T3, 3kg): There was quite a large residue of which about 10-15% was mineral material (sand and gravel, with some bone), the remainder bark fragments and some wood, including moderate numbers of chips. Some undisaggregated clasts appeared to contain material like cereal chaff, and such material, including wheat glumes, was present in the residue, though the concentration of cow parsley (*Anthriscus sylvestris*) fruits (cf. *Sample 1983*, above) perhaps speaks for the presence of

hay like material (other grassland taxa were present, though this was not a large component).

The largest group within the large assemblage (78 taxa) were annual nitrophile weeds, with a large number of cornfield taxa, and smaller components of foodplants, grassland plants, dyeplants and a variety of mosses, all recorded in trace amounts. Amongst these was one rather unusual taxon: pot marigold (*Calendula officinalis*), otherwise only recorded from one Anglo-Scandinavian context (in Period 5B (with single records of *Calendula* sp., almost certainly this species, from Periods 3 and 4B).

Insects (/T3; 3kg): The concentration of adult beetles and bugs was not very high (96 individuals from 3kg; 56 taxa). Only *Anotylus complanatus* was particularly abundant (10 individuals), and it was accompanied by *A. nitidulus* (5) and *A. rugosus* (4). These beetles would have been at home in slightly to very foul matter. Although there were three *Aphodius granarius*, the rarity of other species typical of very foul organic waste suggests the cleaner end of this spectrum was the normal condition, perhaps with filth now and then or here and there.

There were numerous human fleas (12) and 'several' sheep keds, *Melophagus ovinus*, taxa typical of floors at Coppergate, but there was no distinct house fauna group.

The abundant leafhopper (Auchenorrhyncha) nymphs seem most likely to have been brought in cut vegetation, but there were no other taxa particularly likely to have had such an origin.

External layers

Context 31207: layer of very dark grey peaty loam, 0.9 x 0.4m in extent (as excavated), and up to 0.03m thick, probably just immediately outside the Tenement A building, to the SE of contexts **31165** and **31195**.

Sample 1985 (GBA): no action to date.

Context 27093: a layer of very dark grey, peaty loam, with wood chips, in the Tenement A backyard.

Sample 1953 (Spot): a single shell of common periwinkle, *Littorina littorea*.

Context 27203: very dark grey silty peat, with wood chips; a backyard layer.

Sample 1971 (GBA): crumbly slightly gritty silty plant detritus with many wood fragments, bark and leather.

Plants (/M): With 73 taxa, this was one of largest assemblages (rank 5) from the Period 4 GBA samples. Several taxa scored an abundance of 2—*Diphysium*, *Agrostemma githago* seed fragments (whole seeds were scored separately at 1), *Anthemis cotula*, waterlogged cereal chaff, and waterlogged caryopses of *Bromus*. There were also rather large amounts of bark, charcoal, fly puparia and wood chips. The presence of cereal chaff, brome fruits and abundant cornfield weed seeds—the AIV for SECA of 37 was the fourth highest for this series of subsamples—perhaps indicates the presence of threshing debris or decayed straw. Weeds in group CHEN were the largest group, however, and achieved an AIV of 45, just outside the top 10% of values for this parameter for Period 4.

Grassland taxa were rather well represented in this assemblage, the AIV for MOAR of 24 standing at rank 5. There was also an unusually high AIV for fen plants in SCCA, the three taxa achieving a value of 7, the highest for this group of subsamples. The taxa scored here included *Schoenus nigricans*, a good indicator of base-rich fen or wet flushes on limestone and a rather unexpected species to be found in the centre of urban York at this period unless it arrived with water from the river or in imported peat or vegetation from such fen habitats. Interestingly the AIV of 7 for reedswamp taxa (PHRA) was at rank 4 though the four taxa concerned are perhaps more likely to have originated in wetland vegetation locally.

Parasitic worms: The subsample from 1971 was barren. Two subsamples from hand-collected material from the context were also examined; both contained modest numbers of *Ascaris* and a few *Trichuris*.

Insects (/1, /2, /3): The three subsamples were treated separately, /1 and /3 being listed from slides and /2 being subjected only to a rough non-quantitative ('assessment') scan.

Subsample /1 gave the largest assemblage, with which the others may be compared. There were 142 individuals of 70 beetle and bug taxa, with large numbers of other remains including 'many' puparia (mostly *Musca domestica* and *Stomoxys calcitrans*), 'several' beetle larvae and mites, an adult and a puparium of *Melophagus ovinus*, four human fleas, three *Damalinia ?ovis* and a single *Pediculus humanus*.

Diversity was intermediate ($\alpha = 55$, SE = 8), as was the proportion of outdoor insects (% N OB = 13). Decomposers were well represented (% N RT = 70), with modest numbers of 'rd' and 'rf' individuals. This component was of moderate diversity (α RT = 20, SE = 3). The more abundant taxa were not typical of floors at Anglo-Scandinavian Coppergate, but there was some resemblance to several other backyard layers. There were 'many' *Acrotrichis* sp. and 'several' of ten other taxa indicating a variety of decomposer habitats—though, together with some of the less numerous species, probably representing rather moist rotting matter exposed to a considerable background fauna depauperate in outdoor forms. There was evidence from the ectoparasites for the presence of trample or sweepings from within a building.

Subsample /2 produced abundant insects; the more abundant beetles seen in the rapid examination were *Cercyon analis*, a *Philonthus* species, *Acrotrichis* sp., *Xylodromus concinnus* and *Lathridius minutus* group. Other insects were abundant and included three human fleas, three *Pediculus humanus* and a *Damalinia ovis*. There were also 'many' fly puparia (primarily *Stomoxys*

calcitrans and *Musca domestica*), 'several' beetle larvae and mites, and a sheep ked.

The third subsample produced 80 individuals of 48 beetle taxa. The implications of this group were broadly as Subsample /1, but there was a more definite 'foul' element. *Acrotrichis* sp. was not abundant (two individuals), but there were 'several' *Cercyon analis*, *C. atricapillus*, *Anotylus complanatus* and *Oxytelus sculptus*, while other significant taxa included two each of *Leptacinus pusillus* and *Anthicus formicarius*. There were also 'several' *Lathridius minutus* group. There was thus a strong hint of mouldering, rather foul, decaying plant remains. There were 'several' beetle larvae, mites and earthworm egg capsules, 'many' fly puparia including a *Melophagus*, and a single honeybee wing.

A tube of insect material picked from Subsample /M during sorting for plants included many puparia and a few beetles.

Context 34612: an external deposit lying just W of the Tenement A/B boundary and E of the later (Victorian) well 2001, this context comprised dark grey clay loam, its area being not less than 3.3 x 1.1m and its thickness up to 0.03m.

Sample 934612 (BS): There is no record of processing but a parasite subsample examined for this sample gave a single capillarid egg.

Context 18602: layer of black, very peaty clay loam with many small fragments of wood, perhaps a dump of waste, in backyard; an extensive layer, about 3.8 x 2.5m, 0.22m thick, west of ditch cut 2378 and north of pit cut 2337.

Sample 1049 (GBA): no action to date.

Sample 1051 (Spot): a spot find of bird eggshell, not analysed further.

Sample 1054 (Spot): a spot find of hen (*Gallus*) bones.

Sample 1069 (Spot): a spot find thought by the excavator to be eggshell, but not available for inspection.

Context 8574: layer of black peaty clay loam with straw, wood chips and patches of clay; 0.4m north-east of Context **8573**, but outside area of Pit **18490**—backyard deposit.

Sample 301 (GBA): dark grey-brown, plastic to crumbly to brittle, humic silt with traces of charcoal and wood fragments, and inclusions of grey clay.

Parasitic worms: The two subsamples examined gave small numbers of *Trichuris* eggs.

Context 8573: layer of black, very peaty clay loam, with wood chips and patches of clay, about 0.6 x 0.4m in extent; perhaps slump over pit Cut **18490** (*q.v.*) or levelling; a ‘backyard’ deposit, about halfway from ‘front’ of site.

Sample 304 (GBA): dark grey, crumbly, humic clay silt with traces of wood and ?wattle, (?faecal) concretions, and lumps of white material (?rotted shell).

Plants (/T3, 2kg): about 80% of the moderately large residue consisted of organic material (bark, wood and charcoal) with faecal concretions, perhaps reworked from a pit fill (or indicating the deposit to have formed at least partly from the contents of the pit into which this context may have slumped). Amongst the identifiable plant remains (49 taxa), most of which were recorded in only trace amounts, was a diversity of weeds, some woodland taxa (wood sorrel and probably some of the various mosses recorded), a few foodplants (including modest numbers of blackberry seeds) and remains of dyeplants (of which madder root fragments were the best represented).

Parasitic worms: Two subsamples were examined; modest numbers of *Trichuris* eggs were recorded from both.

Insects: not examined.

Sample 306 (GBA): mid-dark grey-brown, crumbly to brittle, rather heterogeneous, very humic silt with somewhat more clayey and more humic patches and distinct inclusions of compressed peaty humic material.

Parasitic worms: Both the subsamples examined gave traces of *Trichuris* eggs.

Context 31215: layer over Roman wall, was originally Period 3.

Sample 1972 (GBA treated as SPOT): This was a sample selected by P. R. Tomlinson as being ‘highly organic’ for the examination of vegetative plant remains. A small subsample of it was found to be rich in moss, including hair moss, *Polytrichum* sp., with twigs, bud-scales (including oak), leaves (including holly and oak), male catkin fragments and fruits of birch, and seeds of wood sorrel (*Oxalis acetosella*). Also recorded was a snail, *Discus rotundatus*, essentially a woodland leaf litter species, though also common under rotting bark and elsewhere. Fragments of woad pod and dyer’s greenweed stem were present, too. It is unfortunate that this sample was not examined for insect remains.

Parasitic worms: A subsample examined for parasite eggs proved to be barren.

Sample 1973 (GBA treated as SPOT): This sample was treated in the same way as *1972*. However, although recorded as coming from the same context, it was rather stony sediment with some bone, charcoal and wood fragments but very little other plant material. The only taxon positively identified was *Diphysium*, of which there were a few stem fragments.

Fills of pits on Tenement A

Cut 18490: a modest pit of about 1.5m maximum diameter and 1.75m depth, with wattle lining (**8504**) in the upper part. Six fill layers, the lowest (**18538**) not sampled.

Context 18529: layer immediately overlying basal layer (**18538**): dark olive-grey structured peat.

Sample 1019 (BS—VW): This sample gave one of the largest assemblages for the Period 4 BS samples (80), with several taxa at an abundance of 3 (*Prunus spinosa*, *P. domestica* sl., *Triticum/Secale* ‘bran’) and at 2 (*Rubus fruticosus* agg., *Malus sylvestris* seeds, *Crataegus monogyna*, *Neckera complanata* and *Isoetecium myurum*); faecal concretions also scored 2, and there can be little doubt that the bulk of this layer comprised faecal material. To the list of foodplants can be added the following in trace amounts: *Juglans* and *Corylus* nutshell; *Rubus idaeus* and *R. caesius*, *Rosa* sp(p), *Sorbus aucuparia*, *Vicia faba* (charred cotyledons), *Vaccinium* sp(p), and charred cereals of several kinds. The AIV for FOOS, at 83, is not surprisingly the highest for this series; flavourings in FOOS reach an AIV of 12, equal rank 4.

The large component of moss presumably indicates the use of this material for hygienic purposes. The AIV for bark-living taxa, group LIGN, is a massive 29 (the largest by far for any Period 4 BS sample), and many of the taxa contributing to it also account for the first rank AIVs for mosses of shaded rocks, etc. (SLIT) and woodland floor habitats (WOOF).

For the other groups, woodland and hedgerow taxa (groups QUFA and RHPR) are very well represented—though the majority are foodplant taxa presumably collected from such habitats. Weeds in groups ARTE, CHEN and SECA are quite abundant, too, though the high AIVs are perhaps partly a function of good preservation in this highly organic deposit.

Other components of the sample included ?charred bread, ?daub and ?dog coprolite and there were traces of four possible dyeplant taxa, feathers, and wool fragments; clearly there was more than just human faeces reaching the pit at this time.

Parasitic worms: Four samples of possible rodent droppings from the BS sample were examined for parasites; they contained many tiny arthropod

sclerite fragments but no parasites were recorded. Four subsamples of faecal concretion gave small numbers of *Trichuris* and *Ascaris* eggs in all cases.

Sample 1021 (Spot): The parasite analysis of this sample gave modest numbers of *Trichuris* and a single *Ascaris* egg.

Context 8843: dark reddish-grey structured peat with nuts [presumably sloe stones].

Sample 442 (Spot): a cache of about 200 sloe (*Prunus spinosa*) fruitstones.

Context 8856

Sample 413 (GBA): dark brown, plastic to crumbly amorphous organic/herbaceous detritus.

Insects (/TP from ‘bag 2 of 2’ washed): Moderate numbers of well-preserved insect remains were present, but only 28 individuals of 20 beetles were noted during rapid scanning. The most abundant species was *Anobium punctatum* (6), and there were three *Lathridius minutus* group. This beetle group resembled a small random extract from some other Anglo-Scandinavian assemblages, including some in pits. Burial was probably rapid. There were ‘many’ puparia (several tens) and mites, ‘several’ beetle larvae, a honeybee, and a sheep ked puparium, among other remains.

A 9kg subsample of this sample was bulk-sieved after the main period of processing; it was found to contain quantities of moss, wool fragments, eel and herring bone, and many faecal concretions. There were many seeds and fly puparia in the unsorted 1-2mm fraction.

Context 8804: very dark grey amorphous/structured peat.

Sample 998804 (Spot = sf2034): debris from around a red wool textile fragment included a ‘pip’; this proved to be a small *Prunus*, probably sloe, *P. spinosa*.

Contexts 8627 and **8792** appeared to be equivalent; they were the uppermost layer of the pit

fill and were described, respectively, as very dark greyish-brown to olive to dark reddish-brown amorphous peat with wattle fragments, wood chips and compact organic matter, and very dark grey silty clay loam; this suggests they were two distinct contexts at the same stratigraphic position.

Context 8627

Sample 345 (GBA): dark brown, crumbly to fibrous amorphous organic material with fine herbaceous detritus and traces of apple endocarp. Two subsamples of 1kg (/1 and /T) were processed.

Insects: /1—this sample was one of a series used to compare ‘scan’ recording (semi-quantitative) with full ‘detail’ recording. Semi-quantitative rapid recording led to one taxon with one individual being missed, when compared with detailed recording. The main statistics were, for practical purposes, the same, the only marked difference being in %NRF, but even here the estimates would both be described as ‘quite high’ (‘detail’—17%; ‘scan’—12%).

The following account is based on the ‘detail’ list. A moderate number of individuals of Coleoptera and Hemiptera was recorded ($N = 82$), and there were only 34 taxa. Diversity was thus low ($\alpha = 22$, $SE = 4$). The outdoor component was insignificant (%NOB = 2); both outdoor taxa were coded ‘ob’, one being a ground beetle (?pitfall) and the other an *Aphodius* dung beetle (?attracted). Decomposers were numerous (%NRT = 79), with the RD group not very important (%NRD = 15) and the foul matter group large relative to the mean for Anglo-Scandinavian samples (%NRF = 17). The decomposer group was of low diversity ($\alpha RT = 13$, $SE = 3$) and the more abundant taxa clearly bred in the layer (*Oxytelus sculptus*, with 15 individuals, *Cercyon analis* with 10 and *C. terminatus* also with 10). Rather foul matter is indicated. There were ‘many’ fly puparia (notably *Teichomyza fusca*), mites and beetle larvae, contributing to the impression that there was time for populations to breed.

The pit may have been within some unrecognised structure or otherwise protected from background fauna; alternatively, and perhaps more probably, the assemblage may have formed deep within foul matter and thus not have been exposed to invasion by outdoor forms. There was a small ‘house fauna’ group.

Sample 1012 (Spot): A bracket fungus identified as *Trametes (Lenzites) betulina*, comprising a single fructification with two lobes. The larger one was at most 131 x 75mm, the smaller 68 x 50mm and the whole was up to 30mm thick. As the specific epithet suggests, this is a species of birch (and to some extent other deciduous) trees, growing on stumps and stout branches. It was presumably brought incidentally with imported timber.

Puparia from this fungus were abundant (but not identified); there was also a single beetle, *Philonthus* sp.

Context 8792

Sample 412 (GBA): mid-brown, sticky, slightly humic clay silt, with traces of large limestone fragments, rotten wood, ?faecal concretions and paler silt flecks. A subsample was selected but not processed.

Tenement A/B boundary

Cut 27070: a large pit, up to 2.5m across and 2.5m deep, in a construction cut of about 3.3m diameter. The pit was wattle lined, the lining placed against the backfill of the construction cut. There were three fill layers, two of which were sampled.

Context 26960: the basal layer—dark grey loamy clay.

Sample 1802 (GBA): no action to date.

Context 26957: black peaty clay loam, the uppermost sampled layer from the pit.

Sample 1799 (BS—VW): This assemblage, 51 taxa, was rather larger than the period mean; only

three taxa scored an abundance of more than 1—viz. *Agrostemma githago*, *Prunus spinosa*, and *Triticum/Secale* ‘bran’, all at 2. There is little doubt that this layer contained faecal material, with its large food component (the AIV for FOOS was 45, rank 4 for this series of samples), though there were substantial proportions of weeds, woodland taxa (other than those likely to have been brought as foods) and minor components such as heathland and grassland taxa.

Sample 1798 (GBA): ‘oxidized’—black outside and greenish-olive within. Laminated, highly organic, essentially pure faeces.

Parasitic worms: There were very large numbers of well-preserved *Trichuris* eggs and small numbers of *Ascaris*; some of each were measured.

Insects (/T): A large flot, with much ‘bran’, contained the remains of only five beetles. Preservation was very good, so it appears that the layer was probably formed rapidly and immediately buried: the alternative hypothesis of near-complete protection from invasion is hardly tenable. Non-beetles included ‘several’ fly puparia (mostly *Leptocera* sp.) and a flea. A specimen of *Bruchus ?rufimanus* may have originated in pulses used for food, having passed through the human gut (there were traces of mineralised field bean cotyledons in BS sample 1799). There were, unusually, many fragments of feathers in the flot.

Tenement B

The building on Tenement B, whose outline was not identified during the early stages of this work, occupied almost the entire width of the tenement. It contained extensive floor deposits.

Structural elements

Context 24666: post in alignment **36586**, a squared timber of 0.15m sides, 0.6m long; the alignment may be an earlier S wall of the Tenement B structure or an early internal subdivision in a ‘standard length’ building.

Sample 1811 (Wood): *Alnus* (alder).

Context 28923: wattle set into top of beam **27908**, part of the rear wall for the Tenement B wicker building.

Sample 2004 (Wood): Unfortunately this sample had decayed in store and was no longer either identifiable or measurable.

Floors

Context 15690: a very extensive layer (4 x 3m on plan), 0.04m thick on average, below **15685** and **15686** (*q.v.*); a floor in Tenement B, comprising black, very peaty silty loam, with many wood fragments and some patches of clay and ash.

Sample 950 (GBA): dark brown crumbly to soft (working just plastic) slightly sandy, slightly silty amorphous organic sediment with white flecks.

Plants (/T3, 3kg): The rather large residue of organic detritus was mostly of bark and charcoal, with some grit and sand; only *Diphasium* stem fragments scored more than 1 (reaching 2 on a four-point scale). The best represented taxa otherwise were weeds of waste places and cultivated ground, with the dyeplant component comprising, in addition to *Diphasium*, also *Genista* and perhaps also hop (*Humulus*).

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

Insect (/T3; 3kg): The subsample examined produced only 94 adult beetles and bugs; there were 62 taxa. In contrast, other invertebrates were abundant: large numbers of fly adults (perhaps modern contaminants, though), mites and scale insects, and ‘many’ bug (Auchenorhyncha) nymphs and *Melophagus ovinus*, nine human fleas, and two honeybees, among others.

There was a small but fairly distinct house fauna component, including most of the taxa represented by more than one individual. Among these were *Lathridius minutus* group (11), *Xylodromus*

concinus (9), *Aglenus brunneus* (5), a *Cryptophagus* sp. (4), the bark beetle *Leperisinus varius* (3, perhaps brought in ash logs?), and of course the fleas noted above.

This seems to have been a fairly clean floor. Wool cleaning is suggested by the sheep keds (and two *Damalinea* sp., probably the sheep louse, *D. ovis*).

Context 15753: very dark grey silty loam with flecks of organic material, charcoal, brown clay and ash; a layer of about 1 x 0.6m extent, irregular in plan, 0.02m thick, and adjacent to and underlying **15761** (*q.v.*)—a floor.

Sample 966 (GBA): dark brown crumbly (working just plastic) slightly humic slightly sandy clay silt with traces of limestone 6-2mm, of glass, bone and leather, with lumps of mid-brown to greyish-brown slightly sandy clay silt (perhaps redeposited).

Plants (/T3, 3kg): The moderately large residue comprised approximately equal volumes of mineral and organic material, the former mainly sand and gravel, the latter mainly bark and charcoal. There was a rather high concentration of seeds overall (50 taxa, though only fat hen, *Chenopodium album*, reached a score of 2 on the four-point scale used), with the weed, foodplant and woodland groups best represented. The dyeplant component included *Diphysium*, *Genista*, *Isatis* and *Rubia*. Sheep ked (*Melophagus*) and bee remains were also recorded during the sorting of this subsample for plant macrofossils.

Parasitic worms: Two subsamples were examined; both gave rather high counts for *Trichuris* eggs (some were measured) and one gave a single tentatively identified *Ascaris*.

Insects (/T3): A rather large assemblage of invertebrates (N = 141, S = 70) was recovered; in addition to the beetles, adult and puparial flies and mites were abundant. House fauna was well represented (e.g. by twelve *Lathridius minutus* group, seven *Anobium punctatum*, five *Aglenus brunneus* and four *Xylodromus concinnus*, as well as five unidentified fleas, probably *P. irritans*), but there were also seven *Carpelimus bilineatus* and

four each of *C. fuliginosus* and *Neobisnius* sp, pointing to damper conditions.

Context 15636: floor in Tenement B building, consisting of very dark grey-brown fine silty loam, with flecks of wood and occasional flecks of grey and brown clay and olive ash; truncated laterally on three sides; context as recorded was 0.12 x 0.2m and 0.04m thick; it overlay **15686** (*q.v.*), **15687** and **15652** and underlay **15622**.

Sample 894 (GBA): dark ('charcoal black'), very crumbly, humic silt, with small grey clay patches at mm scale, shell fragments, twig fragments and some coarser mineral material.

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

Insects (/1, /2, /3): The first subsample gave a modest group of beetles and a single bug (N = 72, S = 45). There was little of note in the main statistics apart from a fairly low value for the diversity of the decomposer component (α RT = 19, SE = 5) and a fairly high proportion of rd individuals (% N RD = 28), the latter being a group rather typical of floor layers at 16-22 Coppergate. Much the most abundant taxon was *Lathridius minutus* group (11 individuals), with three individuals each of four other typical 'floor' taxa. Fairly dry conditions with mouldering organic matter are indicated. There were three human fleas and 'many' mites among the other remains.

Subsample /2 was recorded non-quantitatively. 'Many' mites were noted, together with a few beetle fragments and other insects, including at least four human fleas, one *Pediculus humanus* and 'several' of each of *Chionaspis salicis* and *Lepidosaphes ulmi*, as well as an adult and a puparium of *Melophagus ovinus*.

The /3 subsample was recorded semi-quantitatively, an estimated 94 individuals of 57 taxa being present. Diversity was quite high (α = 61, SE = 12) and the outdoor component substantial (% N OB = 20). Outdoor forms included single individuals of four water beetles. Decomposers coded 'rd' were well represented as

in Subsample /1 (% N RD = 27, 44% of the decomposers). Here too, *Lathridius minutus* group was much the most abundant taxon, with 14 individuals; there were ‘several’ individuals of *Cratarea suturalis* and of an *Atomaria* species. There were four human fleas and three adult sheep keds, together with ‘several’ earthworm egg capsules, ‘many’ fly puparia, and smaller numbers of various other arthropods. This assemblage probably originated under the same circumstances as that from the /1 subsample.

There seems little doubt that this context represented gradual deposition on a floor—unless of course it was redeposited material.

Context 15835: black peaty silt floor about 0.15m square, on east side of Tenement B, against wall, between Gully **15800**, and within timbers **15830-2**.

Sample 943 (GBA): dark grey-brown, plastic to slightly crumbly amorphous organic material or humic silt, with traces of tile fragments and large limestone fragments.

Insects: The flot jar was lost after processing.

Context 15891: black, compact, slightly peaty silt, containing flecks of light grey-brown ash, dark grey-brown clay and charcoal; a floor, about 0.6 x 0.4m, 0.03m thick, 1.5m north of Cut **15861**; lies between **15690** and **15897** (*q.v.*).

Sample 955 (GBA): ‘charcoal black’, brittle to crumbly, humic silt with large patches of ?natural paler sandy silt, wood fragments, some small stones (described in 1998 as a dark grey crumbly very humic sandy silt with traces of stones 20-60mm, charcoal, bone and ?burnt soil, with lumps of ?trampled soil (including, but not exclusively, ‘natural’ clay) and ?ash).

Plants (/T3, 3kg): The moderately large residue was about 40% by volume charcoal with some bark and other organic material, the rest being primarily sand. Most of the rather sparse identifiable remains were seeds and fruits of weeds, all present in trace amounts.

Insects (/1, /2, T3): In the first subsample a small group of insect remains, including 26 individuals of 22 beetle taxa, was present. Over a quarter were ‘outdoor’ forms and only *Lathridius minutus* group (with three) was represented by more than two individuals. The outdoor individuals suggest that this was not the diluted fauna of the building—perhaps it was background fauna, directly deposited or introduced with re-deposited ‘soil’. Curiously, however, there were five *Melophagus ovinus* adults, at least three lice (not identifiable further) and two human fleas, as well as ‘many’ mites and ‘several’ scale insects. It is thus possible that the layer accumulated slowly (or that remains were trampled in) under a regime in which few autochthonous decomposers were present.

The second subsample also produced only a small group of insects, with 27 individuals of 22 beetle taxa. Outdoor forms were again important (over a quarter of the individuals) and a similar origin is suggested. Mites were numerous and there were four *Melophagus*, a single human flea and one sheep louse *Damalinia ovis*.

Like the first two subsamples, the 3kg /T3 produced only a few insects: single individuals of eleven beetle taxa, and very few other invertebrates (including, however, a sheep ked, an unidentified flea, and a honey bee). Most of the beetles were typical house fauna, and it seems very likely that this layer formed on a clean floor.

Context 15761: a floor, comprising black, very peaty silty loam, with small wood fragments, flecks of greyish-brown ash, grey clay and with dark staining in places. Surrounds **15765** (*q.v.*) on three sides; quite extensive—about 1 x 2m, and up to 0.02m thick.

Sample 954 (BS—VW): The assemblage of 57 taxa was well above the mean for this series of samples, though none of the AIVs was especially large and all the taxa were scored with an abundance of 1. There were three heathland/moorland mosses (group HEMO, AIV 6, as high as any from these samples), but no obvious heathland group within the vascular plants. ‘Oil plants’ were

represented by three taxa, giving an AIV of 7 (rank 2, though there were many samples at this rank); of the three, *Brassica rapa* is perhaps most likely to have been a weed. Most of the main plant groups are represented in this sample, none in unusual abundance. Amongst the other components recorded, leather and wool/string fragments indicate possible craft activities, whilst fragments of material similar to charred bread may be counted with the food component.

Context 15650: dark greyish-brown, silty loam with flecks of brown clay, olive ash and wood—variously interpreted as a backfill or dump, but probably a floor deposit; extent approximately 0.8 x 2.0m and 0.07m thick.

Sample 907 (BS—VW): The assemblage of 48 taxa from this sample was rather above the mean for Period 4 BS samples, though most of the AIVs were not remarkable. With three taxa, the medicinal herbs group HERB achieved its highest AIV of 5 (along with three other samples)—the taxa concerned being *Euphorbia lathyris* (scoring 3 for indicator value for this group), and *Genista tinctoria* and *Humulus lupulus* (both scoring 1). *E. lathyris* was recorded from one other layer from Period 4 (also from Tenement B); all the other records were for seeds from pit fills (one each from Periods 3 and 5B, three from Period 5CR).

All the taxa from this sample were recorded in small amounts—they represented most of the groups recorded regularly from these deposits: weeds, dyeplants, foodplants, woodland/hedge/scrub taxa, with a small heathland/moorland component (both capsules and flowers of *Calluna* were present).

Context 15825: very dark greyish-brown, peaty silty loam, with patches of very grey clay and olive brown ash; floor on east side of tenement; about 0.7 x 0.6m and 0.05m thick; abuts Gully **15800** (*q.v.*) and Layer **15712** (*q.v.*).

Sample 948 (GBA): no action to date.

Context 15897: quite an extensive floor layer, up to 0.05m thick, to the north of Cut **15861**,

overlying **15946-8**, **15954-5**, and **15958**, and underlying **15891**; comprised a mixed layer of very dark grey and very dark greyish-brown peaty silt with wood fragments and black staining.

Sample 980 (BS—VW): The assemblage of 45 taxa was only a little larger than the mean for this series of samples, only *Diphysium complanatum*, with an abundance of 2, being well represented. For the rest, there was a modest component of foodplants, including hazelnut, field bean, apple (seeds and endocarp), linseed, sloe and charred cereals, and the dyeplants component included—besides the clubmoss—woad, madder, agrimony and dyer's greenweed. Holly leaf epidermis fragments were present, as in so many Period 4 samples (they were present in 40 of the 95 BS samples from this period), together with several woodland taxa, including mosses.

Other components recorded as being abundant during rough sorting were slag and mould fragments; there was also quite a lot of hazelnut shell (retained but not recorded by ARH) and a bone comb fragment.

Sample 961 (GBA): laminated (in places) humic silt with wood fragments.

Insects (/1, /2): It was estimated (semi-quantitative recording) that there were 36 individuals of 29 beetle taxa in the flot from the first subsample; there were also some other arthropods including two sheep keds, several sheep lice (*Damalinea ovis*), a single *Pediculus humanus* and three *Pulex irritans*. A third of the beetles were coded as 'outdoor' taxa. Only *Xylodromus concinnus* was represented by more than two individuals; there were 'several'. This group was very reminiscent of those from Sample 955. The /2 subsample was also recorded semi-quantitatively and produced an assemblage which differed in species composition from that in Subsample /1, but which had very similar implications. It was notable for the presence of a specimen of the bug *Ischnodemus ?sabuleti*. There were single individuals of the scale insect *Chionaspis salicis* in both subsamples.

Context 15765: very dark grey peaty silt with charcoal flecks; perhaps 1 x 2m in extent and 0.3m thick, surrounded by and underlying **15761**, also under **15753**; a floor.

Sample 949 (GBA): (not described)

Parasitic worms: Two subsamples were examined; one was barren, the other gave trace amounts of *Trichuris* eggs.

Context 15686: extensive layer (3 x 2m on plan) of irregular shape, adjacent to **15685** (*q.v.*); 0.02m thick; black silty loam with flecks of grey clay and olive ash; a floor.

Sample 906 (BS—VW): Fifty-one taxa were recorded from this sample, all but *Chenopodium album* at trace concentrations. Foodplants, dyeplants and various kinds of weeds were moderately well represented but there were no exceptional statistics amongst the AIVs. This was one of 13 BS samples from Period 4 to yield ?beeswax (it was recorded as ‘beeswax’ from two small subsamples, and tentatively from a third). By contrast ?beeswax was recorded from a single BS sample from Period 3 and from only two BS samples from Period 5, suggesting Period 4 was the main period when bees were being exploited at this site.

Sample 898 (GBA): crumbly to brittle humic silt with bone fragments.

Plants (/T3, 2kg): There was a rather large and ‘granular’ residue with a washover of about 60% by volume, consisting mainly of bark and charcoal; the mineral component was mainly grit, sand and gravel. Only one identifiable taxon was present in more than trace amounts: *Diphasium* stem fragments (which scored 2 on a four-point scale), though these were strongly decayed. The remaining taxa included weeds and probable foodplants.

Insects (/1, /2 (3kg)): The first subsample produced only single individuals of five beetle taxa and a few other insect fragments. The 3kg subsample /2 gave a considerably larger assemblage, although there were still only an estimated 47 individuals of 37

beetle and bug taxa (recording was semi-quantitative). There were also modest numbers of other invertebrates including ‘several’ scale insects and fly puparia and ‘many’ mites. There were two human fleas and single specimens of adult and puparial sheep keds. The main statistics of such a small assemblage obviously must be used with care, but diversity was high (α estimated at 79, SE = 27) and the outdoor component proportionally rather substantial (% N OB = 19; only nine individuals, however!). Only *Lathridius minutus* group (with ‘several’) was represented by more than two individuals. This may have been primarily background fauna.

Context 15685: black, slightly peaty, silty clay loam with flecks of olive ash and grey clay; a floor adjacent to **15650** and **15686** (*q.v.*); irregular in shape, reaching a maximum of 1m in width and at least 4m long, but only 0.02m thick.

Sample 899 (GBA): crumbly silt with inclusions of stone and wood.

Plants (/T3, 2kg): The small to moderate-sized residue consisted of about 60% bark and charcoal and 40% sand and gravel with a rather small content of identifiable plant remains of no particular interpretative value, though including traces of two dyeplants (*Diphasium* and *Rubia*).

Insects (/1, /2): Recorded semi-quantitatively, the /1 assemblage consisted of 47 beetle and bug taxa, with an estimated 76 individuals. Main statistics were of little note apart from a high proportion of decomposers (% N RT = 74), a large proportion of these being coded ‘rd’ (% N RD = 32, NRD as % NRT = 43). There were ‘many’ *Lathridius minutus* group, ‘several’ *Aglenus brunneus* and three each of *Xylodromus ?concinus* and a *Cryptophagus* species. There were at least three adults of *Melophagus ovinus* and ‘several’ mites and scale insects.

The second subsample was also recorded semi-quantitatively, there being approximately 63 individuals of 44 taxa. The main statistics differed somewhat from those for subsample /1, with a higher estimate of Fisher *et al.*’s α (α = 64,

although SE = 17), a larger outdoor component (% N OB = 21), and a substantially (proportionally) smaller decomposer component (% N RT = 56). These differences are probably related, caused by the presence of different proportions of autochthones and 'background fauna'. A range of taxa of similar implications occupied the upper ranks of abundance, but numbers of individuals were smaller—'several' *L. minutus* group and three each of *X. concinnus*, *Anotylus nitidulus* and *Anobium punctatum*. There were four human fleas, a louse and a sheep ked.

Sample 900 (GBA): dark brown, crumbly silt, with rotted wood, some charcoal, and patches of paler clay silt.

Insects (/1, /2): The assemblage from the first subsample was of moderate size and recorded semi-quantitatively (N estimated at 92, S = 53). There was nothing unusual about the main statistics, assuming the identification of the context as a floor to be correct. The more abundant taxa also accorded with such an interpretation, although they were not all typical 'house fauna' and slightly foul conditions probably existed. There were 'several' each of *Cercyon analis*, *Xylodromus concinnus*, *Lathridius minutus* group and *Aglenus brunneus*. Species present in twos and threes included several suggesting damper conditions, unless of course they had a 'background' origin (something not suggested by, for example, the outdoor component). The postulated 'post-depositional invader' group was present. 'Several' fly puparia and single specimens of *Pulex irritans* and *Melophagus ovinus* were noted.

Subsample /2 was also recorded semi-quantitatively. Allowing for the vagaries of death-assemblage formation, the main statistics of this group were close to those for the first subsample. Species composition was substantially different—there were 'several' *Carpelimus bilineatus* and *C. fuliginosus* and only a single *Xylodromus concinnus* in subsample /2, while the subterranean component, including *Aglenus brunneus*, was absent from it. There was, however, again a hint of slightly fouler conditions than typical of these 'floor' layers. There were 'many'

mites, two lice, and a single sheep ked, but few other remains.

Context 15712: perhaps a deliberately laid floor (on west side of Tenement B), comprising very dark greyish-brown silty loam, with flecks of brown clay, greyish-brown ash, burnt clay and wood fragments, small cobbles, small pieces of limestone and tile. Extent about 1.8 x 1.4m on plan, thickness 0.08m; abuts **15825** (*q.v.*) at south end of Gully **15800** (*q.v.*).

Sample 938 (GBA): dark grey-brown crumbly humic silt with wood and clay inclusions.

Insects (/1, /2): The rather small assemblage from subsample /1 (N about 56, S = 36) was recorded semi-quantitatively. Seen in the context of floors at 16-22 Coppergate there was nothing unusual about the main statistics or the species list. There were 'several' each of *Cercyon analis*, *Lathridius minutus* group and *Aglenus brunneus*, suggesting that decaying matter which was not too foul was incorporated or trampled into the floor. There was a single human flea and an adult *Melophagus*; other remains were rare. The second subsample produced a smaller group (N = 36, S = 27), essentially similar in species composition. A single *Apis mellifera* wing fragment was noted.

Context 15883: black, slightly peaty silty, about 0.68 x 1.50m, 0.01m thick, to west of Cut **15861**; floor.

Sample 952 (GBA): (not described)

Parasitic worms: Two subsamples were analysed; one gave a single *Trichuris* egg, the other a tentatively identified *Ascaris*.

Context 24003: a smallish patch of black charcoal and burnt peaty silt, about 1x0.5m and up to 0.01m thick, a floor in the middle of Tenement B.

Sample 1544 (Spot): a single *Cepea* sp. snail shell.

Context 23346: a largish area, of about 1.5 x 0.6m, and up to 0.02m thick, of very dark grey, compact silt with flecks of charcoal; a floor.

Sample 1444 (GBA): dark grey-brown, crumbly, humic sandy silt.

Plants (/M): with 42 taxa, this sample was a little below the period mean (of 48). Nutshell of *Corylus* and celery 'seed' were the only taxa recorded at an abundance of 2; charcoal was also rather common. Most of the groups gave AIVs of no particular noteworthiness, the flora being dominated by weeds in CHEN and SECA. The score of 2 for celery seed, together with a trace of dill, gave an AIV of 9 for FOOS but other useful plants were relatively poorly represented.

Parasitic worms: The single subsample was barren.

Insects (/T, /1 (3kg)): The /T subsample gave a small group of beetles ($S = 17$, $N = 43$). Outdoor forms were lacking, the decomposer component very large, dominated by 'house fauna' taxa, and of very low diversity (α RT = 9, SE = 2). There were 'several' mites and single adult and puparial *Melophagus ovinus*. This sample was chosen for further study via a 3kg 'detail' sample as it appeared to have a particularly characteristic fauna.

A substantial assemblage was recovered from the /1 subsample—285 individuals of 98 beetle taxa, and one species of bug. Diversity was moderately high ($\alpha = 54$, SE = 5), and outdoor forms quite well represented (% N OB = 17); decomposers included a large proportion of RD forms (% N RD = 23; NRD as % NRT = 34). Diversity of this component was not very low— α RT = 20, SE = 2. The most abundant taxon was *Lathridius minutus* group (44), followed by *Aglenus brunneus* (36), the characteristic *Cratarea suturalis* (29, ? one of the largest concentrations of this beetle at the site?), *Xylodromus concinnus* (21) and *Atomaria ?apicalis* (7). There were also four *Cryptophagus scutellatus*. 'House fauna' was thus predominant (various other species typical of it were also present), but there were moderate numbers of *Cercyon analis*, *Oxytelus sculptus*, *Aphodius ?prodromus* and some other species. A mixture of habitats within the building seems likely, with small amounts of rather damper decomposing matter and large quantities of mouldering plant remains with a

seething insect fauna. It is just possible, however, that the species from fouler habitats had a 'background' origin.

There were three *Tenebrio obscurus*, the dusky mealworm, constantly present at 16-22 Coppergate but generally as singletons. It is notable that the smaller /T subsample also contained three specimens. There were abundant human fleas (at least 32 were counted), sheep keds (at least 22), and lice and scale insects. The last-named were mostly *Chionaspis salicis*, but there were also some *Lepidosaphes ulmi*; they presumably derived from wattle. 'Many' larval respiratory processes of syrphid flies were recorded, perhaps surprisingly as these have been supposed to originate in a 'rat tailed maggot', adapted to aquatic life. Perhaps they came from water carried to the site? There were 'several' proctotrupoid wasps and at least two honeybees, 'many' mites, fly puparia (including a few *Leptocera* sp. and several *Melophagus ovinus*). Two *Micrelus ericae* were presumably imported with heather (or perhaps moss or peat?).

The outdoor component in this material included many very fragmentary remains, often beyond identification or quantification; the origin of these is uncertain, but importation in predator droppings is one possibility.

Context 23531: a floor level in the middle of Tenement B, about 1.2 x 1.15m in extent and 0.02m thick, comprising very dark greyish-brown, compact, silty loam with flecks of brown and burnt clay, and patches and flecks of pale brown ash; also flecks of wood and some nutshell fragments.

Sample 1445 (GBA): dark brown, crumbly, humic sandy to clayey silt.

Plants (/M): With 31 taxa, the assemblage from this subsample was well below the period mean. Only *Corylus*, charcoal and wood scored abundances of 2. The list of taxa was very like that from other Period 4B floor deposits, with only modest amounts of food- and dyeplants and a range of weeds, grassland, woodland and other taxa.

Parasitic worms: Both of the subsamples examined were barren.

Insects (/T, /1 (3kg)): The /T subsample gave a rather small assemblage of 65 individuals of 39 beetle and bug taxa. The sample was selected for further investigation via a 3kg 'detail' sample because it appeared to contain a mixture of 'house fauna' and elements suggesting rather fouler conditions.

Subsample /1 produced 289 individuals of 121 beetle and bug taxa. Diversity was high ($\alpha = 78$, SE = 7), the outdoor component of moderate size (% N OB = 16), 'dry' decomposers rather less proportionally abundant than in many of these floor layers, and foul decomposers a little more abundant (% N RF = 6, 18 individuals). The more abundant taxa included the usual 'house fauna'—*Lathridius minutus* group (28), *Xylodromus concinnus* (21), *Aglenus brunneus* (also 21), *Cratarea suturalis* (14), *Cryptophagus scutellatus* (6), *Anobium punctatum* (5), and *Ptinus fur* and a *Cryptophagus* species (4 each). There were, however, 12 *Cercyon analis* (admittedly a very eurytopic species), eight each of *Ptenidium* sp. and *Acrotrichis* sp., five each of *Oxytelus sculptus* and *Aphodius ?granarius*, and smaller numbers of other taxa suggesting rather more foul conditions. The long 'tail' of rarer decomposers may have included taxa of 'background' origin; the outdoor component was very diverse ecologically (and mathematically, although the high estimate of α OB, 106, had a very large standard error, 40), and may have included long-travelled elements. The record of the very large water beetle *Dytiscus* sp. (incidentally, the only one from the site), is notable. There were two heath/moor taxa—*Strophosomus sus* and *Micreles ericae*, presumably imported rather than of background origin.

Twenty-six human fleas, many *Chionaspis salicis* and 'several' *Lepidosaphes ulmi* were recorded. The subsample is perhaps most remarkable for the very rare records of fleas other than *Pulex irritans*—there were single individuals of *Nosopsyllus* sp. and *Ctenophthalmus* sp., both associated with rats and mice. There may thus be an implication that rodents nested in the structure;

if they were so confidently established, they may be a source of the highly comminuted 'outdoor' fossils seen in some layers, although similarly damaged remains of the house autochthones might be expected if this were the case. It is possible, however, that such remains might be overlooked or ignored on the grounds that they could not realistically be used in the MNI estimation for an abundant taxon.

There were 'several' adult *Melophagus ovinus* and fragments of 'several' puparia if this species. Other fly puparia were not very abundant; most were *Leptocera*. There were also two ?sheep lice.

Context 23095: an area up to 1.12 x 0.5m in lateral extent, and 0.04m thick, of black structured peat; a floor.

Sample 1374 (GBA): very dark grey-brown, crumbly, slightly sandy silty woody and herbaceous plant detritus with abundant bark fragments.

Insects (/T): This subsample provided a modest group of beetles, recorded semi-quantitatively by rapid scanning. There were about 85 individuals of 41 taxa in addition to various non-beetles including 'many' mites, 'several' scale insects and fly puparia, and an adult and a puparium of *Melophagus ovinus*. There was also a single *Daphnia ephippium*. Although *Aglenus brunneus* was the most abundant beetle ('many'), and the whole species list consisted of taxa occurring commonly in floors at Coppergate, there were hints of slightly more foul conditions than normal—'several' *Gyrophypnus angustatus* and *Monotoma bicolor*, three each of *Acritus nigricornis* and *Leptacinus ?pusillus*, for example. It appears that the decomposer habitats presented by this layer (or its immediate surroundings) were a little unusual. There were single individuals of four 'post depositional invader' taxa in addition to *A. brunneus*; whether these entered after burial, or indicate troglodytic conditions is not certain.

Context 23908: a floor layer to the W of Fenceline 23659, N of Alignment 23651 and 1m N of Cut 20991; it covered a large area (to 1.5 x 1.1m) and was up to 0.04m thick; it comprised very dark grey

clayey silty loam, with streaks of black amorphous peat and some flecks of wood.

Sample 1518 (GBA): dark grey to grey-brown, crumbly to brittle, humic silt.

Plants (/T3, 2kg): The modest-sized residue comprised roughly equal volumes of organic and inorganic material, the former mainly charcoal (giving the whole vary granular texture) with some bark and modest amounts of *Diphasium* stem fragments, the latter mostly sand, with some grit. Other identifiable plant remains were sparse, including a range of weeds, foodplants, and woodland taxa with very small numbers of a range of other types.

Insects (/T, /T3): There were not many insects in the /T subsample—30 individuals of 20 beetle and bug taxa and other remains including three human fleas, eight sheep lice, two adult (and a single puparial) sheep keds and ‘several’ scale insects. This was probably a small ‘house fauna’ group, although only *Lathridius minutus* group (5), *Aglenus brunneus* (3) and *Cratarea suturalis* (2) were represented by more than single individuals. The concentration of adult beetle and bug remains in the /T3 subsample was also low, only 63 individuals of 41 taxa being recorded. Although a house fauna element was discernable (the three most abundant taxa were *Aglenus brunneus*, *Xylodromus concinnus* and *Lathridius minutus* group), and there were abundant human fleas (14), this seems likely to have been a fairly clean floor.

In addition, a subsample was bulk-sieved after the main period of processing; the residue contained modest amounts of charcoal and wood fragments, with a little nutshell, gravel and tile fragments.

Context 23093: a largish area (about 1.7 x 1.2m), 0.03m thick, of very dark grey compact silty loam, with charcoal flecks and traces of wood; a floor.

Sample 1380 (GBA): very dark grey (?charcoal-rich), crumbly humic silt.

Plants (/M): Some of the same elements seen in the other floor deposits were present here in this

about-average assemblage of 46 taxa. Annual weeds formed the largest component, but AIVs for CHEN and SECA were modest. There were abundance scores of 2 for *Diphasium*, *Calluna* (both shoot and twig fragments) and *Anthemis cotula*, but there were not large numbers of other dyeplants and foodplants were sparse.

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

Insects (/T): Semi-quantitative recording was undertaken. Apart from lice (‘many’) and scale insects (‘several’), insects were rare, and only (approximately) 37 individuals of 27 beetle taxa were found. There were ‘several’ *Lathridius minutus* group and three *Anobium punctatum* and *Aglenus brunneus* together with a group of other taxa not untypical of these Period 4B floors. Single individuals of *Pulex irritans* and *Melophagus ovinus* were noted.

Context 23749: dark grey, slightly clayey, slightly peaty silty loam, up to 0.5 x 0.4m in extent, and 0.02m thick, abutting **23590** to E, **23750** to N, **23751** to S and **23305** to E; floor.

Sample 1505 (GBA): dark grey-brown, crumbly, humic silt.

Plants (/M): this was another assemblage with an ‘average’ number of taxa (48). There were abundance scores of 2 for *Chenopodium album* and *Atriplex* sp(p). and of 3 for wood fragments; all others scored 1. The AIVs were mostly rather modest, the assemblage being dominated by weeds in CHEN and SECA. Both stalk and pinnule fragments of bracken were present in small amounts, perhaps originating in litter, and there was a small food component including apple endocarp, dill, linseed, summer savory and some waterlogged caryopses of wheat/rye, barley and oats as well as charred barley. An unusual record—the only one for the Anglo-Scandinavian deposits at 16-22 Coppergate—was for the marsh/fen moss *Cinclidium stygium*, perhaps imported with wetland litter.

Parasitic worms: Both subsamples examined were barren.

Insects (/T): About 65 individuals of 35 beetle and bug taxa were recorded semi-quantitatively. Main statistics were not unusual for floors at Coppergate bearing in mind the assemblage size and method of recording, except for the low value of α for the whole assemblage (30, SE = 7) and for the decomposer component (α RT = 16, SE = 7). There was little of note about the species list, either—*Aglenus brunneus* was predominant ('many'), and there were 'several' *Xylodromus concinnus*, *Cratarea suturalis* and a *Cryptophagus* species. There were also 'many' human lice and mites, 'several' *Damalinia ?ovis*, three human fleas and four adult and one puparial *Melophagus ovinus*.

Context 23200: floor layer covering a large area in the middle of the tenement (up to about 2.1 x 0.95m, and 0.03m thick); very dark grey silty loam, with patches of pinkish-grey clay, grey clay, and a few flecks of brown ash, charcoal and small wood fragments.

Sample 1384 (GBA): dark grey-brown, crumbly, humic sandy silt.

Plants (/M): a large assemblage (58 taxa), though all scored an abundance of only 1. Given this, the AIV of 22 (equal rank 7) for grassland taxa in MOAR is quite important. The ten taxa concerned included *Anthriscus sylvestris* and *Achillea millefolium* (*Hypochoeris* and *Leontodon*, which were also present, were not scored with them, but are usually taken as grassland indicators). Other groups were not especially well represented, though annual weeds in CHEN and SECA were predominant. The presence of material derived from hay is perhaps the most likely explanation for the these grassland taxa (the more likely given the evidence for a 'hay' component amongst the insects, see below).

Parasitic worms: Three subsamples were examined; there was a single *Trichuris* egg in one of them.

Insects (/T, /1 (3kg)): Only a rather small group of beetles (and a single bug) was recorded from the test subsample—N = 57, S = 33. Bearing in mind its small size, main statistics of the assemblage were about normal for this material, and the species composition was also normal for Coppergate Period 4B house floors, apart from the presence of three specimens of a small scolytid, probably derived from structural timber or firewood. There were three *Melophagus* and 'several' lice.

On the basis of the /T subsample this material was selected for detailed examination as being—subjectively—representative of one type of house floor assemblage. A large group of beetles and bugs was recovered—326 individuals of 112 taxa. Diversity was quite high (α = 60, SE = 5), and the outdoor component appreciable (% N OB = 14), although the concentration of this component was not exceptionally high (15/kg) and its diversity estimated to be very high (but with a large standard error— α OB = 96, SE = 36). The 'outdoor' taxa included two with three individuals—a *Helophorus* species (aquatic) and *Ceutorhynchus contractus* (a weevil with various Cruciferae as hosts). These, and all or most of the other outdoor forms, may have found habitats in the vicinity of the structure, although it is possible that some (*Sitona* and *Apion* species in particular) were imported in hay-like cut vegetation. The abundant scale insects were identified as *Chionaspis salicis*, much the commonest species at Coppergate, and probably came from wattle.

Decomposers were abundant (% N RT = 67), and this component was of moderate diversity (α = 20, SE = 2). Although this value of α RT is not (relative to most assemblages from Anglo-Scandinavian Coppergate) particularly low, there is evidence from the abundance of some species for a breeding community. The higher ranks of abundance included many taxa regarded as typical of 'house fauna', as follows: *Aglenus brunneus* (56 individuals); *Lathridius minutus* group (30); *Anobium punctatum* (17); *Cratarea suturalis* (13); *Xylodromus concinnus* (12); a *Cryptophagus* species (9); *Atomaria ?apicalis* (6); and *Ptinus fur*, *Cryptophagus scutellatus* and a third *Cryptophagus* species (all 4). Other more abundant

taxa included the eurytopic *Cercyon analis* (8), and *Anotylus nitidulus* (7), *Monotoma bicolor* (6), *Omosita discoidea* (5) and *Carpelimus bilineatus*, *Anotylus complanatus* and *Oxytelus sculptus* (all 4). There may have been a mixture of decomposer habitats, predominantly rather dry, mouldering plant material but with some moister parts.

Overall, this floor layer indicates fairly tolerable living conditions. Fleas were abundant, however—at least 20 *Pulex irritans* were recorded—and there were ‘several’ lice and fly puparia and remains of single adult and puparial sheep keds.

Context 20982: an extensive floor within Tenement B, though not recorded across the whole width of the plot; 2.74 x 2.58m, 0.03cm thick; very dark greyish-brown silty loam, with flecks and small patches of light yellowish-brown to light olive brown ash and fragments of twigs.

Sample 1366 (BS—VW): There were 49 taxa from the washover and rough-sorted residue, rather above the mean for BS samples in this period. No taxon achieved an abundance greater than 1, however. Of the groups represented, annual nitrophile weeds (CHEN) were the largest and the AIV was the eighth highest for this series for the Anglo-Scandinavian BS samples as a whole, with cornfield weeds (SECA) at rank 2 (13 taxa were scored for both groups); otherwise the AIVs were unremarkable.

Sample 1365 (GBA): mid-dark grey-brown, crumbly, humic, slightly sandy silt, with traces of bark and small bone fragments.

Insects (/T): A modest assemblage of beetles and a few bugs was recovered—45 taxa being noted, with 64 individuals. Apart from the rather high whole-assemblage diversity there was little of note in the main statistics. A distinct ‘house fauna’ element was present (including an unidentified flea), the only species represented by more than two individuals being *Anobium punctatum* (6), *Lathridius minutus* group (5), *Aglenus brunneus* (also 5) and a *Cryptophagus* species (4). There was a single honeybee and an adult sheep ked, and

a few other invertebrate remains including a single *Daphnia ephippium*.

Context 26139: a floor layer of about 1.5 x 1.5m, up to 0.04m thick, of very dark grey, fine, silty loam, with ash flecks and wood fragments.

Sample 1668 (GBA): no action to date.

Context 23307: largish area, up to 1.4 x 0.95m, and up to 0.02cm thick, of very dark grey, compact silt with some ‘iron pan’ staining and flecks of charcoal; floor level.

Sample 1397 (GBA): dark grey-brown, crumbly, humic silt.

Plants (/M): This assemblage of 30 taxa was rather a small one, though three taxa scored an abundance of 2: *Diphasium*, *Corylus* nutshell, and *Apium graveolens*. The presence of dill, as well as of celery seed, gave an AIV of 9 for FOOS with only these two taxa, but foodplants were otherwise scarce, as were dyeplants (other than *Diphasium*). Nearly four-fifths of the assemblage were scored as annual weeds in CHEN, more than two-thirds were scored with SECA.

Parasitic worms: The single subsample examined was barren.

Insects (/T): A rather small group of beetles and a single bug were recorded semi-quantitatively; there were about 58 individuals of 40 taxa. Over a quarter were outdoor forms. There were ‘several’ *Xylodromus concinnus*, *Lathridius minutus* group and *Aglenus brunneus*; ‘house fauna’ was well represented. *Lochmaea suturalis* (provisionally identified from this subsample) is a heath/moor beetle, and a few of the other remains may have been imported with this species in some material (there were traces of heather flowers and capsules amongst the plant remains from the /M subsample, but no heathland or moorland mosses).

There were some *Melophagus ovinus* adults and puparia and a number of unidentified lice, together with ‘several’ mites.

Context 23234: a smallish area on W side of, and adjacent to Fence **23055**, up to 0.6 x 0.4m in lateral extent and 0.02m thick; a mixture of dark grey to dark greyish-brown silt and olive ash; a floor.

Sample 1761 (Spot): This sample consisted almost entirely of fly puparia of which 12 were *Muscina* sp., four *Musca domestica*.

Context 23538: a floor on the W side of Tenement B, just inside the W wall; the context lies between this wall and an 'internal fitting' of wicker; its area was about 1.15 x 1m and it was up to 0.04m thick; it consisted of very dark grey, ashy, sandy silt with many charcoal flecks, traces of very dark grey peaty silty loam and small flecks of crushed limestone.

Sample 1477 (GBA): no action to date.

Context 23248: a largish patch, up to 1.45 x 1.25m and 0.02m thick, of very dark grey silty loam with flecks of charcoal and organic material; floor level abutting **23232** and **23183**.

Sample 1383 (GBA): mid-dark brown, crumbly humic silt, somewhat yellow-brownish in places, containing lumps of fissile compressed plant detritus (and noted as being much more richly organic than other deposits in this group).

Plants (/M): With 93 taxa, this was the largest assemblage from the Period 4 subsamples from GBA samples. However, none of the taxa in this long list scored more than an abundance of 1 and the deposit may be seen as having formed with a variety of components all contributing in a small way. Annual weeds were prominent, especially cornfield taxa in SECA (AIV of 34 was at rank 5), but MOAR achieved an AIV of 22 from 10 taxa (equal rank 7). Unusual records from this sample were *Triglochin maritima*, a species characteristic of the upper parts of saltmarsh meadows, and *Euphorbia exigua*, an arable weed. Woodland taxa were moderately well represented via various fossils of *Oxalis acetosella*, holly leaf fragments, *Stellaria holostea* stem fragments and several

mosses scored with SLIT, LIGN and WOOF and giving high AIVs for these latter groups.

Foodplants from *1383/M* were not very abundant, though the 11 taxa recorded were a higher count than for many of the floor deposits—the second highest count for floors of Period 4B and the third highest AIV for FOOS. Flavourings were represented by dill, celery seed and hops. The five dyeplants yielded an AIV of only 13 (though a little above the mean for Period 4B floors).

Parasitic worms: Two subsamples were examined but both were barren (though magnesium sulphate flotation carried out on one of the subsamples yielded a single *Trichuris* egg).

Insects (/T): Beetles, recorded semi-quantitatively, were not numerous, about 54 individuals of 30 taxa being seen. The main statistics, although obviously to be treated with caution, suggested the presence of a breeding decomposer community, with a bias towards drier material. The most abundant taxa ('several' of each) were *Xylodromus concinnus*, a *Cryptophagus* species, *Lathridius minutus* group and *Aglenus brunneus*, and there were three *Anobium punctatum*. This was a very typical 'house fauna' group. Outdoor forms were conspicuously rare (only three individuals) and this together with the rather limited decomposer community in relation to the rich plant debris suggest rapid burial. There were 'several' mites. Human lice were abundant (33 individuals counted) and there were 'several' *Damalinia ?ovis*, a single human flea, and an adult and a puparial sheep ked.

Context 23048: an irregular patch, about 0.9 x 0.4m, of very dark greyish-brown, silty loam with fragments of wood and charcoal and flecks of light yellowish-brown ash; a floor.

Sample 1379 (GBA): mid-dark grey-brown, crumbly, slightly sandy, humic silt with traces of charcoal, wood fragments and white flecks; no further analysis undertaken.

Context 23597: floor layer adjacent to **23603**, 0.3 x 0.8m.

Sample 1488 (Spot): light yellow-grey-brown, crumbly, sandy silt or ash with traces of charcoal; no further analysis undertaken.

Context 23350: a layer of very dark grey, peaty silt with flecks of greyish-brown ash, some flecks of grey clay and some wood fragments, up to 1.7 x 1.35m and 0.02m thick; abuts **23347**, **23352**, **23293** and **23312**; floor.

Sample 1403 (GBA): dark brown, crumbly, humic silt with some patches of fibrous plant material.

Plants (/M): The 43 taxa in this roughly average-sized assemblage included *Apium graveolens*, *Genista* and *Diphysium* all at an abundance of 2, with similar scores for charcoal and wood fragments. There were traces of several parts of *Calluna*—seeds, capsules, shoot and twig fragments—and leaves of *Erica tetralix*. Unusually, the AIV for MOAR was the highest of any within the vegetation groups, though the value of 17 was just outside the top 10% of values for Period 4 and is based on only five taxa. The tentatively identified calyx of sea-lavender, *Limonium*, a saltmarsh plant, is the only one for the Anglo-Scandinavian deposits at Coppergate, whilst the tentatively identified fruit of annual knawel, *Scleranthus annuus*, is one of two records (with two secure records).

The AIV for flavourings in FOOS (15, equal rank 1 for Period 4 samples) was achieved in this subsample via the score of 2 for celery seed together with traces of dill, hops, and summer savory.

Parasitic worms: Both subsamples examined were barren.

Insects (/T): The rather small assemblage was recorded semi-quantitatively; there were about 52 individuals of 35 beetle and bug taxa. Outdoor forms accounted for about a fifth of the assemblage, 'dry' decomposers were quite well represented (again, about a fifth), and the decomposer component was estimated to be of low diversity (α RT = 15, SE = 4). Three taxa were represented by 'several' individuals (*Anotylus*

nitidulus, *Lathridius minutus* group, *Aglenus brunneus*). The significance of the first of these is uncertain—it may have bred in fairly foul matter in the layer, but was perhaps a component of background fauna (the probable abundance of this and some other Oxytelinae is discussed by Kenward 1978). There were 'many' fly puparia (36 *Leptocera* sp. and a sepsid), 'several' mites, a human flea, abundant sheep lice and nine *Pediculus humanus* and a honeybee wing fragment; sheep keds were represented by two adults and at least two puparia.

Context 23455: an area of about 1.4 x 0.6m, up to 0.03m thick, to the SW of Hearth **23305**, and separated from **23437** by a 0.2m wide strip of **23490**; very dark grey, peaty, ashy loam with charcoal flecks; floor.

Sample 1442 (GBA): dark grey-brown, crumbly to somewhat fissile humic silt with woody and herbaceous plant detritus, twig and bark fragments.

Plants (/M): There was a rather large assemblage of 56 taxa from this subsample, with scores of 2 for *Diphysium*, *Corylus*, *Apium graveolens*, *Calluna* leaves and *Rubia*. Charcoal and wood fragments were also rather common. For the most part, the AIVs were modest with one-fifth of the taxa being unclassified for the analysis of use and vegetation groups. The presence of trace amounts of capsules, seeds and shoot fragments of *Calluna*, in addition to the frequent leaves, gave quite high AIVs for NACA and OXSP, though neither fell within the top 10% of values for these parameters for the site as a whole. The AIV for DYES (18) was, however, just within this limit and that for FOOS (34) stood at rank 4 for this group of samples. The ten taxa scored in this group included apple (seeds and endocarp), sloe, linseed, waterlogged wheat/rye grains, charred and waterlogged oat grains and hazelnut.

Parasitic worms: Two subsamples were examined, but both were barren.

Insects (/T): The insects were recorded semi-quantitatively. It was estimated that 50 individuals of 23 beetle taxa were present, together

with at least seven *Melophagus ovinus*, several sheep lice, a human louse, and a human flea. Of the beetles, *Lathridius minutus* group was predominant, with ‘many’ individuals, and there were ‘several’ *Xylodromus concinnus*. The subsample was notable for the presence of three *Tenebrio obscurus*, usually present in smaller numbers (see discussion of Sample 1444).

This, like the majority of the Period 4B floor groups, appears to have been fauna from within a fairly dry structure mixed with a random component from elsewhere.

Context 23437: a largish area, up to 1.4 x 1.25m, and 0.02m thick, to the E of Fence 23567, and S of Hearth 23305; abuts 23585, 23360, 23377, 23550, 23348 and 23586; a floor, comprising very dark grey, slightly sandy, peaty, ashy loam, with charcoal flecks and small wood fragments and nutshell.

Sample 1449 (GBA): dark grey-brown crumbly humic silt.

Plants (/M): A rather large assemblage (52 taxa) was recovered from this subsample, although only *Corylus* and *Rubia* scored 2. Amongst the other components, wood fragments were also rather common and there were traces of beeswax, bone, and eggshell and eggshell membrane fragments.

The presence of four separately scored parts of *Calluna*, together with *Erica tetralix* leaves gives moderately high AIVs for NACA and OXSP, and there was a modest component of grassland taxa, but annual weeds in CHEN and SECA are predominant. Amongst the mosses, most taxa are scored in LIGN and SLIT and point to a woodland component also reflected in *Oxalis* seeds, but otherwise rather sparse.

Parasitic worms: Both of the subsamples examined were barren.

Insects (/T, /1 (3kg)): The /T subsample gave about 42 individuals of 30 taxa (recorded semi-quantitatively), a small fauna which subjectively differed from that from subsample /1; perhaps this

part of the sample represented part of the layer which formed without a rich breeding insect community, rather than an artefact of processing being involved. Only *Lathridius minutus* group was represented by more than one individual (there were ‘several’). This subsample did, however, contain at least nine individuals of *Melophagus ovinus* (all adults), at least three human fleas, and nine sheep lice. There were also ‘several’ mites and small numbers of a variety of other arthropods.

This sample was selected for further examination using a 3kg ‘detail’ subsample, on the basis of preliminary examination of the /T. The /1 subsample gave 240 individuals of 103 taxa; diversity was quite high ($\alpha = 68$, SE = 7) and outdoor forms made up about a fifth of the fauna (% NOB = 22). Among the decomposers, ‘rd’ taxa accounted for 30% of the whole assemblage and 46% of the RT component.

The decomposers were very reminiscent of those in Sample 1444—most abundant was *Lathridius minutus* group (43), followed by *Aglenus brunneus* (19), a *Cryptophagus* species (10), *Xylodromus concinnus* (9), *Aphodius prodromus* (7), and *Cratarea suturalis*, and an *Atomaria* species (6 each). There were also five *Anobium punctatum* and four *Cryptophagus scutellatus*. Fleas were again abundant, there being at least 29 *Pulex irritans*, and there were large numbers of sheep lice (37 counted) and scale insects (mostly *Chionaspis salicis*, but again with some *Lepidosaphes ulmi*).

In addition to the woodworm beetles there were eight other taxa associated with dead wood—derived either from structural timber (in which case bark was present) or from firewood.

There were four individuals of three *Apion* species, including what appeared to be a newly emerged individual. It is possible that these were imported with hay or similar cut vegetation.

The outdoor component included many highly fragmented fossils, many of which could not be included in the listing.

Context 23720: a floor layer of black, compact, slightly peaty, silty loam, up to 1.3 x 0.8m and 0.02m thick, to the W and S of the cut for Hearth **23305**.

Sample 1498 (GBA): blackish-brown, crumbly humic silt.

Plants (/M): With 48 taxa, this was another sample at the period mean for this parameter. There was abundant charcoal in the residue and a single identifiable taxon, *Chenopodium album*, scored an abundance of 2. Annual weeds in group CHEN made up nearly one-third of the assemblage, but the AIV was not especially high for this group within the range of values for the period or, indeed, for the site as a whole in the Anglo-Scandinavian period. Components recognised clearly or present in quantity in other assemblages from Period 4B were rather poorly represented, e.g. only four taxa scored with QUFA and only traces of four dyeplants. Other components of the residue, however, included tentatively identified beeswax, as well as fragments of bee (separate legs and a pollen basket), and shavings of what may have been antler, horn or bone,

Parasitic worms: The two subsamples examined were both barren.

Insects (/T): Insect remains were rather sparsely distributed. Recording was semi-quantitative, about 35 individuals of 20 beetle taxa being noted. There were also sheep keds (at least three adults, and puparial fragments) and parts of at least three honeybees. There were 'several' *Xylodromus concinnus*, *Lathridius minutus* group and *Aglenus brunneus*, and single individuals of other taxa which were mostly of constant occurrence in the material from Coppergate.

Context 23456: an area of about 1.35 x 0.4m, and up to 0.02m thick, laterally between **23457** and **23450**, SW of Hearth **23305**; very dark grey, slightly ashy, peaty silt with charcoal flecks, small wood fragments and many nutshell fragments; floor.

Sample 1437 (GBA): no action to date.

Context 20799: floor, comprising black structured peat; area about 1.2 x 1.1m, 0.03m thick; S of Cut **20966** and N and W of Cut **20996**.

Sample 1355 (GBA): somewhat 'platy', dark brown, slightly sandy humic silt, with patches of sand, twig and wood fragments, charcoal, layers of pure humic material and lumps of grey clay.

Plants (/T3, 1kg): Although the residue was rather small, and consisted only about 50% by volume of organic material (mainly charcoal with some very decayed wood and bark), there was a rather large content of identifiable plant remains (48 taxa), with abundant toad-rush (*Juncus bufonius*) seeds and moderate numbers of sedge (*Carex*) and chickweed (*Stellaria media*) propagules. Overall, weeds formed the most abundant groups, but with disturbed damp ground also indicated. The material forming the mineral component of this sample was rather unusual within these deposits in consisting mainly of pale grey somewhat indurated silt in clasts to 10 mm, with perhaps also some daub and ash and ?recrystallised lime. The presence of animal hair and sheep keds perhaps reflects the treatment of fleeces here at this time.

Parasitic worms: Five subsamples were examined; two were barren and the remainder gave traces of *Trichuris* eggs.

Insects (/1 (3kg)): This material was selected on first examination as particularly promising for insect preservation and so a 3kg subsample was subjected to 'detailed' analysis. There were 242 beetles and bugs, 65 taxa being identified. Diversity was quite high ($\alpha = 65$, SE = 7), although about normal for the decomposer component ($\alpha_{RT} = 24$, SE = 3). It was clear that the more abundant decomposers at least were autochthonous—to the structure at least—and there were also large numbers of *Anobium punctatum*, which presumably infested wood within the building. The other more abundant taxa were *Lathridius minutus* group (23 individuals) and *Aglenus brunneus* (22), but there were also eleven *Cercyon atricapillus*, six *C. unipunctatus*, five *Acrotrichis* sp., four each of *Gyrophynus fracticornis* and *Monotoma bicolor*, and three each of *Oxytelus sculptus* and *Anthicus*

formicarius, a group of taxa strongly suggesting rather foul conditions. This sort of assemblage has been recorded at Tanner Row (Hall and Kenward 1990), where it was regarded as evidence of material resembling stable manure. The fact that the present sample gave a rich variety of decomposers suggests that they may have developed over a fairly long period (more than a few weeks). Although by no means certain, there is a hint from the varied phytophages that there may also have been cut vegetation—perhaps ‘hay’. There were abundant puparia (mostly *Musca domestica*), ‘hundreds’ of mites, ‘several’ human lice, human fleas and *Melophagus* puparia and adults. Sheep lice (*Damalinea ovis*) were abundant, too.

Context 26147: a floor layer, about 7.4 x 1.1 m in extent and up to 0.05 m thick, of very dark grey slightly clayey loam with wood fragments, charcoal and some limestone chips and flecks of vivianite.

Sample 1672 (Spot): an avian tracheal ring.

Context 23066: irregular area of floor deposit, at most about 1.2 x 0.4 m, and 0.04 m thick, comprising very dark greyish-brown peaty silt with patches of very dark brown amorphous peat, flecks of olive-brown ash and wood fragments.

Sample 1370 (GBA): dark grey-brown, crumbly humic silt.

Plants (/M): This large assemblage (59 taxa) included the following taxa at an abundance of 2: *Chenopodium album*, *Stellaria media*, *Ilex aquifolium* (leaf fragments) and *Lamium* Section *Lamiopsis*. Only wood fragments (at 3) were present amongst the other components of the residue in more than very small amounts. The woodland component indicated by the holly leaf material is supported by records of holly seeds, seeds and petiole abscission plates of *Oxalis acetosella*, buds/bud-scales of oak, bark of *Betula* cf. *pendula* (silver birch), fruits of birch, and stem fragments of *Stellaria holostea*, and by the suite of woodland mosses contributing to groups SLIT, LIGN and WOOF.

Traces of five probable dyeplants were recorded: *Diphysium*, *Reseda luteola*, *Genista tinctoria*, *Rubia* and *Humulus lupulus*, but foodplants were scarce. Annual weeds in CHEN were rather well represented (nearly one-quarter of the assemblage) but other weed groups were much less significant.

Parasitic worms: Three subsamples were examined but all were barren.

Insects (/T): It was estimated (semi-quantitative recording) that about 111 individuals of 54 beetle species were present; there were some other insects, including ‘several’ fly puparia (small numbers of *Leptocera* sp., *Paregle radicum*, *Stomoxys calcitrans* and *Musca domestica*) and three *Melophagus ovinus* adults. Mites were abundant. The main statistics were rather undistinguished. There was, however, little doubt that a group of decomposers bred in the deposit, in conditions similar to those indicated by the fauna of Sample 1373—rather foul decaying matter. There were ‘many’ *Aglenus brunneus* and ‘several’ *Carpelimus pusillus* group and *Anthicus formicarius*, with three *Oxytelus sculptus* and *Leptacinus ?pusillus*. More typical ‘house fauna’ was represented by ‘several’ *Anobium punctatum*, and there were ‘several’ of the probably somewhat eurytopic *Lathridius minutus* group, and three *Cercyon analis* and *Carpelimus ?bilineatus*.

Context 23062: an irregular patch, probably part of a floor, about 1.25 x 1.15 m and 0.03 m thick, abutting contexts 23046, 23048 and 23064; very dark greyish-brown structured peat, with charcoal flecks and a few flecks of light yellowish-brown ash.

Sample 1373 (GBA): very dark brown felted plant debris, including large amounts of moss, in a silty matrix; some patches of pale ?mortar/ash; red root fragments of *Rubia* and twigs, probably of *Genista*, were observed in this material.

Plants (/M): Like the subsample from Sample 1558 (*q.v.*), this subsample (of 40 taxa) included a large component of woodland taxa, with seeds and petiole abscission plates of *Oxalis acetosella* (scoring 2 and 1 were also recorded), leaf

fragments and seeds of holly (both scoring 2) and the woodland mosses *Thuidium tamariscinum* and *Eurhynchium striatum* (both at 3). There were also small amounts of stem fragments and seeds of *Stellaria holostea*, buds/bud-scales of alder and oak, fruits of birch and male catkin fragments of alder, and a suite of mosses likely to have been growing in woodland. The AIVs for QUFA (33, rank 2), QUER (11, equal rank 3), SLIT (28, rank 1), LIGN (26, equal rank 2) and WOOF (24, rank 1) all reflect the presence of these woodland taxa.

There was also a large component of dyeplants—*Genista* at 2 and *Rubia* at 3, with traces of *Diphysium*, and *Reseda luteola*, giving an AIV of 21 (equal rank 4). Foodplants, however, were very sparse.

Parasitic worms: Two subsamples were examined for parasites but both were barren.

Insects (/T): The modest group of beetles and a single bug (N about 92, S = 38) was recorded by semi-quantitative rapid-scanning. Although comprising mainly taxa which were consistent in the 16-22 Coppergate material, quantitatively this was a rather unusual group to have originated in a floor. There is little doubt that a group of decomposers bred in the deposit—whole assemblage diversity and that of the decomposer component were both estimated to be very low ($\alpha = 24$, SE = 4; α RT = 11, SE = 2), although the numbers of individuals of the more abundant taxa and the consistency of their habitat requirements stood as sufficient evidence in themselves. There were ‘many’ *Aglenus brunneus* and ‘several’ *Carpelimus bilineatus* and *Anobium punctatum*, typical enough of the floor deposits, but in addition there were ‘several’ of the following: *Oxytelus sculptus*, *Leptacinus ?pusillus*, *Monotoma spinicollis* and *Anthicus formicarius*. These, and some of the less abundant taxa (two each of *Cercyon atricapillus* and *Leptacinus ?intermedius*, for example) suggest rather foul conditions, there being a strong similarity to some assemblages from Tanner Row believed to have originated in something resembling stable manure.

There were ‘many’ fly puparia including large numbers of *Musca domestica* and smaller numbers of *Stomoxys calcitrans*, both strongly indicative of rather foul conditions. There were also numerous mites (estimated to exceed 50) and two human fleas.

Context 23292: small area of floor, adjacent to **23267** (q.v.).

Sample 1394 (Spot): light-mid yellowish-grey, crumbly (though with some compacted lumps), sandy ?ash; no further analysis undertaken.

Context 23267: large area (up to 1.9 x 1.6m, up to 0.02m thick), abutting **23292**; floor level, consisting of very dark grey silt with charcoal flecks and many very small wood fragments.

Sample 1391 (GBA): dark brown, crumbly silt, laminated in places with buff to light brown, rather brittle silt and/or clay.

Plants (/M): A rather below-average assemblage of 35 taxa, all at an abundance of 1. Annual weeds in CHEN made up more than a quarter of the taxa, but the AIV (21) was very low for this group when considered for the site as a whole. There was a moderate amount (score 2) of some ?mortar, and this may partly account for the low input/survival of identifiable remains.

Parasitic worms: Three subsamples were examined but all were barren (one subsample, subsequently subjected to magnesium sulphate flotation, yielded a single *Trichuris* egg).

Insects (/T): Recorded semi-quantitatively, this subsample provided a small group (N = 28, S = 21) of beetles. Main statistics are clearly unreliable in such a case, but hint at the presence of small breeding decomposer community—perhaps only nearby—of foul matter or dung; there were four *Aphodius* spp. and an *Onthophagus* sp. Two human fleas were recorded as well as ‘many’ lice and ‘several’ adult and one puparial *Melophagus ovinus*.

Context 23369: a layer of about 1.75 x 0.75m, up to 0.03m thick, quite close to **23346** (*q.v.*), of olive silt; floor.

Sample 1410 (Spot): mid yellow-brown, crumbly, calcareous silt with traces of wood fragments (this deposit had a very smooth feel and may perhaps have contained some clay minerals like fuller's earth).

Context 23603: a largish layer, about 1.4 x 1.25m and up to 0.02m thick, of black, compact, peaty silt, with many wood flecks; abuts **23602**, **23448** and **23597**; floor.

Sample 1470 (GBA): dark grey-brown, crumbly, humic sandy silt.

Plants (/M): The number of taxa from this assemblage (47) was at the Period 4 mean for this parameter. Dyeplants formed a significant component, with an AIV of 15 from three taxa, of which both *Diphysium* and *Rubia* achieved an abundance score of 2. The residue was rich in wood fragments, but other occupation debris were rather sparse. AIVs were unremarkable.

Parasitic worms: Both of the two subsamples examined were barren.

Insects (/T): A small group of beetles and a single bug were recovered (N about 40, S = 30). There were 'several' *Lathridius minutus* group and three *Aglenus brunneus*. This appeared to be a small but fairly typical house floor group, although a quarter of the remains were 'outdoor' forms of varied habitat requirements. There were 'several' fly puparia, mites, sheep keds, human fleas, sheep lice and three human lice.

Context 23288: a large area of floor, up to 2.2 x 1.3m, and 0.03m thick; very dark grey, compact silty loam with charcoal flecks and a few wood chips.

Sample 1395 (GBA): dark grey-brown, very crumbly, humic silt.

Plants (/M): There were 39 taxa in this somewhat below-average assemblage. Only *Chenopodium album* and *Sambucus nigra* scored 2, and the flora was dominated by annual weeds in CHEN (one quarter of the taxa); all other groups were rather or very poorly represented. One unusual record is of a fruit of field maple (*Acer campestre*), a taxon assumed to have been represented by the many records of *Acer* wood amongst the wooden artefacts (especially turned bowls and turning-cores) and some of the roundwood used for fences. It may be no coincidence that this subsample was rich in wood chips in the >4mm fraction, perhaps wood turner's waste.

Parasitic worms: Two subsamples were examined, both proving barren. Magnesium sulphate flotation on one of them gave two *Trichuris* eggs.

Insects (/T): There were about 55 individuals of 30 beetle and bug species (recording being semi-quantitative). There were 'many' *Aglenus brunneus* and 'several' *Lathridius minutus* group, three *Anobium punctatum*, and various other remains of typical 'house fauna'. A sheep ked and a louse were noted. Fly puparia included eleven *Leptocera* sp. and two *Tephrochlamys* sp.; there were also 'several' human fleas.

Context 24064: a largish area of about 1.8 x 0.9m, and up to 0.05m thick, along the N side of cut **20987**, consisting of very dark grey, silty, peaty loam, with many small wood fragments; a floor.

Sample 1551 (BS—VW): Four of the 40 taxa recorded from this sample were scored at an abundance of 2—*Corylus avellana*, *Bilderdykia convolvulus*, *Agrostemma githago* and *Malus sylvestris* (seeds). The two cornfield weeds in this list contributed to the rather high AIV for SECA, but otherwise the statistics were unremarkable. Tentatively identified beeswax was also recorded from this sample and amber was noted as present during rough sorting.

Sample 1550 (GBA): dark grey-brown, crumbly to soft (working just plastic) amorphous organic sediment with traces of wood and charcoal.

Plants (/T3, 2kg): The rather large residue was about 15-20% by volume mineral matter (mainly sand and gravel), the rest bark, wood and charcoal. Some concretions present are perhaps most likely to relate to an industrial or craft process and are not faecal in origin. A wide range of identifiable taxa (52) was recorded, mostly in trace amounts. Weeds of various kinds were the most frequent, with a small component of foodplants, grassland and woodland taxa, and some dyeplants.

Insects (/T3): The concentration of adult beetles and bugs was low (77 individuals from 3kg of sediment), and only 40 taxa were found. The most numerous of the other invertebrates were fly adults and puparia, suspected to be modern contaminants.

This was, for Coppergate, an unusual assemblage, especially for a floor deposit, and very hard to interpret. Although here were numerous human fleas (*Pulex irritans*), there was only a trace of other house fauna elements. The most abundant beetle was *Carpelimus ?gracilis* (15). *Anotylus complanatus* and *Neobisnius* sp. (both 5) may have co-existed with *C. ?gracilis* in moist, open-textured plant litter.

Context 23753: black, oxidising to very dark grey, peaty loam, N of Pit 20897, E of 23590 and 23748, W of 23752 and 23755, and S of 23751; up to 1.3 x 0.6m, a floor.

Sample 1506 (BS-VW): A total of 48 taxa were recorded from this sample, rather above the period mean for BS samples (40). Three taxa achieved an abundance of 2—*Diphasium complanatum*, *Corylus avellana* and *Chenopodium album*; the first of these in part accounts for the rather high AIV for DYES (at 20, equal rank 6), though seven taxa were scored in this group, the largest number for any Period 4 BS sample (the others present were *Genista*, *Rubia*, *Reseda luteola*, *Isatis*, *Agrimonia* and *Humulus* and, indeed, the largest for any sample from the Anglo-Scandinavian deposits at this site. For the rest, the AIVs were unremarkable.

Context 23163: a largish area of about 1.35 x 0.7m, up to 0.02cm thick, of black structured peat

with a large quantity of wood fragments and small twigs, bounded by Contexts 20994, 23165, 23221 and 23223-4; a floor.

Sample 1390 (GBA): dark grey-brown, crumbly humic silt with some wood fragments.

Plants (/M): This large assemblage (67 taxa) included several at an abundance of 2: *Diphasium*, *Genista*, *Calluna* twig fragments and *Rubia*, and the AIV of 22 for DYES is high (rank 3 within this group of subsamples). A woodland component, including *Oxalis* petiole abscission plates, *Ilex* leaf fragments and *Stellaria holostea* stem fragments, together with a long list of mosses of which many are indicative of woodland habitats, is also quite prominent, though the generally modest AIVs reflect the low abundance scores, if not the numbers of taxa. However, mosses scored in LIGN achieved an AIV of 27 (rank 1) and those in SLIT (23) and WOOF (19) both stand at rank 2 for the respective parameters. A high AIV of 11 (rank 2) for GRAS may parallel the rather high value of 19 for grassland plants in MOAR.

Parasitic worms: Both the subsamples examined were barren.

Insects (/T): The flot was semi-quantitatively recorded. There were 43 beetle taxa (about 88 individuals) and other remains including ‘many’ mites, ‘several’ puparia (small numbers of *Leptocera* sp., *Stomoxys calcitrans* and Sepsidae), some lice, a human flea and a sheep ked. The most abundant species—not unusually—was *Aglenus brunneus* (‘many’), and there were ‘several’ *Cercyon analis*, *Carpelimus bilineatus*, *C. fuliginosus* and *Oxytelus sculptus*. Rather moist but open-textured plant remains may have provided a habitat for such an assemblage, but interpretation is a little uncertain.

Context 23341: an area of about 0.8 x 0.7m, up to 0.04m thick, of very dark grey, slightly peaty, silty loam, with charcoal flecks; a floor.

Sample 1411 (GBA): dark grey-brown, crumbly humic silt.

Plants (/M): The assemblage of 55 taxa was rather above the period mean. As in the subsample from 1397, *Diphysium* and *Apium graveolens* both scored 2, and there were similar scores for the following parts of *Calluna*: capsules, flowers, and shoot fragments. *Rubia* also scored 2, giving an AIV for DYES of 18 (just within the top 10% of values for this parameter for Period 4). Notably, both stem fragments and leaves of *Genista tinctoria* were recorded from this subsample.

The *Calluna* records account to a large extent for the high AIVs of 23 (rank 5) for NACA and of 15 (equal rank 4) for OXSP, though other taxa were included in these groups—*Erica tetralix* in OXSP and *Danthonia decumbens*, *Potentilla* cf. *erecta* and *Rumex acetosella* agg. in NACA. Other groups were moderately or poorly represented.

Parasitic worms: Three subsamples were examined of which two were barren; the third, subjected to magnesium sulphate flotation, gave a few *Trichuris* eggs.

Insects (/T, /1 (3kg)): A moderate assemblage of 65 individuals of 44 taxa was noted in the /T subsample. Main statistics were not unusual for this material except for a rather large proportion of outdoor forms (over one fifth) and the fact that a quarter of the individuals belonged to taxa coded 'rd'. Species composition was, subjectively, a little unusual, however, particularly in the presence of *Tipnus unicolor*, so this material was chosen for further analysis via a 3kg 'detail' subsample. There were several mites, a human flea and two sheep keds.

A substantial assemblage was (detail) recorded from the /1 subsample—288 individuals of 107 taxa. Main statistics were reasonably close to those for the /T subsample: $\alpha = 62$, SE = 6; % N OB = 18; % N RT = 70; % N RD = 30. The diversity of the RT component was not especially low (α RT = 19, SE = 2).

As in the previous subsample, the predominant taxon was *Lathridius minutus* group (there were 60 individuals). *Aglenus brunneus* was represented by 33 individuals; *Xylodromus concinnus* by 17;

Cratarea suturalis by 8; *Atomaria ?apicalis*, 7; *Anobium punctatum*, 6; and *Cercyon analis.*, *Ptinus fur* and a *Cryptophagus* species by 5 each. There were also four *Cryptophagus scutellatus*. The decomposer component was thus predominantly 'house fauna', although there were lesser numbers of some taxa indicating rather more varied habitats, though not extremely foul conditions.

There were 42 outdoor taxa, some probably locally derived (e.g. the four *Ceutorhynchus contractus*), others perhaps imported in some way; all could, however, have lived on or around the site. This deposit seems likely to have formed in a rather open structure or to have received imported material containing insects.

There were 'many' lice (seven *Damalinea ovis* and three *Pediculus humanus*), abundant human fleas, 'many' *Chionaspis salicis* scales and at least three sheep keds. *Tipnus unicolor* was not found, and most of the other less usual elements of the /T assemblage (for example *Strophosomus faber*) were absent. *Bruchus rufimanus*, a bean weevil, was present in both subsamples. This species has been commonly recorded from pit fills at the site, but rarely from floors.

Context 20972: very dark grey peaty loam with wood chips and charcoal flecks; a floor.

Sample 1346 (Spot): a small lump of wood with a curving grain, suggesting it might be 'curl wood'; it could not be identified further.

Context 23123: floor.

Sample 1396 (Spot): avian eggshell; no further analysis undertaken.

Hearth of Tenement B

Cut 20882

Context 23029: basal layer in hearth, approximately 0.02m thick, comprising very dark

greyish-brown ashy, peaty loam with wood fragments.

Sample 1357 (GBA): mid-dark grey-brown, crumbly to brittle, humic, very slightly sandy silt with traces of small bone fragments, bark/wood and shellfish; no further analysis undertaken.

Gully within Tenement B building

Cut 15800: a gully about 0.35m across and traced for at least 3.2m (towards the N end of the site, between the Tenement B and C buildings). The fill (**15708**) was about 0.11m thick, and along the western margin was a strip of wood or fibrous structured peat, **15710**.

Context 15708: the fill of the gully; a very dark grey silty clay loam with patches of decayed wood.

Sample 951 (BS—VW): This sample yielded an assemblage of 58 taxa, rather above the mean for BS samples for the period, though with all taxa scoring an abundance of 1. The AIVs appeared to be essentially unremarkable, except that for MOAR (16, equal rank 5). The taxa contributing to this group included *Centaurea nigra* (knapweed, hardheads) involucreal fragments, usually considered to be a good indicator of the presence of grassland material in a sample, perhaps especially of the presence of hay.

Bees were recorded from this sample and it also yielded some tentatively identified beeswax.

Sample 939 (GBA): no action to date.

Context 15710: strip along western margin of gully.

Sample 940 (GBA): no action to date.

External layers

Alleyway deposits

(i) Alleyway west of Tenement B building

Context 26157: a large area, up to 3 x 1m and 0.05m thick, in the alleyway W of Tenement B; very dark grey, slightly clayey loam, with many wood fragments.

Sample 1670 (BS—VW): With only an 'average' number of taxa (38), this sample yet contained most of the elements seen in the Period 4 deposits—a predominance of annual weeds, modest numbers of woodland plants (some perhaps food, others probably imported accidentally) and a range of smaller groups. The AIV of 12 for flavourings is quite high, being based on 4 taxa, viz. *Humulus*, *Apium graveolens*, *Anethum* and *Satureja*, though these four were present in a very large proportion of these samples.

Sample 1669 (GBA): no action to date.

(ii) Alleyway to east of Tenement B building

Context 34703: a layer of dark brown sandy loam, with flecks of ash and many thin strands of wood (i.e. wattle), between the Tenement B/C property boundary and the E wall of the Tenement B building; 2.1 x 0.7m across and up to 0.04m thick.

Sample 2420 (Spot): a single snail shell (*Helix aspersa*).

External deposits to rear of Tenement B building

Context 27880: layer.

Sample 1924 (Spot): no action to date.

Context 34424: layer of very dark grey loamy peat, with pieces of charcoal, patches of ash and many small pieces of wood; up to 2.3 x 2.2m across and 0.16m thick, about one-third of distance from N to S of site, immediately behind the Tenement B building.

Sample 934424 (BS—VW): Rough-sorted remains and those from the washover were examined, but a very small assemblage (15 taxa) was recovered. *Diphysium* fragments scored 2, the remainder 1,

though material tentatively identified as wood ash also achieved an abundance of 2. Other dyeplants were *Isatis* and *Rubia*, and *Humulus* has been counted with this group, too. No further comment is called for.

Context 34285: modest area of about 1 x 0.6m, up to 0.12m thick, of compact, olive, sandy ash, bounded by **34289** and **34290**; behind the structure on Tenement B.

Sample 2371 (Spot): light grey, crumbly, sandy clay silt; no further analysis undertaken.

Context 27504: layer, partly overlying **27503**, of dark greyish-brown, sandy ash, with charcoal flecks and some wood fragments; about 5.1 x 1.8m across and up to 0.08m thick and lying behind the structure on Tenement B.

Sample 1866 (BS—VW): There were 39 taxa recorded from this sample—it was thus near the period mean for BS assemblages. Very large amounts of hazelnut shell were recorded (abundance 3), and there were abundance scores of 2 for *Diphasium*, *Chenopodium album*, *Calluna* (flowers) and *Rubia*. Not surprisingly, DYES achieved a rather large AIV (18), but other groups were rather more moderately represented.

Sample 1865 (GBA): no action to date.

Context 31424: layer of black, peaty loam, 1.9 x 0.7m and 0.03m thick, just S of rear of Tenement B building; abuts **31425**.

Sample 2011 (BS—VW): An assemblage of 52 taxa was recorded from this sample, putting it in the top quartile of Period 4 BS samples for this parameter. There were abundant (score 3) *Calluna* flowers, with appreciable amounts (score 2) of *Diphasium*, *Corylus*, *Chenopodium album* and *Ilex* (leaf epidermis). The high concentration of *Calluna* flowers, together with traces of shoot and twig fragments of this taxon contributed largely to the high AIV for heathland/moorland taxa (group NACA, at 19, rank 2). The assemblage was, in most other respects, very similar to many others from this period. A single puparium of

Melophagus ovinus was also noted from this sample.

Sample 2010 (GBA): no action to date.

Context 34284: a modest area of about 1 x 0.9m, up to 0.04m thick, of compact, olive sandy ash, bounded by **34290** (*q.v.*), behind the structure on Tenement B.

Sample 2372 (Spot): light yellow-grey, crumbly silt or ash with modest amounts of charcoal and some plant detritus, including *Diphasium* stem fragments.

Sample 25174 (GBA): light-mid yellow-grey-brown, unconsolidated, somewhat heterogeneous silty sand with traces of wood and other plant debris, partly in humic patches; ?ashy.

Insects (/T): There were 19 individuals of 16 beetle taxa, only *Atomaria* sp. and *Lathridius minutus* with more than single individuals. About a third of the individuals were of taxa coded 'oa' or 'ob', and a background origin seems probable for most of the beetles. Other arthropods were rather more abundant—'many' (and varied) fly puparia, 'several' mites, 'many' scale insects (perhaps from wattle), a sheep ked, a human flea, and a honeybee.

Context 34726

Sample 25171: dark grey, crumbly, locally layered, humic, slightly sandy silt, with abundant wood fragments, and wood reduced to frass by arthropods, abundant herbaceous detritus and large and small bone fragments present.

A subsample of 5kg was bulk-sieved after the main period of processing; the residue contained wood and charcoal (the bulk of the residue, approximately two-thirds wood and one-third charcoal), with corroded ironwork or iron slag, fragments of brick/tile, stone, slag, mammal, bird and fish bone, eggshell and nutshell.

Context 34663

Sample 25178: mid-dark grey-brown, crumbly to brittle, slightly silty amorphous organic material with abundant rotted wood fragments and some large and small bone.

Insects (/T): The subsample appears to have been processed but not recorded.

The residue from the /T subsample was rich in charcoal, wood and bark, and also included a little hazel nutshell, burnt bone, brick/tile and mortar/plaster.

A subsample of 4kg was bulk-sieved after the main period of processing; the residue contained fragments of brick/tile, stone, slag, shellfish, eggshell and large and small mammal, bird and fish bone. There were also lumps of ?iron corrosion and a lead strip, some wood and charcoal fragments, and hazel nutshell.

Context 34292: a very dark greyish-brown, peaty loam, about 3.5 x 0.4m, and up to 0.07m thick, running along and amongst the posts of the W side of the Tenement B/C boundary, against context **34289** (*q.v.*); and external layer. Note that the two samples lay on the same eastings grid line (72.5) but were 2 metres apart N-S (2374 at 42.5N and 2373 at 40.5N).

Sample 2373 (BS—VW): Another rather small assemblage (23 taxa) was obtained from this sample, though most of the same elements present in this series of deposits from Tenement B were present (the dyeplants comprised *Diphasium*, *Genista* and *Rubia*, but with the addition of *Isatis* and *Humulus*).

Fly puparia were quite common in this sample; they included modest numbers of Sepsidae, *Leptocera* sp. and *Stomoxys calcitrans*, and an unusual record of three *Copromyza* sp.

Sample 2374 (GBA): Although described as another ‘red-stained layer’ by the excavator, there was no red colouration at the time of examination in the laboratory; P. R. Tomlinson reports that *Genista* and *Diphasium* stems were present,

however, so it is quite possible that *Rubia* was present elsewhere in the deposit.

Context 34483: abutting the B/C boundary, and lying immediately N of **34482** (*q.v.*), this external layer in Tenement B comprised olive silty loam, with patches of dark grey, slightly peaty loam, with large amounts of charcoal and occasional flecks of wood; about 2.5 x 1.1m across and up to 0.05m thick.

Sample 2401 (BS—VW): There were 50 taxa from the components of this sample that were examined; all scored 1 except *Diphasium*, *Betula cf. pendula* (bark) and *Corylus* (nutshell), which all had an abundance of 2. The assemblage was similar to many others from the Period 4B deposits associated with Tenement B, having a large component of woodland taxa, some of which were probably foodplants, others moss or taxa perhaps brought accidentally with it. The record of wheat/rye ‘bran’ from this sample was one of only three for the Period 4B external layers. There were also modest numbers of puparia of Sepsidae and *Stomoxys calcitrans* and a single *Musca domestica*

Parasitic worms: A subsample of faecal concretion gave modest numbers of *Trichuris*, most with both polar plugs present.

Sample 2400 (GBA): a small subsample examined by P. R. Tomlinson for vegetative remains was found to contain *Genista*, *Diphasium* and *Calluna* stem fragments, *Phragmites* culm and *Pteridium* pinnule fragments, in a matrix of amorphous humic silt, with stones, bone and wood fragments.

Context 34413: a layer of dark grey peaty loam, with occasional patches of dusky red peaty loam, and of olive silty ash, with some charcoal flecks; at about the same location as **34483**, but stratigraphically higher than this, and **34412**; at least 2.3 x 1.6m across and up to 0.11m thick, Tenement B, external to the structures.

Sample 2397 (BS—VW): This sample yielded the largest number of taxa for any Period 4 BS sample from Coppergate (100), with *Rubia* scoring 3 (and accounting for the ‘dusky red’ colour noted on

excavation), and several taxa scoring 2: *Diphasium*, *Humulus*, *Rumex acetosella* agg, *Chenopodium album*, *Atriplex* sp(p)., *Oxalis acetosella* (seeds), *Ilex aquifolium* (leaf fragments), and *Calluna* (flowers and capsules). Not surprisingly, therefore, there were large AIVs for DYES (the highest value for this series, 24, based on six taxa), CHEN (60, also the highest, based on 26 taxa), BIDE (rank 1 with an AIV of 19 for seven taxa, some shared with CHEN), and NACA and OXSP (both rank 1, their AIVs respectively 24 (six taxa) and 13 (five taxa)). Other well represented groups include PLAN (AIV of 11 being rank 1 for this series), QUFA (AIV of 32, rank 1), RHPR (21, rank 2) and SECA (34, rank 1). The grassland groups MOAR (AIV 20, equal rank 1) and FEBR (AIV 7, equal rank 1) also stand out when compared with other Period 4 samples.

Foodplants were also well represented—FOOS achieved an AIV of 48, rank 3 in the Period 4 BS samples, FOOO an AIV of 8 (equal rank 1), and FOOS an AIV of 13 (equal rank 2).

Many interesting (or, for the site as a whole, unusual) taxa were recorded from this sample, including *Stellaria holostea* (stem fragments), cf. *Lepidium sativum*, *Hippuris*, *Cladium* and *Potamogeton*. There were also many moss taxa, though all were present in small amounts.

Sample 2398 (GBA): A small subsample examined by P. R. Tomlinson for vegetative remains gave modest amounts of *Genista* twig fragments, some *Calluna* shoot and twig fragments and flowers, small root fragments of *Rubia*, *Diphasium* and some ?straw fragments.

Context 34289: dusky red, structured peat, 2.1 x 0.85 m across and 0.03m thick, another, more extensive area abutting **34290** behind the structure on Tenement B.

Sample 2379 (BS—R): Only the residue for this sample was examined; it yielded 46 taxa, somewhat above the mean for the Period 4 BS samples. There was good evidence for foodstuffs (the AIV for FOOS, 48, was the third highest for this series), in the form of *Rubus fruticosus*, *Malus*, *Prunus*

spinosa and cereal ‘bran’ (which all scored an abundance of 2). Dyeplants were quite well represented, with *Rubia* and *Diphasium* both scoring 2. The rather large component of mosses, including *Thuidium tamariscinum* at abundance 2, perhaps indicates the presence of toilet ‘tissue’. The holly leaf epidermis fragments (which are noted as including spines) might have arrived with woodland moss, though in this case it is difficult to see how the moss would be used for hygienic purposes if it contained holly leaves! One of the few records for *Euphorbia lathyris* came from this sample—a half seed only—and the only record for the site for guelder rose, *Viburnum opulus* (two seeds).

This sample produced very large numbers of puparia of *Stomoxys calcitrans* and smaller numbers of Sepsidae sp., and *Leptocera* sp. and a few individuals of several other taxa.

Sample 2378 (GBA): crumbly, silty plant detritus.

Plants (/M): A total of 65 taxa were noted, with dyeplants prominent (*Genista* and *Rubia* both scored 3, *Diphasium* 2—giving the highest AIV for DYES for the site for the assemblages from the GBA samples), and a strong component of heather (flowers, shoot fragments and seeds all present at an abundance of 2). Waterlogged cereal chaff, mites and fly puparia were all also recorded at 2. For the rest, woodland, wetland and grassland habitats were all quite well represented though the relevant AIVs were not especially large.

Parasitic worms: The subsample examined was barren.

Insects (/1, /2 (3kg)): The first subsample (/1) gave about 52 individuals of 40 beetle taxa, the second 134 individuals of 60 taxa, recording being semi-quantitative in both cases. The /2 group was of intermediate diversity ($\alpha = 42$, SE = 6) and had a modest proportion of outdoor forms (% N RT = 73), with ‘rf’ taxa rather well represented (% N RF = 11). Diversity of the decomposer component was fairly low (α RT = 17, SE = 3). There were ‘many’ *Cercyon analis* and *Lathridius minutus* group, both rather eurytopic taxa, but there were ‘several’ *Cercyon haemorrhoidalis* and *Platystethus*

arenarius, indicating foul matter. Other more abundant taxa were *Acrotrichis* sp., *Cryptophagus* sp. and *Orthoperus* sp. (all 'several'). There were 'several' fly puparia and small numbers of other remains. This layer appears to have supported a community of decomposers associated with foul conditions (a mosaic of drier and wetter habitats seeming probable), and to have received background fauna.

Subsample /1 gave a smaller group of less clear ecological origin, together with the following fly puparia: quite large numbers of *Nemopoda* sp. and a few each of *Leptocera* sp. and *Stomoxys calcitrans*.

Context 34412: Lying 1m to the W of the Tenement B/C boundary, this was a very extensive external layer of very dark grey peaty loam, with many small fragments of wood and occasional patches of dusky red peaty loam; the context was at least 3.7 x 1.9m across, and up to 0.16m thick. The various samples from this context were taken from different parts, some at 42.5N, some at 40.5N.

Sample 2403 (BS—V): Only the rough-sorted remains were examined from this sample; abundance scores of 2 were achieved by *Diphasium* and *Corylus*, otherwise there were traces of foodplants, and several weed taxa, but the assemblage (22 taxa) is really too small for further comment. (It is perhaps surprising that *Rubia* was not recorded in view of the red colouration of the raw sediment as described on excavation (though it was noted in the GBA subsample from 2402, see below).

Sample 2404 (BS—V): A very similar assemblage was obtained from the rough-sorting of this sample (18 taxa, the similarity coefficient between 2403 and 2404 being 48%), with *Diphasium* and *Neckera complanata* scoring 2.

Sample 2402 (GBA): crumbly silty organic detritus with some coarse wood and bone fragments.

Plants (/M): Of the 50 taxa recorded, only *Diphasium*, *Genista* and *Rubia* were present with an abundance of 2. They account for the high AIV

for DYES (21, equal rank 4). With hemp, linseed and flax seed capsule fragments all recorded, the AIV for FIBR was rather high (9, equal rank 2), and, together with walnut (an unusual record from a GBA subsample), they also account for the high AIV for oil-plants (FOOO, AIV = 8, equal rank 3).

There was quite a wide spectrum of mosses from this subsample, with bark and woodland floor taxa predominating. A rather unusual find amongst the matrix components were traces of antler shavings.

Parasitic worms: The subsample examined was barren.

Insects (/1, /2): The first subsample gave 106 individuals of 52 beetles and bug species and a variety of other insects including 'several' beetle larvae and scale insects and 'many' puparia, and at least two sheep keds and six human fleas. The fly puparia included about 20 *Nemopoda* sp.

The more abundant beetles suggested an origin in a building—there were 19 *Aglenus brunneus*, ten *Cratarea suturalis*, five *Xylodromus concinnus* and *Lathridius minutus* group, four *Cryptophagus scutellatus*, and three each of two other *Cryptophagus* species—and the six human fleas lend support to such an interpretation. There were small hints, but no more, of the presence of some material like mouldering hay: a newly emerged *Apion* weevil, two *Anthicus floralis/formicarius* and a single *Typhaea stercorea*.

Subsample /2 gave a smaller (semi-quantitatively recorded) assemblage (N = 74, S = 41); on the whole species composition was rather similar. Here there were, in addition to two *Apis mellifera*, two adult and one puparial sheep keds, and a damaged louse. A similar origin within a building may be suspected.

There were many *Nemopoda* from both subsamples.

Sample 2405 (GBA): Another sample described as being 'red-stained', it yielded *Genista* twigs, sometimes in clumps, a single fragment of *Rubia*, and some small fragments of *Diphasium*. P. R.

Tomlinson also recorded a calyx+pod of *Trifolium* sp., and a fragment of oak (*Quercus* sp.) leaf.

Sample 25177 (GBA): dark brown, crumbly, coarse and fine woody detritus with abundant, but very rotted wood fragments and moderate amounts of bark.

Insects (/T): Thirty-three beetle and bug taxa were recorded, represented by 52 individuals. Diversity was not very high ($\alpha = 39$, SE = 10) and over a third of the individuals were of 'outdoor' taxa. The most abundant species was *Platystethus degener* (6), found at the present day in organic-rich mud, generally by water. Other taxa were ecologically rather mixed, with a hint of 'house fauna'. This may be a further variation on the theme established by *Sample 2402/1*. There were 'many' mites and scale insects, 'several' fly puparia (including a *Melophagus ovinus*), an adult ked, a human flea, a honey bee, and some lice.

Context 34287: small patch of light brown sandy ash in **34290**, 0.3 x 0.24m across and 0.03m thick; external layer in Tenement B.

Sample 2370 (Spot): light grey-brown, crumbly, sandy silt with traces of wood and bark fragments and a *Diphasium* stem fragment; no further analysis undertaken.

Context 34290: dark brown, compact, structured peat, at least 3.9 x 2.9m across and 0.10m thick, a dump deposit behind the structure on Tenement B.

This extensive layer was very well sampled (the original sample numbers were BSs 2363-6 and 2381 and GBAs 2367-8, 2380 and 2517B (latterly 25172), though during processing of the BS samples there was confusion regarding the numbering, and for the present purposes a single sample, 934290, amalgamating results from all the BS samples examined, will be considered:

Sample 934290 (BS—VW+): Although compounded from the results of examinations of several BS samples, the final list of taxa amounts to 49, not greatly higher than the period mean for BS samples. Only two identifiable taxa

(*Diphasium* and *Rubia*) scored an abundance of 2, though unidentified twig fragments were also recorded at 2. Of the remainder, all scoring 1, there was a mixture of foodplants, two other dyeplant taxa, a variety of weeds and woodland plants, the latter including several moss taxa, besides *Ilex* seeds and leaf epidermis fragments, though none of the AIVs was especially large.

Sample 2367 (GBA): dark brown, crumbly, very humic silt with wood and moss fragments.

Plants (/M): There were 53 taxa, a little above the site mean. Only *Rubia* was at all frequent (its abundance score was 2), and AIVs were all unremarkable, the largest groups being CHEN, NACA and SECA.

Parasitic worms: The subsample examined was barren.

Insects (/1, /2 (2kg)): The /2 subsample gave the larger group and so it is dealt with first. There were 121 individuals of 72 beetle taxa. Diversity was high ($\alpha = 75$, SE = 12) and the outdoor component quite substantial (% N OB = 17). All the outdoor taxa were represented by single individuals, so a mixed transported origin is likely. Over a quarter of the assemblage was made up by the RD group (% N RD = 28, 45% of the RT component). Only one taxon—*Lathridius minutus* group—was particularly numerous (22 individuals), and this together with the intermediate value of α RT (20, SE = 4) suggest that only a limited range of decomposers has the opportunity to build up populations. Other taxa with more than two individuals included *Anotylus complanatus* and *A. nitidulus* (four of each), both suspected to at least sometimes have been abundant in the Anglo-Scandinavian background fauna of the Coppergate-Pavement area and perhaps also (concomitantly) rapid colonisers. There were five *Xylodromus concinnus*, four *Aglenus brunneus*, and three each of an *Atomaria* and a *Cryptophagus* species. There were also 'many' fly puparia (those identified being *Nemopoda* sp.), mites, and scale insects, three *Melophagus ovinus* adults, and some puparial fragments of this fly, and two human fleas.

Subsample /1 produced about 56 individuals of 40 taxa (semi-quantitative recording). The fauna—subjectively—probably had an origin like that of subsample /2. There were even more ‘outdoor’ forms proportionally (% N OB = 27), and again all were single individuals. There were ‘several’ *Lathridius minutus* group and *Anotylus complanatus*, but only one or two individuals of the remaining taxa; again there were ‘several’ fly puparia. Perhaps surprisingly there were ‘many’ *Lepidosaphes ulmi* scales (one of the few cases where this species was more abundant than *Chionaspis salicis*), perhaps evidence that twigs or other small pieces of wood were incorporated. Other remains included two adults and puparial fragments of *M. ovinus* and a human flea.

There were a few insect remains from the /M subsample from 2367, but these had no special significance.

Overall, this layer appears to have built up and been sealed fairly quickly, unless it was somehow inhospitable to decomposer fauna. A ‘house fauna’ community may even have been present before dumping, although this may equally have originated as background fauna and/or initial colonisers.

Sample 2368 (GBA): A small subsample was examined by P. R. Tomlinson for vegetative plant remains; she recorded *Calluna* twigs, *Diphasium* and *Genista* stem fragments (and epidermis and leaf fragments of the latter), a few *Rubia* root fragments, and a fragment each of cereal straw and bracken pinnule. There were also ‘lots’ of wood chips and a *Corylus* bud (this last was a part taxon only rarely recorded from 16-22 Coppergate, despite the large amount of imported hazel wood for wicker, wattle and posts and the huge quantities of hazelnut shell fragments).

Plants (/T3, 3kg): Subsequently, a subsample was examined in detail for plant and insect remains. The rather large residue was about 20% by volume sand and grit, the rest bark and charcoal with some wood fragments and other woody detritus. The material gave the impression of having been subject to decay during storage (which might have been as long as 17 years at that point). Seed concentrations

were low, probably reflecting dilution by the large component of wood and bark. Although annual nitrophile and segetal weeds were the best represented groups, two dyeplants were the only identifiable taxa scoring more than ‘1’ on the four-point abundance scale used: *Diphasium* and *Rubia* were both present at an abundance of 2 (there were also traces of *Genista*). The presence of capsules, seeds, shoot and root/twig fragments of heather was responsible for the heathland group also being quite prominent in the statistics for this modest-sized assemblage (45 taxa); with them was a diversity of woodland plants, including several mosses, all taxa commonly recorded in these richly organic occupation deposits.

Insects (/T3): The abundant invertebrates included 144 adult beetles and bugs of 80 taxa, huge numbers of scale insects, numerous mites and fly puparia, eight *Melophagus ovinus*, five honey bees, four human fleas, and various others. Although this was an assemblage of high diversity ($\alpha = 74$, SE = 11), there was a clear house fauna component. This included 21 *Lathridius minutus* group, *Cryptophagus* sp. (9), *Aglenus brunneus* (7), and *Xylodromus concinnus* and a second *Cryptophagus* sp. (4 each), with 1-3 individuals of a number of others. The fleas and a single immature human louse belong here, too. The rest of the fauna consisted of numerous species able to exist in mouldering to somewhat foul floor litter, and some ‘outdoor’ taxa, with which the single individuals of five *Aphodius* species should probably be grouped.

The abundance of the sheep ked (and two *Damalinia* lice) suggests that wool cleaning took place (cf. the evidence for dyeplants), and the presence of five honey bees suggests that they were kept nearby, or that comb including adults was processed. There was no heathland or woodland component to match the plant evidence.

Sample 2380 (GBA): This was described at the time of sampling as a ‘red-stained layer’. A small subsample examined by P. R. Tomlinson revealed the presence of dyeplants (*Genista*, *Rubia*, *Diphasium*), together with some grass fragments and the moss *Neckera complanata*, an assemblage

very reminiscent of the remaining samples from this context.

Sample 25172 (GBA): Dark brown, crumbly, fine and coarse herbaceous detritus and amorphous organic material. A 9kg subsample was bulk-sieved after the main period of processing but the remains recovered from it were not recorded in detail.

Context 27852: an irregular and extensive layer, part of a thick series of madder, ‘peat’ and ash layers immediately S of the Tenement B building; extent about 1.8 x 1.6m; olive, compact, ‘cessy’, silty loam, with patches of grey silty clay and of olive ashy loam.

Sample 2377 (Spot): a very large concentration of fly puparia (271 *Stomoxys calcitrans* and a single Sepsidae sp.) in a matrix rich in madder (*Rubia*) fragments. A large proportion of the *Stomoxys* (and the single sepsid) were unemerged, indicating that some catastrophe befell the puparia before they could mature.

Sample 25173 (GBA): dark, slightly reddish, grey-brown, crumbly, slightly sandy silty amorphous organic material; with abundant wood fragments.

Insects (/T): Apart from ‘many’ fly puparia, insects were not vary abundant—there were 20 individuals of 18 beetle taxa and a few other remains including single adult and puparial sheep keds. There were three *Lathridius minutus* group, but a quarter of the individuals were of ‘outdoor’ species and a background origin for all or most of the assemblage is entirely possible.

In addition a 5kg subsample was bulk-sieved after the main period of processing. It gave a residue rich in wood/twig fragments, with traces of nutshell, large bone fragments, charcoal, shellfish and leather, and included a pig metatarsal with a hole through the shaft, forming a ‘toggle’.

Context 27503: layer of black, slightly peaty, slightly silty clay loam, with some small wood fragments; extent 6.3 x 3m, up to 0.2m thick; to the rear of the structure on Tenement B.

Sample 1887 (BS—VW): With 61 taxa, this was one of the larger assemblages from Period 4 BS samples. *Diphasium* and *Rubia* made up quite a large proportion of the material, both having an abundance of 2. This gave a rather large AIV for DYES of 20 (equal rank 6). The AIVS for CHEN and SECA were also relatively high, but the six taxa scored in NACA and OXSP gave, respectively, the third and second highest values (15 and 10) for their AIVs from this series of samples (though of the ‘taxa’, four were part-taxa of *Calluna*. Though the numbers of taxa contributing to them were small (and the plants in each largely the same!), the AIVs for fibre and oil plants, FIBR and FOOO were relatively high (rank 1 for FIBR, rank 5 for FOOO), and the AIV for the flavourings group FOOS reached rank 4 (based on five taxa—*Humulus*, *Apium graveolens*, *Anethum graveolens*, *Satureja hortensis* and cf. *Myrica*).

A single snail, determined as *Clausilia bidentata*, was also recorded.

Sample 1886 (GBA): no action to date.

Context 34416: very dark grey peaty loam, with many patches of light brown ash, occasional charcoal flecks and occasional fragments of wood; 1.6 x 0.6m across and up to 0.08m thick; an external layer.

Sample 2395 (Spot): mid brown, crumbly, sandy silt with traces of twig fragments; no further analysis undertaken.

Context 34286: compact, olive sandy ash, about 1 x 0.6m across and up to 0.02m thick, in similar location to **34285**.

Sample 2369 (Spot): light grey-brown, crumbly silt with coarse and fine herbaceous and woody detritus, including fragments of *Calluna* and some bark, and traces of stones 2-20mm in size; no further analysis undertaken.

Context 34291: dark reddish-grey, structured peaty clay loam, 1.25 x 1m across and up to 0.09m thick, on the W side of the Tenement B/C boundary, abutting **34290** and external to the buildings.

Sample 2383 (BS—V): Only rough-sorted remains were available for this sample, and the sum of taxa (26) is correspondingly small. *Diphasium* and *Corylus* scored an abundance of 2; the remaining taxa at 1 included foodplants (sloe, ‘plum’, blackberry and apple), *Rubia*, holly leaf fragments and seeds and heather capsules and flowers.

A large number of fly puparia were recorded from this sample. The majority were *Muscina stabulans* and Sepsidae sp., with appreciable numbers of *Stomoxys calcitrans*, *Tephrochlamys* sp. and *Musca domestica* and small numbers of a few other taxa.

Sample 2382 (GBA): A small subsample was examined by P. R. Tomlinson for vegetative plant remains. Another layer described on sampling as being ‘red-stained’, there had been much earthworm damage during storage. Dyeplants (*Rubia*, *Genista* and *Diphasium*) were again recorded, along with *Corylus* nutshell.

Context 34482: a layer of very dark grey peaty loam, with a few patches of dusky red peaty loam, some charcoal flecks, and many flecks and chips of wood; behind the Tenement B building, abutting the B/C boundary.

Sample 2399 (GBA): P. R. Tomlinson recorded ‘lots’ of *Genista* twigs and a few cereal straw fragments, mixed with amorphous organic detritus in a small subsample examined for vegetative plant remains.

Context 32214: a layer of very dark grey, peaty clay loam, with charcoal and pieces of wattle members, up to 0.7 x 0.5 and 0.03m thick, about 5m to the rear of the S wall of the Tenement B building.

Sample 2499 (Spot): a small pad of the moss *Neckera complanata*.

Context 28835: layer of very dark grey, silty, structured peat, with many small fragments of wood and some patches of reddish-brown peat; up to 2.9 x 2.1m, and 0.14m thick, abutting **28838** and Cut **28334**, and probably slumping into the

upper part of another pit at its N end; behind the Tenement B building.

Sample 2309 (Spot): Though sampled by the excavator as ‘plant leaf?’, there were no recognisable remains amongst the fine plant debris observed in this small sample.

Context 28999: a thin strip of deposit in Tenement B (behind the building), curving round the edge of a depression which became a pit; abuts **28995-6**, **28998** and **32000**; up to 0.15m wide and 0.08m thick, very dark greyish-brown, silty, structured peat.

Sample 2236 (GBA): no action to date.

Context 32746: an external layer of reddish-black structured peat, with many wood chips.

Sample 2461 (Spot): This sample was taken to check for wood chips and bark that might have been used as fuel in metalworking. There were certainly wood fragments present, some perhaps chips, to about 40mm square, with some fragments of rods to 20mm diameter and much fine wood debris (and perhaps also some grass fragments). The wood included alder and hazel. There was a little charcoal present, but only a small proportion by volume.

Context 28234: a layer of very dark grey, silty loam, 2 x 1.8m across and up to 0.02m thick, behind the Tenement B structure.

Sample 1876 (Spot): A collection of about 100 ‘cherry’ *Prunus* Section *Cerasus* stones, unusual for this site in the Anglo-Scandinavian period (cherries were recorded from five Period 4B contexts, but as many as nine for Period 5C, a much larger proportion).

Context 28901: layer of olive, ‘cessy’, structured peat to 0.15m thick, perhaps a patch in the corner of a depression (abutting **28902**), behind the structure.

Sample 2008 (Spot): a thin sheet of orange-brown, resinous-looking material with grey or brown

surfaces; maximum dimensions approximately 0.16 x 0.2m by 0.5mm thick; perhaps a sheet of skin.

Context 28815: a layer of very dark grey clay loam, with many wood fragments and patches of both light grey clay and olive silty, 'cessy' material; behind the Tenement B building, abutting pit **32008** and layer **28817**; up to 1.3 x 0.9m and 0.1m thick.

Sample 2172 (Spot): a piece of coal, very unusual for deposits of Anglo-Scandinavian date.

Context 28819: a long, straggly layer of very dark grey clay loam, with some wood fragments and patches of both light grey clay and light brown ash; between **28820** and **22817**, cut at N end by **37073**; 2.7 x 0.7m, up to 0.15m thick; behind the Tenement B building.

Sample 2164 (GBA): A small amount of this deposit was examined for vegetative plant remains by P. R. Tomlinson; she reports that it contained many stem and shoot fragments of *Calluna vulgaris*, with small numbers of stem fragments of *Diphysium* and *Genista*; there were also *Genista* flower remains, *Malus* seeds and endocarp, moss shoots, and a fragments of leather.

Context 27341: a fairly extensive area of about 1.2 x 1.1m, just N and W of the large well (**4976**) towards the central part of the excavation (in Tenement B); very dark greyish-brown, peaty loam, with many patches of light yellowish-brown ash.

Sample 1964 (Spot): a single, modern *Helix aspersa* shell.

Sample 2316 (Spot): a coprolite with many coarse hairs protruding from it. No further analysis was undertaken but it seems likely that it was from a dog.

Context 28125: a layer towards the rear of Tenement B, just S of the mid-line across the site; black 'cessy' structured peat.

Sample 2095 (Spot): a pad of the large branching moss, *Neckera complanata*, a species typically found in archaeological cess pit deposits where it is assumed to have served as toilet tissue.

Context 28059: layer of dark greyish-brown, ashy, silty loam, up to 0.03m thick, forming a thin lens between **24561** (above) and **26246** (below); behind the Tenement B building.

Sample 184308 (GBA): mid grey-brown, plastic to crumbly, clay silt, with moderate numbers of paler, ?ash-like material and some ?humic silt, perhaps derived from adjacent layers.

Insects (/T): There were only single individuals of six beetles, a human flea and a single hymenopteran.

Context 24560: a mixture of brown, very silty clay and brown sticky clay, about 0.6 x 0.4m and 0.05m thick, overlying **24561** (*q.v.*); layer in 'backyard' of Tenement B.

Sample 184301 (GBA): dark grey, brittle to stiff, slightly sandy clay silt with abundant charcoal and traces of mortar and tile fragments, plant detritus, and a mid brown silt.

An 8kg subsample of this was bulk-sieved after the main period of processing (a decision having been made that none of the material was to be treated as a GBA). The residue was largely charcoal, with a little stone, tile, bone, and wood/twig fragments and nutshell.

Context 31434: an external layer of very dark peaty loam, containing some wood fragments, up to 1.6 x 1.2m across, and to 0.2m thick; cut by construction trench for the 19th century well **2001**; about 2m S of **31424**, on Tenement A.

Sample 2013 (GBA): A small subsample was examined by P. R. Tomlinson for vegetative plant remains; she recorded large amounts of *Calluna* twigs and shoots, small numbers of *Rubia*, *Genista* and *Diphysium*, *Linum usitatissimum* capsule fragments and seed and a fragment of *Polytrichum* shoot (probably brought with the *Calluna*, or

perhaps with the woodland component so prevalent in these deposits and exemplified here by *Ilex* leaf epidermis and a bud and leaf fragment of *Quercus*).

Context 34436: layer, Tenement B.

Sample 2419 (Spot): avian eggshell; no further analysis undertaken.

Pit fills on Tenement B

Cut 36574: this pit was about 1.2m in diameter and 1.5m deep; two contexts were sampled. The pit was cut from above by the Period 5A pit **27805**.

Context 34397: the second-to-lowest layer; described as having a very high organic content, this was a dark yellowish-brown peaty clay loam.

Sample 3000 (GBA): A small subsample of this extraordinarily richly organic sample was examined by P. R. Tomlinson for vegetative plant remains. It was found to be rich in *Triticum/Secale* 'bran', with cereal chaff and whole (waterlogged) wheat and/or rye grains.

Parasitic worms: Two subsamples were examined. The first yielded large numbers of *Trichuris* and considerable numbers of *Ascaris*, although in the proportions normally encountered at the site. The second, however, gave a very high count for *Ascaris* and only modest numbers of *Trichuris*. Had these proportions been found in both subsamples, it would be tempting to suggest the presence of faeces from pigs rather than humans; as the counts were inconsistent, it is possible that the high *Ascaris* count represents, for example, the voiding of a whole gravid worm. A further complication in this argument is the presence of a small proportion of trichurid eggs whose measurements are closer to those of *T. suis* (of pigs) than of *T. trichiura* (of humans).

Insects (/1): A 1kg subsample was processed and produced a very large flot consisting mainly of plant remains but including abundant hairs. Very

few insect remains were present and they provided no further interpretative information.

Contexts 34377 and 34385: are thought to be equivalent; they were described as very dark grey peaty loam to black clayey peat.

Sample 2360 (GBA): no action to date.

Sample 2361 (BS—VW): Of the 40 taxa recorded, only *Prunus spinosa* scored an abundance of 2; faecal concretions were also moderately abundant. This was, in other respects, an unremarkable sample, the assemblage dominated by foodplants and annual weeds and with a modest range of (essentially) woodland mosses.

Sample 2393 (Spot): a high concentration (approximately 1000) of fly puparia of which it was estimated that about 94% were *Musca domestica*, with 5% Sphaeroceridae and 1% Sepsidae.

Cut 32431: a pit about 1.5m across and not less than 0.7m deep;

Context 34558: the lowest fill, comprising dark greyish-brown peaty 'cessy' material.

Sample 2429 (Spot): no action to date.

Sample 2430 (Spot): no action to date.

Cut 34479: unrepresented on any plan or section, this pit lay about one-third of the distance from the front to the rear of the site, by the Tenement B/C boundary and close to pit **32431**. Its dimensions were not recorded.

Context 34477: a layer of very dark grey, peaty loam, with many wood and twig fragments, matted together.

Sample 2396 (GBA): A small subsample of this sample rich in plant remains was examined by P. R. Tomlinson for vegetative fragments; material identified included twig fragments of *Genista* and

Diphysium, root fragments of *Rubia*, and shoot and twig fragments and flowers of *Calluna*—evidently waste from dyeing. Other occupation debris included wood fragments and chips, bark (including birch bark), bone, eggshell and cereal straw (culm) fragments.

Cut 37027: although not recorded on any plan or section, the dimensions of this pit are extrapolated as not less than 1.5m diameter and 0.6m depth. There were three fills, one of which was sampled.

Context 32926: fresh cess and ‘cessy’ pit fill; olive yellow amorphous peat, olive amorphous peat, olive brown peat, structured with grass stems, black silty clay loam with charcoal, wood chips and hazelnut shells.

Sample 2476 (GBA): A small subsample examined by P. R. Tomlinson was found to contain fragments of *Genista* and *Phragmites* stem, cereal straw fragments, eggshell and wool. The ‘strawy’ element was reminiscent of large herbivore dung.

Cut 28652: a pit about 2.4m square and at least 1.7m deep.

Context 32026: the basal context; black, mixed amorphous peat/peaty loam.

Sample 2287 (BS—VW): An average-sized assemblage (37 taxa), with large numbers (abundance score 3) of *Prunus spinosa* and more modest (score 2) amounts of ‘plum’ (*P. domestica* sl.) stones. The foodplant component was quite large (AIV 41, rank 7), though somewhat inflated by the large number of *Prunus* (the proportion of taxa scored in this group was 32%).

Other components of the assemblage were modest, apart from annual nitrophile weeds (group CHEN, 41% of taxa) and call for no further comment.

Sample 2286 (GBA): no action to date.

Context 32032: between 28717 and 32026.

Sample 2297 (Spot): four *Musca domestica* puparia.

Context 28717: the uppermost sampled fill.

Sample 2300 (Spot): a sample of bird eggshell; no further analysis undertaken.

Cut 37107

Context 32223: black silty clay loam.

Sample 2315 (Spot): a coprolite with embedded woody fibres and fly puparia; modest numbers of *Muscina* sp. and *Thoracochaeta zosteræ*, with single *Fannia* sp. and Limosininae sp.

Cut 37089 (=37066): this pit was elongate in plan, up to about 2.8m long and about 1.5m across the short dimension; its depth was about 1.25m.

Context 32570: overlying 32571 (not sampled), the lowermost fill, and at a depth of between 0.35 and 0.5m from the bottom, this layer comprised dusky red, pure silty manure/cess.

Sample 2442 (Spot): a coprolite with fly puparia embedded in it, of which the majority were *Muscina* sp., with a few *Thoracochaeta zosteræ*.

Sample 2443 (Spot): no action to date.

Context 32105: black peaty loam with many small wood fragments; one of the upper fills of the pit.

Sample 2290 (Spot): a specimen of the beetle *Blaps* sp.

Sample 2292 (Spot): a small sample of twigs of dyer’s greenweed, *Genista tinctoria*, together with some leguminous pods, probably also of this plant.

Cut 37109: a thin layer in a pit with much recutting, the pit about 1.2m across and not less than 0.8m deep; black peaty loam with pieces of wood.

Context 32240

Samples 2317 and 2498 (Spot): both were samples of avian eggshell; no further analysis undertaken.

Cut 37106: a pit of about 1m across and 0.5m deep on the W edge of **37089**.

Context 28904: Fill of very dark greyish-brown, loose silty loam, with many wood fragments and occasional patches of yellowish-brown ash.

Sample 2273 (Spot): no action to date.

Sample 2293 (Spot): no action to date.

Cut 28729: a rather deep, steep-sided cut, judging from the section, with a diameter of about 2m and a depth of at least 1.8m. Samples were taken from two of the five fills.

Context 28728: dark greyish-brown amorphous and structured peat with some dark grey peaty clay loam.

Sample 1979 (Spot): no action to date.

Context 28589: the uppermost fill, of mixed grey-brown and dark grey clays with some wood fragments.

Sample 1963 (Spot): This modest collection of fly puparia were identified by J. Phipps as *Muscina* sp. (12) and *Leptocera* sp. (11).

Cut 32008: a small cut, about 1.1m across and 0.5m deep, containing two fills, the basal one of which was sampled.

Context 28987: black structured peat.

Sample 2173 (BS—VW): There were 66 taxa in this assemblage, making it one the fourth largest from the Period 4 BS series. The foodplant component was predominant, with abundance scores of 2 for apple pips and sloe stones, and a

further 11 taxa recorded, the AIV being 44 (rank 5). Nitrophile weeds in groups CHEN and SECA (annuals) and ARTE (perennials) were also very well represented. The importance of the woodland and hedgerow groups QUFA and RHPR, with large AIVs of 30 and 22 respectively, largely reflect the abundance of foodplants with an origin in this kind of habitat.

That the foodplants were partly, at least, faecal in origin, is indicated by the record of faecal concretions from this sample; wheat/rye ‘bran’ was also present.

Fly puparia were recorded from this sample; they included small numbers of several taxa, the most numerous being *Paregle radicum*.

Cut: not assigned.

Context 32440: probable pit fill in the backyard of Tenement B; a mixed ashy deposit with many charred pieces of wood. *N.B. This context has subsequently been designated as unstratified.*

Sample 2410 (Spot): of the order of a thousand *Musca domestica* puparia were recorded from this sample, all of them fragmentary, together with some charred grain.

Tenement C

Besides a large number of samples from floors, there were many from the fills cut features within the ‘west wicker building’.

Deposits associated with structure

Floors

Context 22420: an area of about 1.2 x 1.6m, though very irregular in outline, abutting **22495** and **22417**, and abutted by cuts **14533** and **22392**; underlay **22323** and overlay **22417** and **22462**; dark grey to black, compact, silty peaty loam with some wood chips—a floor.

Sample 1436 (GBA): grey-brown, crumbly, humic silt.

Plants (/M): This was an assemblage of 52 taxa, rather larger than the mean for these Period 4 samples, and with several taxa recorded at an abundance of 2: *Chenopodium album*, *Atriplex* sp(p). *Spergula arvensis*, *Anthemis cotula*, *Juncus bufonius* and *Cerealia* (waterlogged chaff fragments). There was a large component of annual nitrophile weeds in group CHEN (AIV 53, rank 3) and of cornfield weeds in group SECA (AIV 38, rank 3). These high values can be explained in part by the abundance scores of 2 listed above, but the actual numbers of taxa present (21 and 15 respectively) were also high—i.e. 40% of the assemblage was scored in CHEN and 29% in SECA.

None of the other groups was especially well represented, however, and the assemblage is in many ways typical of Period 4 samples in its mixture of taxa from a variety of habitats. An unusual record was for wild mignonette, *Reseda lutea*, recorded from rather few Anglo-Scandinavian samples from this site (in fact, from three contexts in each of Periods 4B, 5A and 5CR).

Parasitic worms: The subsample examined was barren.

Insects (/T, /1 (3kg)): The /1 subsample was submitted to ‘detailed’ analysis. A large assemblage of beetles (and a single bug of the groups included in calculation of main statistics) was recorded (N = 263, S = 92); there were in addition large numbers of fragmentary fossils which could not reasonably be named or quantified even in a detailed analysis. Diversity was moderately high ($\alpha = 50$, SE = 5) and there was little of note about the main statistics bearing in mind the archaeological interpretation of the layer. Decomposers were important (% N RT = 70) and the taxa generally associated with drier habitats were well-represented (% N RD = 23; NRD as % NRT = 32). The diversity of the decomposer component was fairly low (α RT = 20, SE = 2), although such values are not unusual in material from Anglo-Scandinavian Coppergate. The great

abundance of some taxa leaves little doubt that there was a breeding community of beetles, probably associated with mouldering plant remains. The woodworm, *Anobium punctatum*, was abundant (19 individuals), as were human fleas (at least 30). There were also ‘many’ *Chionaspis salicis* and some *Lepidosaphes ulmi*, probably from small structural wood retaining bark, or from brushwood. One pig louse, *Haematopinus suis*, was recorded. Overall, this was a very typical ‘house fauna’ assemblage, although with hints of a fouler element from *Carpelimus bilineatus* (13), *Acritus nigricornis* (5) and *Oxytelus sculptus* (4) and some others.

The fauna of the /T subsample was recorded non-quantitatively; it was reminiscent of that from the larger subsample.

Context 22462: black, silty, peaty clay loam with 5% each of ash, wood chips and charcoal; floor, towards front of E side of Tenement C, about 2.2 x 1.4m; abuts **22421** and layer **22463**, and cut by later features **22392** and **14533**.

Sample 1448 (GBA): blackish-brown, rather heterogeneous humic sandy silt with some clay silt, with wood fragments, grey clay lumps and charcoal.

Plants (/M): With 62 taxa, this was one of the larger assemblages from the Period 4 samples. Two taxa were present with an abundance of 2—*Rubia tinctorum* and *Chenopodium album*, and the presence of trace amounts of four other dyeplants gave a modest AIV for the DYES group of 16. For the most part the AIVs were unexceptional, though there appeared to be quite a large component of grassland taxa (the values for both MOAR and FEBR were rather higher than the period means) and FOOS, with four taxa, achieved an AIV of 12 (equal rank 4). There were trace amounts of ‘bran’ but no other evidence which might be taken to indicate the presence of faeces.

Parasitic worms: The single subsample examined was barren.

Insects (/T): There were few insects—only 32 individuals (semi-quantitative rapid scanning) of 24 beetle and bug taxa and a few other remains including ‘several’ fly puparia, sheep keds, a human flea and four human lice. Decomposers accounted for a very large proportion of the remains (four-fifths) and taxa coded rd were important. This appeared to be a small, but very typical ‘floor’ group.

Context 22670: a large area, at least 2 x 2m in extent, cut by a later pit, **14533** and by ?contemporaneous cuts **22557** and **22721**. The layer comprised dark grey sandy, slightly silty clay loam with 10% each of charcoal, clay, and ash, and 5% wood flecks, with some daub fragments; a floor.

Sample 1500 (BS): This assemblage was dominated by annual nitrophile weeds (group CHEN), which made up 39% of the total number of taxa recorded (49) and, with an AIV of 47, achieved the fifth highest value for this parameter for the Period 4 BS samples. Part of the reason for this large value is the presence of three taxa with an abundance of 2 (*Urtica urens*, *Chenopodium album* and *Atriplex* sp(p).), though 16 other taxa were scored in this group. Similarly, the cornfield weed group SECA achieved its sixth highest AIV (29), with 14 taxa (some of them held in common with CHEN, of course).

The AIV for FOOS was 33, so foodplants were fairly well represented; there were traces of all the four cereal genera (and traces of charred organic material tentatively interpreted as ‘burnt bread’). Only one possible flavouring (hops) was recorded, however.

Sample 1501 (GBA): dark grey-brown, crumbly ‘loam’ (a more or less humic clay silt) with inclusions of reddish ash/burnt soil and wood fragments and some dark brown and pinkish-brown clay lumps.

Plants (/M): the assemblage of 38 taxa was rather below the Period 4 mean. None of the identified plant taxa scored an abundance of more than 1 and only charcoal and mammal bone scored 2 amongst

the other components. The AIVs were, not surprisingly, mostly rather low, though flavourings in FOOS scored 9 (from three taxa—dill, celery seed and summer savory). Weeds in CHEN and SECA predominated, as so often in these deposits.

Parasitic worms: the single subsample examined was barren.

Insects (/T): The subsample was rapid scanned. There were only 14 beetles, and only *Neobisnius* sp. was represented by more than one individual. There were scarcely any other insects, and only a single mite.

In addition, a 6kg subsample was bulk-sieved after the main period of processing; there were small amounts of a variety of occupation debris, but charcoal was recorded as being predominant and mammal bone and shellfish fragments described as common.

Sample 1504: (Spot): This was a stone—a pale orange-brown (iron-rich) quartzite, perhaps an erratic from the local drift.

Context 22859: floor layer of black, loose, peaty, slightly silty clay loam, with fine twigs, hazelnut shells fragments and 10% wood chips; to E side of Hearth **22720** and N of area **22868**.

Sample 1543 (GBA): dark brown to blackish, very crumbly organic material rich in ash/charcoal, with ?contemporaneous arthropod coprolites throughout; inclusions of bone, wood, and bark fragments; some silt.

Plants (/M): The sum of 41 taxa in this assemblage was a little below average for Period 4. However, there were abundance scores of 2 for several taxa: *Diphysium*, *Corylus* nutshell, *Atriplex* and *Rubia* and for each of the several parts of *Calluna* recorded—seeds, capsules, flowers and twig fragments. Not surprisingly, there was a high AIV of 27 for NACA (rank 2 within the period) and one of 16 for OXSP (rank 3), mostly (NACA) or wholly (OXSP) accounted for by the *Calluna* records. It seems likely that the upper parts of the heather plant were being used, since taxa likely to

have arrived with pulled plants or turf were rare. Other useful plants were not common in this assemblage, though the AIV of 16 for DYES was quite high for Period 4 assemblages.

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

Insects (/T, /1 (3kg)): The /T subsample was recorded non-quantitatively, as a 3kg/1 subsample was processed on the basis of a quick inspection of the test flot. The /T subsample included a small insect assemblage, with a honeybee, three human fleas (one lacking the spinule), and two sheep keds, among other arthropods.

The /1 subsample, recorded as a 'detail' sample, gave a large assemblage of beetles (N = 262, S = 62). Diversity was low ($\alpha = 26$, SE = 3), the outdoor component modest (% N OB = 12), the decomposer component quite large (% N RT = 65) and of very low diversity (alphaRT = 10, SE = 1). Six taxa were present in moderate to large numbers: *Aglenus brunneus* (57, 22% of the assemblage); *Carpelimus bilineatus* (38); *C. pusillus* group (33); *Lathridius minutus* group (26); a Euplectini sp. (16) and *Xylodromus concinnus* (7). Doubtless these, and many of the rarer taxa, were autochthonous, indicating the presence of mouldering slightly damp organic matter. The outdoor component included three each of a *Meligethes* species, *Phyllotreta nemorum* group and a second *Phyllotreta* species; these and most of the other outdoor species may have lived on the site if there was open ground with patches of weeds.

Non-beetles included 'several' fly puparia (including fragments of *Melophagus ovinus*, of which there was also an adult), earthworm egg capsules, and a human louse.

Context 22767: black silty, peaty clay loam with 10% wood chips and charcoal flecks; a floor.

Sample 1539 (BS—VW): Apart from *Diphasium complanatum* at 2, all the 42 taxa recorded achieved an abundance of 1. The AIVs were all

very 'average' within the context of these Period 4 layers, and call for no particular comment.

Sample 1538 (GBA): very fine, crumbly, humified organic material, probably somewhat decayed since sampling; some silt, but mostly amorphous organic matter.

Plants (/M): The sum of taxa for this subsample was 53, rather above the period mean. With the exception of *Anthemis cotula* and *Lapsana communis* at 2 and waterlogged grass/cereal chaff at 3, all the taxa scored 1. There were many phytoliths (presumably from grasses) and wood chips also scored 2. Although annual weeds were most prominent within the assemblage, the score for the AIV for MOAR of 17 was quite high and may reflect the presence of grassland material (?hay) indicated by the phytoliths and culm fragments. At 10, the AIV for PLAN was also high (equal rank 4, though with only four taxa contributing to it).

Parasitic worms: A single *Trichuris* egg was recorded.

Insects (/T): This subsample was rapid-scan recorded. Insects were not abundant, only 34 individuals of 31 beetle taxa being present; other insects included a single human flea. About a quarter of the individuals were 'outdoor' forms—probably of random origin—and there were only two taxa with more than one individual, *Aglenus brunneus* (3) and *Lathridius minutus* group (2). The former were recorded as particularly well-preserved, in contrast to the generally poor condition of the other remains, and so may have been intrusive.

Context 25450: floor.

Sample 1666 (Chemical): mid red-brown, indurated clay with some grey areas; essentially burnt clay—no further analysis undertaken.

Context 22741: floor.

Sample 1515 (Spot): no action to date.

Context 22237: floor deposit of very peaty clay loam with 20% ash flecks, and wood chips and hazelnut shells.

Sample 1438 (Spot): a collection of (mostly broken) *Corylus avellana* nutshells.

Context 22524: dark grey, compact, slightly silty peaty clay loam, with 5% each of light grey clay flecks, charcoal/wood chips and ash; floor.

Sample 1522 (BS—VW): An assemblage of 51 taxa, rather above the period mean. Only hazelnut was recorded at an abundance of 2, the basic foodplants component being otherwise rather modest. Despite the presence of five taxa counted in DYES (and including *Isatis*), the AIV for this group did not reach the top 10% for Period 4 BS samples. The relatively high AIV for FIBR was accounted for by traces of hempseed, linseed and flax capsule fragments and is of limited significance. Textile fragments (presumably wool) were, however, recorded from the sample, as were bees and ?beeswax.

Sample 1511 (GBA): very crumbly, dark brown, sandy silt with wood fragments, hazelnut shell fragments, small stones and ?ash.

Parasitic worms: Two subsamples were examined; both yielded single eggs of *Trichuris*.

Insects (/T): Recording was by rapid scanning. Twenty-three individuals of 18 beetle taxa were noted; there were about three *Lathridius minutus* group and *Aglenus brunneus* and two *Xylodromus concinnus*, the remaining taxa being represented by singletons. There was nothing unusual about this as a house fauna group. Other invertebrates included two human fleas, a honeybee, a sheep ked puparium, a louse and 'several' mites.

Context 25253: floor.

Sample 1621 (Spot): large lumps of yellow-brown ?opus signinum in a grey-brown sandy silt matrix; no further analysis undertaken (returned to YAT).

Context 25285: very dark grey, compact, slightly clayey loam, with 10% charcoal, ash flecks, wood chips and hazelnut shell fragments; floor.

Sample 1633 (GBA): light yellowish-brown, unconsolidated, fine sandy silt and ash with burnt bone, limestone fragments, hazelnut shell fragments, and patches of purer silt.

Plants (/M): There was a large assemblage (64 taxa) with celery seed, waterlogged cereal chaff, hazel nutshell, nipplewort and charcoal all scored at 2. The celery seed, along with dill, opium poppy and hop, led to an AIV for flavourings, FOOS, which was the second highest for the site (though shared with several other assemblages). All four of the commonly recorded dyeplants were present in trace amounts, but otherwise the taxa were of no particular note.

Parasitic worms: The subsample examined was barren.

Insects (/T, /1 (3kg)): The /T subsample was not recorded, but the material was chosen for 'detailed' examination after brief inspection. Unfortunately it was not possible to record the /1 subsample fully because of time constraints, and a semi-quantitative rapid-scan listing was made. It produced an estimated 78 individuals of 55 beetle and bug taxa. There were abundant lice, including an estimated minimum of 100 *Damalinia ovis* and at least three *Pediculus humanus*. Scale insects were numerous, there were about 25 human fleas, 'several' sheep ked puparia (and one adult), two honeybees (at least), 'several' fly puparia and three aphids.

The beetle and bug assemblage was estimated to be of high diversity ($\alpha = 83$, SE = 19), and about a quarter of the individuals were coded 'oa' or 'ob'. Another (approximate) quarter were coded 'rd', though the majority of these were the 'many' *Lathridius minutus* group. There were also 'several' *Xylodromus concinnus* and three *Aglenus brunneus*.

This group appeared to be a mixture of 'house fauna' and, perhaps, background fauna. Many beetle remains were highly fragmented, this being

one reason why recording was not carried out fully, and these remains resembled those noted in some other floor layer samples from Coppergate. While such remains may in some cases have originated from insectivore droppings, in the present case it was noted during recording that, subjectively, the remains probably did not have such an origin.

Context 25340: very dark grey, compact, silty clay loam, with 10% wood chips, 5% ash, 5-10% charcoal and burnt clay; floor.

Sample 1646 (BS—VW): There was a large assemblage (57) taxa, though none achieved an abundance greater than 1. Dyeplants were rather poorly represented (only three taxa), foodplants moderately so (12 taxa, giving an AIV of 36). The assemblage was distinguished by yielding the only record for Anglo-Scandinavian Coppergate for the moss *Dichodontium pellucidum*, a species of damp soil and rocks by streams and rivers; it seems unlikely either to have been growing at or near the point of deposition or to have been brought to Coppergate deliberately and is perhaps most likely to have arrived incidentally with some imported material.

Context 25350: a floor of very dark grey, compact, silty loam, with many hazelnut shells, 10% each of charcoal and wood chips.

Sample 1661 (GBA): dark grey-brown, crumbly, friable and dusty (working just plastic when wet), sandy clay silt with a component of amorphous organic matter.

Plants (/T3, 3kg): The moderately large residue was about 50% mineral material (including several large butchered bone fragments), the rest organic (mainly charcoal with some bark). Identifiable plant remains were quite frequent (48 taxa), with celery seed (*Apium graveolens*), fat-hen, hazelnut, *Diphysium* and chickweed all reaching an abundance 2 on the four-point scale used. Weeds were the most abundant taxa, but there was a significant component of foodplants, notably the flavourings celery seed, with summer savory and hops.

Insects (/T3): A rather substantial group of beetles and bugs (N = 190, S = 74) was accompanied by a range of other invertebrates, among which abundant human fleas stood out (33 individuals). A rather distinctive house fauna group dominated the upper ranks of abundance: *Xylodromus concinnus* (44); *Crataeraea suturalis* (15, unusually important in this assemblage); *Cryptophagus scutellatus* (10), *Aglenus brunneus* (10), *Lathridius minutus* group (9), *Cryptophagus* sp. (7), *Atomaria nigripennis* (6), and smaller numbers of several others. Sheep keds were rather abundant (8 adults), suggesting wool cleaning, and there was a single honey bee.

Sample 1664 (Spot): Bear (*Ursus*) phalanges.

Context 25598: black, silty, peaty clay loam, with ash and charcoal and 20% wood chips; floor.

Sample 1750 (GBA): dark grey (charcoal-rich), very crumbly, humic silt with large bone fragments, limestone and wood fragments.

Plants (/M): There were 45 taxa, just below the site mean. The assemblage was dominated by weeds (with *Atriplex* and *Chenopodium album* both scoring an abundance of 2) but none of the AIVs was especially large. As usual, there were dyeplants, foodplants and taxa from a variety of natural or semi-natural habitats.

Parasitic worms: A single *Trichuris* egg was recorded.

Insects (/T): The small assemblage was rapid scan recorded semi-quantitatively, 42 individuals of 36 beetle taxa being noted. There were various other arthropods, including two adult *Melophagus ovinus* (and a single puparium of this species), 'several' other fly puparia and mites, and a human flea. The main statistics were unexceptional (taking feature type and assemblage size into account). There were 'several' *Aglenus brunneus* and two *Xylodromus concinnus*; other beetles were single individuals, mainly of decomposer taxa frequent in these floors.

Sample 1758 (Spot): no action to date.

Context 22523: very dark grey silty peaty clay loam, with 10% wood chips, 5% each of charcoal, ash patches, clay flecks and limestone fragments; a floor.

Sample 1489 (BS—VW): the assemblage of 45 taxa was a little above the period mean for BS samples. Most vegetation and use groups had AIVs that were not particularly high, though there were four taxa recorded in HERB (*Genista tinctoria*, *Atropa bella-donna*, *Verbena officinalis* and *Humulus lupulus*). Four was the highest number of HERB taxa recorded for any Period 4 BS sample (or, indeed, any Anglo-Scandinavian sample from the site). The group is not clearly defined, however—many taxa not included in it but recorded from these deposits may have been used as medicinal herbs, just as the taxa scored in HERB may have been brought for other purposes, or have arrived incidentally.

Together with modest dyeplant and foodplant components, the group of woodland/woodland margin taxa is quite large, but much less significant than in many other Period 4 assemblages.

Other items recorded from the sample were bees, and some charred organic material tentatively identified as burnt bread (or some similar grain-based food).

Sample 1490 (GBA): mid grey-brown, humic, slightly sandy silt with small stones (?rotten limestone) and wood fragments.

Plants (/T3, 1.1kg): About 30% of the moderate-sized residue comprised mineral material (sand, grit and gravel), the rest mostly bark fragments. Identifiable plant remains were rather sparse, mainly weeds and dyeplants with a few probable foodplants.

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

Insects (/T, /1 (3kg): The /T subsample was not recorded, as it was decided to make a detailed study of a 3kg sample. The latter produced a large number of insects, including 474 individuals of 119

beetle taxa. Whole-assemblage diversity was rather high for such rich material ($\alpha = 51$, SE = 4), a result of the presence of a large number of taxa as single individuals. There is little doubt, however, that the more abundant taxa bred—*Aglenus brunneus* (185 individuals), *Lathridius minutus* group (35 individuals, probably *L. pseudominutus* on the basis of male genitalia), *Oxytelus sculptus* (13), *Cercyon analis* and *Acrotichis* sp. (10 each)—and a number of other taxa present in moderate numbers doubtless formed part of communities of similar habitats to these. The RT component was of low diversity (α RT = 16, SE = 1). *A. brunneus* may have been a post-depositional invader, but other species thought to form part of this community were poorly represented (only a single *Rhizophagus ?parallelocollis*). This appears to have been the fauna of mouldering organic matter, perhaps a little foul in places.

There were seven human fleas, two *Damalinia ovis* and some *D. ?ovis*, a single *D. caprae*, four *Melophagus ovinus*, ‘many’ *Chionaspis salicis* and some *Lepidosaphes ulmi* scales, and ‘many’ proctotrupoid wasps, fly puparia and earthworm egg capsules.

Sample 1495 (Spot): This was a further find of charred organic material, possibly burnt bread.

Context 22421: very dark grey silty, clayey peaty loam, with flecks of ash, mortar, charcoal and clay; floor.

Sample 1466 (BS—VW): There was a near-average number of taxa, all rare except for *Humulus lupulus* and *Reseda luteola* (both abundance 2). The only unusually high AIVs were those for perennial/biennial weed communities (ARTE at rank 5, with a value of 21, based on 9 taxa) and flavourings (FOOS, rank 6).

The modest range of foodplants included traces of charred ?pea seeds.

Sample 1465 (GBA): dark (charcoal-rich) grey-brown, crumbly silt with small lumps of reddish-brown ‘soil’ with a very low organic content, some coarse sand and a little clay and ash;

limestone chips and wood fragments; plant detritus mostly very small.

Plants (/M): An average-sized assemblage of 39 taxa, with only *Chenopodium album* scoring 2 (though charcoal was recorded at 3 from the matrix). There were traces of probable faecal concretions, too, but very little other evidence for faeces from this subsample. The AIVs were all rather low or near the mean for the period.

Parasitic worms: The single subsample examined was barren.

Insects (/T): Recording was by rapid scanning. A small group of beetles was recovered (N = 40, S = 36), together with some other insects including two human fleas, a sheep ked puparium and several sheep lice. Preservation was variable and some of the remains were badly rotted. This was a typical 'floor' group, but was too small for interpretation in isolation.

Context 25270: floor.

Sample 1628 (Spot): avian eggshell; no further analysis undertaken.

Context 22200: extensive floor deposit, at least 2.5 x 1.5m, abutting later cuts *14544* and *14533*, touching *22177*; black silty peaty clay loam with 10% wood chips.

Sample 1387 (GBA): no action to date.

Context 22808: floor, of very dark grey sandy silty clay loam with 10% each of ash and charcoal flecks, and of clay.

Sample 1533 (BS—VW): The assemblage of 55 taxa was well above the period mean for BS samples, though all had an abundance of 1. The only AIV of relatively large size was that for the medicinal herb group HERB—it reached 4 (rank 2), though with only four taxa (the largest number of taxa ever contributing to this group at this site) this is scarcely a large component of the assemblage.

Sample 1534 (GBA): dark grey-brown, slightly humic sandy clay silt, with limestone fragments and some reddish-brown ?burnt clay; some traces of internal stratification.

Plants (/M): There were 38 taxa in this subsample, rather below the period mean value. All scored an abundance of only 1, though the residue yielded modest amounts of charcoal and mammal bone. AIVs were rather low, annual weeds in CHEN being the most abundant group. Celery seed, hops and summer savory constituted a group of possible flavourings, to which mint (identified only as *Mentha*) might be added. The grass leaf epidermis fragments identified from this subsample might indicate a hay component (MOAR, in which this taxon was not included, was the second largest of the 'vegetation' groups, though with an AIV of 11 and only five taxa).

Parasitic worms: The subsample examined was barren.

Insects (/T): This subsample produced a small assemblage of beetles and a single but (N, estimated by semi-quantitative rapid scanning, as 34, S = 27). There were also a few other arthropods including a sheep ked puparium. Main statistics (in as much as they may be used for such a small group) and species composition were very reminiscent of many other small groups from floor deposits at Coppergate; only *Aglenus brunneus* was recorded as more than two individuals.

Context 22726: a floor.

Sample 1525 (Spot): light yellow-grey, crumbly, silty sand or ash; no further analysis undertaken.

Context 22756: floor.

Sample 1523 (Spot): mid yellow-grey-brown, crumbly, layered, silty sand or ash, with darker lenses and traces of charcoal; no further analysis undertaken.

Context 22757: floor.

Sample 1524 (Spot): yellow-grey-brown, crumbly, sandy silt or ash; no further analysis undertaken.

Context 22758: floor.

Sample 1529 (Spot): mid yellow-grey, crumbly to indurated, silty sand with traces of small charcoal fragments; no further analysis undertaken.

Context 25267: floor.

Sample 1625 (Chemical): mid grey-brown, crumbly, sandy silt or ash; no further analysis undertaken.

Context 25282: floor.

Sample 1632 (Spot): light-mid grey-brown, crumbly, slightly clayey, silty fine sand with abundant charcoal; no further analysis undertaken.

Sample 1640 (Spot): varicoloured (light buff to blue (vivianite), with dark grey-brown and dark grey) crumbly, layered ash; no further analysis undertaken.

Context 25327: floor.

Sample 1639: (Spot): varicoloured (light yellow-grey to light-mid grey), crumbly, slightly sandy ash with traces of charcoal; no further analysis undertaken.

Context 25329: floor.

Sample 1641: (Spot): light yellow-brown, crumbly, humic, slightly sandy silt with some dark grey-brown silty sandy material and ?root fragments; no further analysis undertaken.

Context 25332: floor.

Sample 1642 (Spot): varicoloured (dark greyish-brown to black to pale pink), crumbly, sandy silt or ash, with abundant charcoal; no further analysis undertaken.

Context 25333: floor.

Sample 1667 (Chemical): light pinkish-yellow-brown, indurated clay with traces of wood fragments and vivianite; no further analysis undertaken.

Context 25881: layer of black, silty peaty loam, with 20% wood chips and 20% matted grass.

Sample 1837 (GBA): dark grey-brown, well-humified, silty detritus, with twig fragments, and patches of lighter silt or clay.

Plants (/M): Annual nitrophile weed taxa formed by far the most important group within the rather large assemblage from this subsample, with smaller components of segetals and foodplants. Wood chips were recorded at 2 on the three-point abundance scale used.

(/T3, 2kg): The rather large residue was mostly very decayed wood with bark and some finer woody detritus, and moderate amounts of sand and gravel. Wood chips were again quite frequent. For the most part the AIVs for this assemblage of 48 taxa were similar to those for the 60 taxa from the /M subsample—though smaller, the latter was more thoroughly sorted), with annual nitrophile and segetal weeds best represented, and a modest (if only poorly coherent) component of grassland taxa; foodplants were, however, rather better represented in the /M than the /T, the former having some nine taxa contributing to this category, whilst only four did so for the /T.

Insects (/T3): Invertebrates were numerous, but dominated by adult flies (possibly modern), fly puparia and mites. As for adult beetles and bugs, there were only 66 individuals of 46 taxa. There was no clear dominant ecological group (reflected in rather high diversity, $\alpha = 67$, $SE = 17$), but a component which probably exploited rather damp and slightly foul litter could be discerned among the more abundant taxa: *Anotylus complanatus* (7), *A. nitidulus* (4) and a *Stenus* species (also 4) occupied the upper ranks. There were three human fleas.

Hearth deposits

Cut 22320

Context 22152: extensive cover on Hearth **22320**, about 1m wide and 2.1m long, of compact, clean brown clay.

Sample 1440 (Chemical): mid red-brown, crumbly, sandy silt or ?ash with traces of stones 6-20mm; no further analysis undertaken.

Sample 1441 (Chemical): mainly mid red-grey-brown (mottled blue-grey), crumbly, silty clay with patches of mid grey-brown silty clay. No further analyses undertaken, but the answer to the excavators' enquiry whether there was evidence from this deposit for industrial activity appears to be a negative.

Cut 22720: a hearth.

Context 22725

Sample 1541 (Chemical): mid purplish grey-brown, crumbly, layered, silty clay, the layering and internal convolutions perhaps indicating puddling; lighter bands of silt and localised orange colouration and lenses of red-brown silt; no further analysis undertaken.

Sample 1542 (Chemical): mid purplish-grey silty clay and mid red-brown silty clay with contorted internal layering; no further analysis undertaken.

Context 22754

Sample 1547 (Chemical): mid grey-brown, crumbly, slightly clayey silt with laminated/contorted structure internally—more ?puddled clay with some silt; lumps contain layer of light reddish-brown fine sand and mid red-brown (iron-rich) material; the whole very much like redeposited river silt; no further analysis undertaken.

Sample 1548 (Chemical): mid-dark grey-brown, crumbly sandy silty clay with traces of ?ash; no further analysis undertaken.

Context 25101

Sample 1585 (Chemical): mid red-brown, crumbly, silty fine sand with lumps of red-brown contorted clay (?puddled); no further analysis undertaken.

Context 25198: perhaps the fill of a feature robbing Hearth **22720**; 40% pure clay with patches of sandy, ashy loam, 10% charcoal, 10% burnt clay and 5% wood chips.

Sample 1755 (Chemical): varicoloured (very dark grey-brown to mid grey-brown to pinkish-red), plastic to crumbly, somewhat heterogeneous, slightly clayey, sandy silt with abundant charcoal; no further analysis undertaken.

Cut 35484: sections and plans not available; no stratigraphical information but co-ordinates indicate it to have been in Tenement C.

Context 35525: mixture of very dark grey, crumbly, ashy clay loam with burnt and unburnt clay of light brown to reddish-yellow colour, and patches of olive-brown ash.

Sample 2495 (Chemical): mid brown, crumbly, rather heterogeneous sandy clay silt with yellowish lumps and traces of ?burnt soil; no further analysis undertaken.

Other deposits associated with Tenement C hearths, but without hearth cut numbers

Context 22164: dump of dark brown silty ash with a few charcoal flecks.

Sample 1381 (GBA): mid grey-brown, unconsolidated sandy silt with traces of wood and some small bone fragments; no further analysis undertaken.

Context 25069: layer associated with hearth.

Sample 1581 (Chemical): mid grey-brown, crumbly, sandy silty clay with patches of ?soot; no further analysis undertaken.

Context 25134: layer associated with hearth.

Sample 1749 (Spot): mid-dark red-brown plastic to crumbly, slightly sandy clay silt (burnt or just iron-stained?); no further analysis undertaken.

Sample 1753 (Chemical): mid red-brown, crumbly to indurated baked clay; no further analysis undertaken.

Context 25666: layer associated with hearth.

Sample 1777 (Spot): sample taken for identification of charcoal; it was, in fact, black, crumbly soot.

Context 25667: layer beneath hearth.

Sample 1778 (Spot): no action to date.

Fills of features within Tenement C wicker building

Cut 22556: [section not available] a scoop to the (site) SW of Hearth **22320**, towards the middle of the Tenement C wicker building.

Context 22452: very dark grey, peaty, silty loam, with 15% wood chips, 5% ash patches.

Sample 1467 (BS—VW): Of the 31 taxa recorded, two achieved an abundance of 2: *Humulus lupulus* and *Rubia tinctorum*. These were both scored in the DYES group, along with *Diphysium*, though the resultant AIV of 11 was not especially high. The assemblage was somewhat unusual in that the AIV for the annual weeds group CHEN was lower than that for two other groups—QUFA and SECA—but no particular interpretative significance can be attached to this.

Sample 1464 (GBA): fissile, dark, somewhat reddish-brown, humic clay silt, with wood and leather fragments, clasts of olive-brown clay, fly puparia, and some charcoal.

Plants (/T3, 2kg): The rather large residue contained much grit and sand (about 40% by

volume), the rest being bark and wood fragments and some charcoal. Remains of bees were quite frequent (see below) and there was a rather small assemblage (for a 3kg subsample) of identifiable plant remains, a mixture of taxa representing weed communities, of various kinds, foodplants, woodland habitats and dyeplants, though all except corncockle (*Agrostemma githago*) seed fragments and fat-hen (*Chenopodium album*) seeds were present in only trace amounts.

Parasitic worms: The single subsample examined was barren.

Insect (/T, /1): The 3kg /1 subsample gave a very large flot, consisting mainly of plant fragments. Insect preservation was good and the abundant remains included very many *Apis mellifera*, a human flea (*Pulex irritans*), 'several' lice and scale insects and fragments of more than one *Melophagus ovinus* puparium; other puparia were rather rare. Recording of beetles was by semi-quantitative rapid scanning, the number of individuals being estimated at 88, with 62 taxa. Diversity was rather high ($\alpha = 63$, SE = 20), the outdoor component quite large (%NOB = 20). Decomposers were proportionately quite numerous (%NRT = 69), with RD and RF taxa quite well represented (%NRD = 18; %NRF = 10). Diversity of the RT component was not especially low (α RT = 36, SE = 8). The most abundant beetles were *Xylodromus concinnus*, *Anotylus nitidulus*, *Atomaria* sp. and *Lathridius minutus* group, all recorded as 'several'. There was thus no clear evidence of breeding, but there were hints of 'house fauna'.

The /T subsample included many bees and a rather small number of other insects. Recording was non-quantitative.

Context 22449

Sample 1496 (Geological): a small lump of sand grains apparently cemented together in a clear, hard matrix. Sent to YAT Conservation Laboratory.

Cut 22557: towards the very N end of Tenement C, this pit was cut by the shoring; it was at least 3.3m across (E-W) and about 0.5m deep. Fenceline **22492** ran along one margin. The three contexts thought to comprise its fills were all sampled.

Context 22595: the basal fill, comprising dark grey, very silty, peaty, sandy clay, with 5% grey clay patches, 30% wood chips and some hazelnut shell.

Sample 1494 (BS—VW): A somewhat below-average assemblage of 35 taxa was recovered, with *Corylus* and *Raphanus raphanistrum* pod segments/fragments the only taxa scoring an abundance of 2. The latter is perhaps an indicator that straw rather than hay was present in this deposit, an interpretation borne out by the relatively large AIV for SECA (22, 9 taxa) and an almost non-existent grassland component (AIV for MOAR = 2, 1 taxon). Some domestic food waste appears to have been present—there were eight foodplant taxa in FOOS, and traces of three dyeplants were also recorded.

Sample 1493 (GBA): dark grey-brown, organic clay silt, with wood chips, twig and plant fragments, charcoal, and some coarse grit.

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

Insects (/T): Recorded by rapid scanning. The flot was rich in fragments of bees, which were, however, less abundant than in other samples from this cut. The beetle fauna had much the same character as that from the subsample described from Sample 1486. There were 24 taxa, each with one individual, including seven classified as outdoor (%NOB = 29).

Fly puparia were also recorded, with modest numbers of *Leptocera* and *Nemopoda* spp. making up the majority.

Context 22574: very dark grey, silty, sandy clay, with lenses of brownish-yellow to olive-yellow compacted grass/straw and 10% wood chips.

Sample 1487 (BS—VW): This was another average-sized assemblage of 41 taxa, with the following at abundance 2: *Diphysium*, *Humulus*, *Genista*, *Calluna* and *Rubia*. All of these were certainly or probably dyeplants, and the AIV for DYES is consequently very high at 23 (rank 2 for the Period 4 samples, but with one more taxon—six—than in any other case; the sixth taxon was *Isatis*, whose remains are in any case likely to be grossly under-represented). The only other component to be recorded in quantity was ‘bees’ (also at 2). The foodplant component was quite large (AIV 27, nine taxa), and included walnut, blackberry, sloe, linseed, and charred grains of wheat, barley, and oats. These account in large part for the fact that the AIV for woodland plants in QUFA was larger (just) than that for weeds in CHEN and SECA, a rather unusual occurrence.

Sample 1485 (GBA): fine, reddish, decayed twig fragments, with wood and bark. Very little silt matrix. (The /M subsample was described as unconsolidated twig fragments.)

Plants (/M): A little below average at 45 taxa, this sample also had a large dyeplant component but rather few foodplants. The AIV for DYES of 23 (by coincidence, the same as for Sample 1487) was also at rank two within its sample series. Unlike the BS sample, however, there was a very large component of *Calluna* (the smaller parts of which might be expected to be recorded more readily from a small subsample); thus flowers, shoot, twig and root-twig fragments all scored 2; an additional taxon scored in OXSP, and helping to make the AIV for this group unusually large (19, rank 2), was *Erica tetralix* (leaves). The rather high AIV for grassland plants in MOAR (20, 6 taxa, equal rank 11) is largely accounted for in a similar way to that for NACA (based on four ‘part taxa’ of *Calluna*), through the presence of stem fragments, leaves and flowers/petals of *Genista* being scored separately in this group. Moreover, *Genista* stem fragments achieved an abundance of 3—these and the *Calluna* were evidently the twigs described from the sediment before analysis. A further possible dyeplant present in moderate amounts was *Humulus* (2), and there were modest amounts of bark and bast fragments. Amongst the mosses,

Thuidium tamariscinum, *Pseudoscleropodium purum* and *Hylocomium splendens* all scored 2; they, and the less common taxa, account for the high AIVs for the woodland floor (WOOF), grassland (GRAS) and heathland/moorland (HEMO) groups (the AIVs for the last two groups were rank 1 within this series of Period 4 samples). They may have been brought incidentally with the heather, or collected deliberately for some purpose.

The non-plant components of this sample included bees, fish scales, fly puparia and leather fragments.

Parasitic worms: Two *Trichuris* eggs were recorded.

Insects (/1): This 3kg subsample produced an extremely large flot—400 cm³ or more—which consisted almost entirely of the remains of honeybees, *Apis mellifera*. There was a single flea. Beetles were fairly numerous and there was a single bug (N = 116, S = 59). Diversity was neither especially high nor especially low ($\alpha = 48$, SE = 8), and the same was true of the proportion of outdoor taxa (%NOB = 10). Decomposers were proportionally important (%NRT = 74), with RD taxa well represented (%NRD = 35). The three most abundant taxa were classified in the latter category—*Lathridius minutus* group (14), *Atomaria* sp. (11) and *Ephistemus globulus* (8). Diversity of the decomposer component was fairly low (α RT = 22, SE = 4). Whether the more numerous taxa bred in the fill, or originated in dumped material, is uncertain, but ‘house fauna’ was abundant. (‘House fauna’ taxa are not necessarily confined to houses but, as a group, rather to the kind of somewhat dry, mouldy decomposer habitats believed to have existed in Anglo-Scandinavian wooden or wattle buildings.) There were two *Apion ?difficile* (presumably imported with the *Genista tinctoria*) and a single *Micrelus ericae* (an arrival with heathland plants).

Sample 1486 (GBA): very heterogeneous, grey organic silt, with brown organic matter, rotted wood, stones, bone and eggshell fragments.

Parasitic worms: A single *Trichuris* egg was recorded.

Insects (/T): A rather large flot contained some substantial fragments of charcoal and abundant remains of honeybees (many tens). There were also various other arthropods including ‘several’ mites and fly puparia including a few *Nemopoda* sp. and a single *Melophagus ovinus*. The sample was not very rich in beetles, and there was a single corixid bug (N = 34, S = 29). The proportion of outdoor individuals was quite high (%NOB = 21), but the other statistics were unremarkable. Six *Aglenus brunneus* were recorded, but none of the remaining taxa were represented by more than two individuals. The list included some phytophagous species which might be associated with weedy vegetation.

The /1 subsample consisted of a further 3kg processed in view of the special interest attached to the sample. Honeybees were abundant and there were ‘several’ mites and Hymenoptera, and a sheep ked. A total of 169 beetles and bugs of 87 taxa were recorded. Diversity was high ($\alpha = 72$, SE = 9). ‘RD’ decomposers were well-represented (% N RD = 22), and the most abundant taxa included a ‘house fauna’ group. There were 16 *Lathridius minutus* group, ten *Aglenus brunneus*, nine *Xylodromus concinnus*, seven specimens of an *Atomaria* species, six of a *Cryptophagus* and four *Anobium punctatum* in this category. There were also *Anotylus nitidulus* (6), *Cordalia obscura* (5), *Cercyon analis* (4), and three each of seven other taxa including *Cercyon unipunctatus*, *Ochthebius* sp. and *Monotoma bicolor*. There were three other aquatic taxa in addition to the *Ochthebius*, and a *Notaris acridulus*.

This was a somewhat unusual group—as hinted by the /T assemblage—and the mixture of ecological groups makes interpretation difficult.

Context 22490: the uppermost fill, a black, peaty, very silty clay loam, with 15% wood chips.

Sample 1468 (BS—VW): This assemblage (27 taxa) was rather small for Period 4, with only five (19%) foodplant taxa and 3 (8%) dyeplants. Amongst the vegetation groups, QUFA (unusually) achieved a higher AIV than CHEN, though the

actual values for this parameter were modest within this series of samples. Only *Humulus lupulus* and *Rubia tinctorum*, with an abundance of 2, were present in more than trace amounts. Bees were again recorded from this context.

Sample 1469 (GBA): slightly crumbly, dark greyish-brown or reddish-brown comminuted plant remains, with some silt and eggshell fragments, and ?concretions; puparia present.

Plants (/M): The subsample was not recorded in detail, but a range of macrofossils, including wood chips, moss, *Calluna* shoot fragments, dyeplant material, cereal caryopses and linseed were noted by P. R. Tomlinson from this subsample.

(/T3, 2kg): This subsample, examined some years after the main phase of analysis, yielded a moderately large residue of which about 60-70% was organic material (bark, charcoal and a rather large range of identifiable remains—61 taxa—those recorded in more than trace amounts including the dyeplants *Diphysium*, *Genista*, *Rubia* and also wood sorrel, *Oxalis acetosella*). Indeed with these somewhat higher scores for dyeplants, this group was the best represented after annual nitrophile weeds, with woodland taxa forming the third most significant group. As noted from the /M subsample, remains of heather were present (capsules, flowers and root/twig fragments); these may also be part of the dyeplant component, though not scored as such in the data analyses. Remains of bees were also quite prominent in this subsample (see further below).

Parasitic worms: A single subsample was examined and found to be barren.

Insects (/T): The flot contained a small number of well-preserved beetles (N = 23, S = 22, recorded fully quantitatively), together with other insects including abundant fragments of honeybees, *Apis mellifera* (probably more than 20 individuals), two lice, and a flea. There were also some fly puparia, mainly *Leptocera* and *Nemopoda* spp. Amongst the beetles, only a *Philonthus* species was represented by more than two individuals. Main statistics were generally unexceptional, although

over a quarter of the individuals were ‘outdoor’ taxa. The assemblage was probably essentially background fauna, perhaps including some beetles attracted to the deposit.

The /1 subsample is the object of much uncertainty. Records show it to have been sorted, but there is no trace of the material picked out. There were no bees remains in the flot jar in 1990, although records suggest that huge numbers were present. There seems no reason to doubt that the flot belongs to this subsample; it is almost impossible to see how labels could have been exchanged. The flot included *Oxalis* abscission plates, holly leaf fragments, and much moss. There were ‘many’ fly puparia and a few beetles.

The restricted beetle fauna from the subsamples from this cut did not suggest that any species bred in the pit, and there was certainly no evidence for foul matter. The assemblages were probably largely background fauna, perhaps with some invaders of decomposing matter.

The bees from this pit are, of course, of considerable interest. They were certainly honeybees, and their numbers were large enough to suggest either that hives were kept on the site, or that their contents, including bees, were brought to it to be processed. The former seems more probable.

Cut 25108: a cut beside Hearth 22320, about 1m across and 2m long; cut by 22557 to N. Two layers, the upper 22909, the lower 22910.

Context 22910: dark brown to very dark grey, very compact, silty organic material.

Sample 1557 (GBA): no action to date.

Context 22909: black, silty, sandy, ashy, peaty loam, with wood, charcoal flecks and patches of burgundy organic material.

Sample 1556 (Spot): This small sample was composed almost exclusively of root fragments of madder, *Rubia tinctorum* with a little fine silt or

clay. The mineral component was reminiscent of fuller's earth but was not positively identified as such. The 'burgundy' colour is thus easily accounted for. A total of 11 taxa was recorded from a 0.1kg subsample examined in detail—too small for further interpretative discussion.

Cut 25105: this cut lay a little to the (site) S of **25108**, and was also cut by **22557**. It was no more than 1.4m across and 0.3m deep and contained two fills.

Context 25110: the lower fill, a black, compact, very silty, peaty clay loam with patches of matted grass and straw, and wood chips.

Sample 1592 (BS—VW): All the 40 taxa in this sample were scored with an abundance of 1. None of the AIVs was especially high, even for the largest groups (FOOS and CHEN), though that for MOAR was 14, rank 7 within this series of samples. This may perhaps relate to the 'matted grass' described by the excavator, and signify the presence of hay or undigested grassland remains from herbivore dung. There were only six taxa in this group, however, of which some, like *Genista* probably arrived at the site for other reasons, so the evidence for 'hay' is not especially good.

Sample 1591 (GBA): mid to dark grey slightly sandy organic silt with patches of compressed plant material; wood and rotted wood fragments, charcoal, eggshell, bark, brick/tile, twigs and moss.

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

Insects (/T): The rather large flot contained quite a lot of charcoal. Preservation of insect remains was good and fossils quite abundant. Recording was by semi-quantitative rapid scanning and the number of individuals estimated as 62, with 40 taxa. Diversity was in the middle of the range ($\alpha = 49$, $SE = 12$) and the outdoor component small (%NOB = 6). Decomposers were about normally represented (%NRT = 74), with taxa preferring relatively dry conditions important (%NRD = 24). There was

only one individual from a foul matter taxon (an *Aphodius* sp.).

The most numerous taxa were *Carpelimus fuliginosus* and an *Atomaria* sp. ('several' of each), followed by *Mycetaea hirta* (3). Other taxa were represented by one or two individuals. The assemblage probably included a breeding component associated with mouldering (not foul) organic remains, not surprising within a structure of this period.

There were also 'several' mites and a *Melophagus* pupa among the small number of other arthropods.

Context 25104: immediately overlying **25110**; black, peaty, silty, sandy, ashy loam, with patches of pale yellow ash and 5% charcoal.

Sample 1588 (BS—VW): A somewhat larger assemblage (49 taxa) was recovered from this sample, though with similarly unremarkable AIVs. Though five taxa were scored in the DYES group, the AIV was only 13, only a little above the mean for the Period 4 BS samples. Dyebath waste was clearly not a major component of this fill layer. The 'grassland' component seen in the sample from **25110** was not evident here.

Sample 1587 (GBA): blackish-brown, humic silt, including some fairly coarse plant detritus, with large lumps of buff wood ash containing charcoal.

Plants: not recorded, but the flot from subsample/1 included moss, *Oxalis* and holly.

Parasitic worms: The subsample examined was barren.

Insects (/1, /T): The flot from the 3kg /1 subsample included abundant beetles and some bugs ($N = 243$, $S = 101$). Diversity was high ($\alpha = 65$, $SE = 7$). The outdoor component was of about normal size (%NOB = 13). Coded decomposers (RT) accounted for 57% of the assemblage, but there were many individuals of uncoded taxa likely to be found in decomposer habitats. The RD and RF components were unexceptional and diversity of the

RT component moderately low (α RT = 25, SE = 3).

The most numerous species was *Aglenus brunneus* (27). There were 17 individuals of an aleocharine, probably *Atheta deformis* (definitely identified male genitalia of this species were present); this beetle is associated with 'marshy places' according to Fowler (1888), but also with compost. (Genitalia of *A. deformis* have been found several times in Anglo-Scandinavian deposits at Coppergate, so it may have been one of the commoner aleocharines at that period.) The distinctive aleocharine 'X' (subsequently identified as *Cratarea suturalis*) was also abundant (15 individuals). This taxon may include more than one species when the site as a whole is considered, but many samples had numerous individuals of what was clearly a single species thus recorded. There were 13 *Xylodromus concinnus*, 12 *Lathridius minutus* group, and six each of *Anotylus complanatus*, *Cryptophagus scutellatus* and a *Cryptophagus* sp.

About 15 human fleas were present, and there were 'several' lice. There were 'many' fly puparia of more than one kind (the majority of those identified were Sepsidae sp.), 'several' mites and bees, 'many' scale insects (including *Chionaspis salicis* and *Lepidosaphes ulmi*), an adult sheep ked, and various other arthropod remains.

This assemblage was typical of house floors at 16-22 Coppergate and offered no special evidence concerning the use of the cut.

The /T subsample was only examined rapidly. There were 'several' fly puparia, a human flea, a sheep ked, a modest group of beetles and a few other remains.

Cut 22831: a shallow, oval hollow about 2.3 x 1m across and about 0.35m deep, containing a series of about five fill contexts, recorded as two separate sequences.

Context 22868: the lowermost sampled context, the third layer from the bottom; black, loose,

fibrous peaty, silty, clay loam, with large patches of olive ash.

Sample 1545 (BS—VW): Though this was one of the smaller assemblages from the Period 4 BS sample series (31 taxa), there were abundance scores of 2 for the following: *Diphasium complanatum*, *Corylus avellana*, *Malus sylvestris* (seeds) and *Rubia tinctorum*. The AIVs for DYES and FOOS were thus rather high, though not exceptionally so. The remainder of the assemblage comprised the weeds, woodland plants and so forth seen repeatedly in the samples from these deposits.

Sample 1549 (GBA): dark brown, crumbly, slightly humic, slightly clayey silt with many wood fragments.

Plants (/M): The assemblage of 45 taxa was a little below the period mean. Most were recorded with an abundance of 1, but *Calluna* scored 2 for several 'part taxa'—seeds, capsules, flowers, shoot fragments and twig fragments—and *Corylus* also scored 2. There was large component of *Rubia* (score 3), and this, together with *Diphasium*, *Isatis*, *Genista* and *Humulus* accounts for the rather large AIV of 19 (rank 6) for DYES. The records for *Calluna* are reflected in the high AIV for NACA (30, rank 1), to which no other taxa contributed (though the rank 1 AIV of 26 for OXSP is based on seven 'taxa'—the five part taxa of *Calluna*, plus capsules and flowers of *Erica tetralix*, indicative of wetter heaths and bogs rather than dry heaths and moors.

No other remarks are called for, except to comment on the rather long list of 'other' components of the sample. Charcoal was recorded at an abundance of 2, with trace amounts of bark and wood fragments (including wood chips), mammal bone (including burnt fragments), fish bone and scales, fly puparia, leather and mussel shell fragments and the calcareous red alga, *Corallina*, this last probably brought with shellfish.

Parasitic worms: The single subsample examined was barren.

Insects (/T): the flot was small and gave only about 29 individuals of 24 taxa of Coleoptera (semi-quantitative rapid scan recording). These were not unusual in the context of the present site and period; only *Lathridius minutus* group was represented by more than one individual. There were 'several' fly puparia, lice and mites, a single human flea, an adult and a puparium of *Melophagus ovinus* and a few other remains.

Context 22956: the layer immediately overlying **22868**; pale yellow, compact ash with 5% charcoal.

Sample 1571 (Spot): mid yellow-grey-brown, crumbly sandy silt or ?ash; no further analysis undertaken.

Context 25097: the uppermost layer, equivalent to **25065** (*q.v.*); black, silty, sandy clay loam, with 5% each of burnt clay, clay, charcoal flecks and wood chips.

Sample 1580 (Spot): a cache of approximately 30 seeds of yellow flag, *Iris pseudacorus*.

Context 25065: the lateral equivalent of **25097**, and the uppermost recorded fill from the cut; very dark greyish-brown, silty, peaty loam, with patches of olive ash and flecks of dusky reddish material (?fruit stain); this last is evidently *Rubia*, see below.

Sample 1573 (BS—VW): A modest number of 29 taxa were recovered, though with *Diphysium*, *Rubia* and *Thuidium tamariscinum* all scoring 2. There was a fairly strong component of both dyeplants and foodplants, the remainder of the assemblage comprising weeds and woodland taxa and several other mosses (giving a rather high AIV of 11, rank 5, for SLIT—mosses of shaded rocks).

Sample 1572 (GBA): dark brown, very crumbly, slightly humic, sandy silt with many limestone fragments. There appeared to have been much decay, post excavation, by arthropods such as woodlice.

Plants (/M): Despite the strong decay noted at the time of subsampling, a respectably large assemblage of 49 taxa was recovered, with *Rubia* at a score of 3. This accounts for a good part of the moderately high AIV for DYES (only two other taxa were scored in this group), all the other group AIVs being unexceptional (though large, branching mosses were quite well represented). Like the /M subsample from 1549, there was a long list of 'other' components, including ?*Sus* tusk fragments, bone, fish scale, avian eggshell, bark, wood (including chips) and charcoal.

Parasitic worms: The single subsample examined was barren.

Insects (/T): A small flot was recovered, containing abundant pale plant fragments. There were very few beetles (N = 21, S = 20), but their preservation was quite good. Only *Lathridius minutus* group was represented by more than one individual. Input was therefore presumably small. The list had the appearance of a random selection of Anglo-Scandinavian urban fauna. Other remains included *Melophagus ovinus*, 'several' coleopterous larvae and mites and a ?*Pulex irritans*.

Cut 25941: [section not available] a 'scoop' with ?one fill

Context 25935: black, compacted, very silty, peaty layer with 40% wood chips, some wattle fragments and matted grass.

Sample 1858 (GBA): A small subsample examined by P. R. Tomlinson for vegetative plant remains was found to contain fragments of grass and ?cereal straw, wood fragments and twigs, the latter including willow (*Salix*).

Cut 22721: a scoop in the Tenement C wicker building.

Context 22636: silty, sandy, peaty loam with 10% charcoal fragments and patches of olive-brown ash and ?dark reddish-brown material.

Sample 1499 (GBA): dark brown, crumbly, slightly clayey silt with a small organic content, bone fragments, small stones and ?burnt clay; some lenses/laminations internally.

Plants (/M): With 19 taxa, this was one of the smallest assemblages from Period 4 subsamples. *Rubia* was the only taxon recorded at an abundance of 2, and this is presumably the ‘reddish brown’ material described on excavation. Charcoal and wood fragments also scored 2 and this perhaps suggests a degree of dilution of ‘identifiable’ remains by (largely) unidentifiable matrix. There was quite a wide range of ‘other’ components, besides wood and charcoal—including baked clay/daub, tile, avian eggshell and eggshell membrane and bone and shell fragments.

Parasitic worms: The single subsample examined was barren.

Insects (/1, /T): A 3kg subsample (/1) of this sample was fully processed and ‘detail’ recorded. A very large assemblage (N = 871, S = 65) of low diversity ($\alpha = 16$, SE = 1) was recovered. The number of outdoor individuals was quite small (NOB = 14) and the proportion very small (% NOB = 2). Coded decomposers made up a fairly large proportion of the fauna (% NRT = 68), but several uncoded taxa probably belong with them. Diversity of the decomposer component was very low (α RT = 8, SE = 1) and RD and RF insignificant.

Three taxa dominated the assemblage—*Aglenus brunneus* (328, 38%), *Carpelimus pusillus* group (207, 24%), and *C. bilineatus* (151, 17%). Seven other taxa were quite numerous: Euplectini, *Acritus nigricornis*, *Leptacinus intermedius*, *Neobisnius ?villosulus*, *Lithocharis ochraceus*, *Lathridius minutus* group and *Anotylus rugosus*. All these ten most abundant taxa could breed, with many of the less numerous ones, in somewhat damp, mouldering organic matter, generally neither foul nor too dry, but perhaps locally fouler.

Other insects and mites were abundant—there were ‘many’ fly puparia (including Limosininae, Sepsidae and, most abundant, *Stomoxys*

calcitrans), mites, three adults and a puparium of *Melophagus ovinus*, a fragmentary louse, three human fleas, a *Daphnia ephippium* and various other remains.

The /T subsample was rapidly examined. Its fauna included ‘many’ *Aglenus brunneus* and *Carpelimus bilineatus*, suggesting a similarity to the /1 group.

Cut 25379: a cut within the area of the Tenement C wicker building, about 0.95m across and 0.33m deep. There was a single fill.

Context 25380: black, peaty, slightly sandy, ashy clay loam, with 20% wood fragments, a few patches of light grey ash and 5% fine ash flecks; some patches of matted grass in the lower parts (which should perhaps have been designated as a distinct context).

Sample 1649 (BS—VW): For the Period 4 BS samples, this was a rather large assemblage (52 taxa), though only *Diphasium* and *Corylus* achieved an abundance of 2. The AIVs were mostly rather moderate, though that for BIDE (18, based on 7 taxa) was at rank 2 for this series of samples. The AIVs for LIGN (12, equal rank 6), and OLIT (5, rank 2) reflect the presence of mosses frequently recorded in small amounts from these deposits.

There was a rare record of *Ranunculus* Subgenus *Batrachium*, scored for groups LITT and POTA, and it is tempting to speculate whether this indicates the importation of water (perhaps for industrial use in, for example, dyeing), and with which the ‘dirty ditch’ component in BIDE might also have arrived.

Sample 1648 (GBA): no action to date.

External layers on Tenement C

Alleyway deposits (between building and property boundaries)

(i) alleyway to W of Tenement C building

Context 22746: layer of black silty clay loam with flecks of clay, wood, and charcoal and patches of yellowish-brown ash, from the alleyway W of Tenement C.

Sample 1519 (GBA): mid grey-brown, crumbly, sandy clay silt with some rounded stones, lumps of purplish-grey clay, micaceous sandstone, and charcoal.

Plants (/M): There were 42 taxa, but only fat hen seeds and wood fragments reached an abundance of 2. The assemblage had no remarkable AIVs. FOOS, CHEN and SECA being the large groups for this parameter.

Insects (/T): This sample was rapid scan-recorded semi-quantitatively. The number of beetles was estimated at 60, while 33 taxa were noted; there were a few other arthropods including ‘many’ mites and a human flea. A larval apex of *?Athous haemorrhoidalis* was also noted.

Aglenus brunneus was recorded as ‘many’, and the distinctive *Crataerea suturalis* as ‘several’. There were four *Xylodromus ?concinus* and three *Carpelimus bilineatus*. This appears to have been a rather typical small floor group, despite its origin in an ‘alleyway’; perhaps the fauna originated in the adjacent structure as strays or scatter.

Context 22747: very dark grey, compact, peaty silty loam, with large pieces of wood and a few charcoal flecks; layer in alleyway W of Tenement C.

Sample 1521 (GBA): dark reddish-grey-brown, crumbly, humic silt, with wood fragments, bone and burnt bone, and fine plant detritus.

Plants (/M): With 89 taxa, this was one of the largest assemblages for this period and one of the largest overall for the Anglo-Scandinavian deposits at Coppergate. Grass or hay must have a major component of the deposit as it formed, for there were scores of 3 for Gramineae/Cerealia culm fragments and *Agrostis* caryopses and a score of 2 for unidentified grass fruits (Gramineae). Other taxa scoring 2 were *Corylus* nutshell,

Chenopodium album, *Anthemis cotula*, cf. *Cirsium arvense* (an unusual instance where sufficient material was present for identification beyond *Carduus/Cirsium*), *Juncus bufonius*, *Eleocharis palustris* and *Carex* sp(p). Amongst the other components there were abundance scores of 2 for some objects thought to be fungal sclerotia as well as for eggshell and wood fragments.

With such a large assemblage, some of the AIVs were very high. Grassland plants in MOAR (16 taxa) reached 33 and perennial weeds in ARTE scored 23—both values being the highest for the parameter for any subsample from this period and some of the same taxa will have contributed to the rank 1 value of 12 for the AIV for EPIL, too. SECA reached 41 (rank 1), CHEN 56 (rank 2), whilst the AIV for PHRA of 10 was at rank 2. Even the AIVs for FOOS and NACA were within the top 10% of values for Period 4.

Several rather unusual taxa were recorded from this sample—*Lythrum salicaria* (one of only five for the Anglo-Scandinavian deposits) and *Myosotis* (one of only 14 records), all four British species of *Sonchus*, and one or more *Epilobium* spp.

Insects (/T): Recorded by semi-quantitative rapid scanning; no account was written, but a small house fauna group was present. A larval apex of *?Blaps* sp. was noted.

Context 22748: black silty clay loam with flecks of clay, wood, and charcoal, and patches of yellowish-brown ash; a layer in the alleyway W of Tenement C.

Sample 1530 (GBA): dark grey-brown clayey sandy silt with some patches of ?ash and some wood fragments.

Plants (/M): There were 40 taxa in this subsample, somewhat below the period mean for the parameter. Three taxa were scored at 2: *Urtica dioica*, *Atriplex* sp(p). and *Chenopodium album*; the remainder were an assortment of plants typical of these urban deposits, the majority being annual weeds in CHEN and SECA. The range of useful

plants was very limited, the food component being especially small.

Insects (/T): Few insects were recorded (rapid scanning): 19 individuals of 17 beetle taxa, fly puparia (including small numbers of *Nemopoda* and *Leptocera* sp.), and a few other remains including a sheep ked. Preservation was not very good. The species list had no clear character, although all the taxa were typical of the site.

Cut 22811: a construction trench or perhaps a narrow drainage channel, immediately east of and about 0.3m away from the property boundary between the west wall of the west wicker building (Tenement C) and the east wall of the Tenement B building.

Context 22785: black silty peaty clay loam with wood, charcoal, and a few clay flecks.

Sample 1528 (GBA): dark grey-brown, crumbly, sandy clay silt with fine, light-coloured mineral flecks and patches of ash.

Plants (/M): Weeds were predominant in this rather large assemblage of 55 taxa—abundance scores of 2 for *Chenopodium album* and *Atriplex* sp(p). being reflected in the high AIV for CHEN (47, rank 6). Two other taxa scored highly: *Agrostis* sp(p). at 2 (though there was not a large component of grassland taxa with it, suggesting that it might have been one of the weedy taxa like *A. stolonifera*), and *Juncus bufonius* at 3 (accounting on its own for the AIV of 9, equal rank 2, for ISNA).

Useful plants were poorly represented in this sample, though there were traces of eggshell, fish bone and scale and oyster shell fragments in the matrix and mammal bone at a score of 2, indicating it certainly to have incorporated (?domestic) occupation debris.

Insects (/T): the small flot was rich in insects, although only a modest number of individuals of Coleoptera was recorded (by semi-quantitative rapid scanning). The number of individuals was

estimated at 51, with 34 taxa. Decomposers (RT) constituted 65% of the individuals. There were 'several' *Carpelimus bilineatus*, *Neobisnius* sp. and *Aglenus brunneus*, with one or two individuals of the remaining taxa. Outdoor forms were rare (three individuals). This group may have consisted mainly of rapid colonisers and background fauna; element of the putative post-depositional invader group were, however, present.

Non-beetles included many puparia (mainly *Leptocera* and *Nemopoda* with a single *Musca domestica*), 'several' mites, and a badly preserved flea.

(ii) alleyway to E of Tenement C building

Context 22679: a deposit of black sandy silty peaty loam, with 40% total flecking of wood, ash and charcoal, immediately outside Tenement C (in the alleyway between this and Tenement B).

Sample 1514 (GBA): dark grey, crumbly, humic silt with rotted wood, much charcoal and some coarser grit, to 5mm.

Plants (/M): There was a large assemblage (60 taxa) with several at a score of 2: *Agrostis* sp(p)., Gramineae, *Juncus bufonius*, *Lapsana communis*, *Ranunculus* Section *Ranunculus*, and with wood fragments similarly abundant. Grassland material is indicated by some of these and by the AIV for FEBR which stood at rank 3 (the AIV for MOAR was quite high, too). The other group rather well represented was ARTE (rank 6) and other weeds (in CHEN and SECA) contributed to significant AIVs for these groups, too..

Insects (/T processed): The small assemblage of beetles was recorded semi-quantitatively by rapid scanning—there were about 44 individuals of 28 taxa. Only *Aglenus brunneus* ('many') gave more than two individuals; this species presumably lived in the deposit, possibly after burial, but the remaining fauna appears to be a randomly accumulated group of taxa mostly typical of Anglo-Scandinavian Coppergate. Two human fleas, two lice, many mites, a few *Nemopoda* sp.

puparia and a ?*Blaps* sp. larval apex were noted, and some of these seem likely to have bred in the layer.

Sample 1520 (Spot): no action to date.

Context 22713: black silty peaty loam with flecks of yellowish-brown ash; wicker fragments, limestone blocks and a few tile fragments; layer in alleyway to E of Tenement C.

Sample 1508 (BS—VW): Of the 43 taxa recorded, nearly 40% were annual nitrophile weeds (group CHEN), nearly 30% cornfield weeds (SECA), though neither of the AIVs for these was especially high. For the rest there were dyeplants and foodplants, all in small amounts and of the kinds regularly recorded from these deposits. Five *Melophagus ovinus* puparia were recorded from this sample.

Sample 1507 (GBA): dark grey-brown, crumbly, sandy clay silt with fine humic material, some small stones and coarse grit; quite a high charcoal content.

Insects: The /T subsample was recorded by semi-quantitative rapid scanning; an estimated 72 individuals of 38 beetle and bug taxa were noted. Diversity was estimated to be fairly low ($\alpha = 33$, SE = 7). Decomposers made up 78% of the assemblage (RT). *Aglenus brunneus* was much the most abundant ('many'), but there were 'several' *Xylodromus concinnus*, *Carpelimus bilineatus* and *Cratarea suturalis*, together with four *Cryptophagus scutellatus*. There were several *Melophagus* puparia and a human flea; other invertebrates included 'many' mites and 'several' other fly puparia and earthworm egg capsules.

Context 22714: black ashy silty peat with wicker fragments and limestones blocks; layer in the alleyway to the E of Tenement C.

Sample 1510 (BS—VW): A very 'average' assemblage, with very much the usual range of taxa, though possible dyeplants were restricted to traces of *Diphysium* and *Humulus*, and most of the

vegetation groups were represented by only a few taxa.

Sample 1509 (GBA): no action to date.

Context 25623: layer, alleyway E of building on Tenement C.

Sample 1779 (Spot): light grey, crumbly, wood ash, with moderate amounts of charcoal and traces of small burnt bone fragments; no further analysis undertaken.

Context 25748: layer of black, silty sandy clay loam, with 5% wood chips and several patches of pale red clay, in the alleyway E of Tenement C.

Sample 1794 (GBA): grey-brown, crumbly to brittle, sandy silt, with limestone fragments, tile, charcoal, and eggshell.

Plants (/M): There were 56 taxa, a quite high number. Wood and charcoal were very common in the residue, and there were abundance scores of 2 for *Ranunculus sceleratus* and *Urtica dioica*, with the remainder of the assemblage largely comprising weeds of various kinds, and some grassland taxa, and food/flavouring plants. Possible wetland taxa in groups PHRA and ALNE appear quite frequent from the AIVs for these groups (both in the top 10 ranks for the site as a whole) but the numbers of taxa were not large. The presence of cut wetland vegetation is certainly a distinct possibility for this deposit, however.

Insects: /T washed. Recording was by semi-quantitative rapid scanning. There were approximately 27 individuals of 19 beetle taxa, including 'several' *Aglenus brunneus*. Apart from a few puparia of *Nemopoda* sp., no more than two individuals of any other insects were present. This small group appeared to have originated at least in part from adjacent buildings.

Context 25790: layer, alleyway E of building on Tenement C.

Sample 1833 (Spot): charcoal, including pieces of about 15mm in maximum dimension identified as oak and ?ash (*Quercus* and ?*Fraxinus*).

Context 25887: layer, alleyway E of building on Tenement C.

Sample 1842 (Spot): light pinkish-grey, crumbly, slightly sandy ash with traces of shellfish fragments and a bright pink colour resulting from burning; no further analysis undertaken.

Other external layers on Tenement C

Context 29222: a backyard deposit on either side of the property boundary (wicker Fence **5852**) between Tenements C and D; very dark greyish-brown, structured peat; very woody, with hazelnut shell fragments, charcoal and wicker fragments. (For the purposes of analysis, this deposit is regarded as coming from Tenement C).

Sample 1896 (BS—VW): Evidently large quantities of dyeplants were being disposed of in this space between the buildings; *Diphysium* and *Genista* stem fragments both scored an abundance of 3 and there were trace amounts of *Rubia* (the AIV of 22, based on four taxa, was at equal rank 3 for this series of samples).

The only other taxon to score more than 1 was *Corylus* (at 2), and there was a modest component of foodplants, including charred *Vicia faba* and cf. *Pisum sativum*. With an AIV of 17 (rank 4), the grassland group MOAR was unusually well represented. The five taxa included in this group are *Genista*, *Heracleum sphondylium*, *Pastinaca*, *Ranunculus* Section *Ranunculus* and *Eleocharis palustris*, which do not form a particularly coherent component, however.

Sample 1895 (GBA): no action to date.

Sample 1909 (GBA): no action to date.

Context 29467: a layer of very dark grey clay loam, with 60% total of charcoal pieces and fragments, burnt daub, tile and patches of pink

clay; about one-third of distance from N to S of site, to rear of wicker buildings, and up to about 0.11m thick.

Sample 1940 (Spot): glassy, vesicular fragments, passed to YAT Finds Department.

Sample 1941 (Spot): a lump of tufa-like material, rich in organic matter or moulds/casts left by the decay of such material.

Context 35672: layer overlying fills of pit cut **35671**, to rear of Tenement C building; very dark grey silty peat with wood fragments and nutshell fragments.

Sample 2523 (GBA): P. R. Tomlinson examined a small subsample of this sample and reports that it contained many *Genista* stems, 20-30mm long, *Pteridium* pinnule fragments, apple core and seeds, some mosses (*Mnium hornum*, *Pseudoscleropodium purum* and *Polytrichum* sp.), a fragment of *Calluna*, a seed of *Agrostemma* and decayed fragments of epidermis of *Carex*, ?grass and ?straw (i.e. cereal), and some fragmentary pericarp of grass, perhaps *Bromus* sp(p).

Context 35561: an extensive layer of very dark greyish-brown clay loam, with 10% patches of burnt clay, charcoal and reddish-brown unburnt clay, abutting **35332** and **35161**; external layer.

Sample 2513 (GBA): no action to date.

Context 29844: a backyard deposit behind Tenements C/D, up to 0.15m thick, and comprising very dark grey amorphous/structured peat.

Sample 2387 (BS—VRW): Although both residue and washover from this sample were examined, and plant remains were recovered by rough-sorting, too, the sum of taxa was very small (16). *Genista* stem fragments predominated (abundance score 3), with smaller amounts of *Betula* bark fragments and hazelnut shell (both scored 2); *Genista* pod fragments were also present, along with *Diphysium* and *Rubia*. The superabundance of *Genista* accounts for the unusually large AIVs for grassland taxa (MOAR) and the minor group TRGE

(species-rich communities of scrub borders, often calcicolous), and these values should be regarded as anomalous and of no interpretative significance.

Sample 2388 (GBA): A small subsample from this deposit was examined by P. R. Tomlinson for vegetative plant remains. She recorded abundant *Genista* twigs and some leguminous pod fragments, probably also *Genista*; other identifiable macrofossils included *Ilex* (holly) leaf epidermis and ?*Calluna* twigs.

Sample 2389 (Spot): This consisted of lumps of flattened, twisted, fibrous material, perhaps tree bast, up to about 10-15mm across and 100mm long.

Context 35137: a layer to the W of Tenement C/D boundary, behind the Tenement C building; olive charcoal-flecked ash and very dark greyish-brown peaty clay loam, not less than 4 x 1.5m in extent.

Sample 2456 (Spot): avian eggshell; no further analysis undertaken.

Sample 2458 (Spot): a 'coprolite', but found to be barren of eggs.

Sample 2459 (Spot): avian eggshell with some membrane attached; no further analysis undertaken.

Context 35674: very dark greyish-brown, silty peat, overlying pit fills in **35671** and underlying **35673** (*q.v.*).

Sample 935674 (BS—VW): The assemblage of 36 taxa was very similar to that from sample *935673* (coefficient of similarity between the two assemblages was 55%); again, all the taxa scored abundance 1. No further comment is called for.

Context 35673: very dark grey silty, structured peat with charcoal flecks, overlain by **35672** and thus also overlying pit fills in **35671**.

Sample 935673 (BS—VW): There were 40 taxa in this sample (exactly at the mean for Period 4 BS samples), all of them scoring an abundance of 1. Though the AIVs were not especially large, the

most important groups represented were foodplants, dyeplants, annual weeds of groups CHEN and SECA and woodland taxa (most of the latter probably having arrived as foodplants).

Context 29528: dark reddish-brown amorphous peat with 20% fragments of organic material; about one-third of distance from N to S of site, beyond the head of Gully **21850**, behind wicker building on Tenement C.

Sample 2319 (BS—R): Only the residue for this sample was examined, the rough-sorted plant remains having been mislaid; as a consequence, though the deposit was clearly richly organic, only a rather modest assemblage of plant remains (22 taxa) was recorded. Of these, however, *Corylus* nutshell scored 3, and *Malus* seeds 2, accounting in some measure for the rather high AIV for basic foodplants (34). The moss *Neckera complanata* also scored 2, though it was the only moss taxon present. Other food remains included both *Prunus spinosa* (sloe, blackthorn) and *P. domestica* ssp. *insititia* (wild plum or bullace), *Vicia faba* (a single charred seed) and *Triticum aestivo-compactum*. The sizes of some of these plant remains were recorded.

Sample 2318 (GBA): no action to date.

Context 27452: a layer to the rear of the Tenement C building, immediately E of alignment **27605**, the property boundary between Tenements B and C; dark grey silty loam, with many patches of brown clay.

Sample 1846 (Spot): no action to date.

Sample 2093 (Spot): this sample, described by the excavators as 'twigs', was examined by ARH and P. R. Tomlinson. The charred and semi-charred plant stems with small leaves were *Genista tinctoria* (pods and flowers were recorded, as well as stem fragments and leaves), and there were also spikelets and caryopses identified as *Anthoxanthum odoratum* and *Danthonia decumbens* (perhaps grasses growing with *Genista* and collected incidentally with it).

Context 34296: dark grey peaty clay loam, dusky red in places, about 1 x 1m across and 0.12m thick, abutting wall-line on the E side of the Tenement B/C boundary and behind the buildings.

Sample 2375 (GBA): Although damaged by earthworms in store, there were high concentrations of *Rubia* root fragments in the small subsample examined by P. R. Tomlinson. Also present were *Genista* twigs and some compacted, decayed 'straw-like' material with coarse animal hairs (?from horse or cow) quite frequent within the 'straw'.

Context 34297: immediately S of **34296**, this context also lay against the wall-line between Tenements B and C, on the E side and behind the structures; it was dark greyish-brown, peaty loam, about 1.1 x 0.4m across and up to 0.1m thick.

Sample 2376 (GBA): The material was almost completely damaged by earthworm activity, but P. R. Tomlinson was able to identify twig fragments of *Genista*, *Diphysium*, *Calluna*, and *Salix*, and there were a few ?straw fragments, wood, bone and small lumps of clay.

Context 32725: an external layer of very dark brown (?peaty) silty loam, up to 0.06m, thick, immediately E of the boundary between Tenements B and C.

Sample 932725 (BS): Only the washover for this sample was examined; it yielded a modest list of 23 taxa, including one of only three identifications of wheat/rye 'bran' from Period 4B 'external layers'. It is unlikely that this represents faecal material, however, the rest of the assemblage being rather poor in foodplant taxa.

In addition, a spot sample from this context, sf *14170*, was allegedly a coffin fragment; it was oak (*Quercus*) wood.

Context 32591: layer.

Sample 2475 (Spot): a small fragment of the arsenic trisulphide, orpiment, as sample *2452* from **32443** (next entry).

Context 32443: layer.

Sample 2452 (Spot): a small fragment of the arsenic trisulphide, orpiment, as sample *2475* from **32591** (previous entry).

Context 28962: a layer in Tenement C (and behind the structure) of very dark grey, peaty, silty loam; up to 1.6 x 0.4m across and up to 0.07m thick, abutting E tenement line between B and C, abutting **28961**, **28963-4** and **28883**.

Sample 2175 (GBA): P. R. Tomlinson examined a small subsample of this sample for vegetative plant remains and recorded that it was compacted and highly organic, but that there were only very small fragments of plant material, perhaps indicating that it was well humified. It was not thought to be human faecal material, though it was possible that some straw fragments were present. Leather fragments were also recorded.

Context 32823: an external layer of blackish, silty, clay loam, to 2.6 x 1.5m, and up to 0.15m thick, abutting alignment **36706** between Tenements B and C on E side.

Sample 2468 (GBA): A small amount of the sample was examined by P. R. Tomlinson in pursuit of vegetative plant remains. She reported that there were many wood fragments up to about 100mm long and 30mm in diameter, together with twigs of about 5-10mm diameter. The wood consisted primarily of birch and willow, but with some hazel and two pieces identified as *Rhamnus*, presumably purging buckthorn, *R. cathartica*). Leaf fragments of willow, probably *Salix cinerea* were also recorded, and the smaller stem fragments included *Genista* and *Diphysium*. The legume pod fragments could well have been *Genista*, too. Birch was represented by bud-scales, leaf fragments and twigs, besides wood and twigs. This assemblage had every appearance of being brushwood with an admixture of occupation debris including food waste and litter, perhaps all from floors—other plant remains recorded included apple pips and endocarp and an agrimony fruit, a bracken pinnule fragment and 'lots' of *Centaurea* sp. (most likely to have arrived in hay or straw). A single fly

puparium of *Fannia* sp. was also identified from this small sample.

Plants (/T3, 3kg): Subsequently, a subsample was processed in the normal way and examined for plant remains. The large residue consisted almost entirely of wood and twig fragments with herbaceous detritus and only a trace of sand. Preservation was excellent, even in material which had been in store for up to 17 years, some of the *Diphysium* stems present still bore well-preserved leaves. Overall the residue gave the impression of consisting of twig fragments with fine dicot leaf fragments, perhaps debris from brushwood? The largest component of the identifiable plant remains (of which there were 67 taxa) however, was of foodplants (including flavourings), notably celery seed and wheat/rye bran (both scored '3') and apple endocarp, ?bilberry and charred bread/club wheat grains (all '2'). Also recorded, though all in trace amounts, were leek epidermis, hazel nut, linseed, apple pips, summer savory and field bean (this last in the form of the tracheid bars which lie underneath the hilum or scar at the proximal end of the seed).

Insects (/T3): There was a modest-sized, rather mixed group of adult beetles and bugs (N = 104; S = 65; alpha = 74, SE = 14). Outdoor forms were rather well represented (% B OB = 19), although none of the outdoor species was sufficiently abundant to suggest that it formed a substantial population nearby. Indeed, only a few species belonging to any ecological group were at all common, and these appeared ecologically mixed, with house fauna (*Lathridius minutus* group, eight individuals; *Xylodromus concinnus*, *Cryptophagus* sp. and *Atomaria* sp., all four, two human fleas, a human louse, and some others) and decomposers suggesting fairly foul conditions (five *Philonthus politus*, four *Cercyon analis*, and small numbers of several others). This layer may have been somewhat midden-like, with assorted materials deposited onto the ground surface. Wool cleaning waste—perhaps, like the house fauna, deposited with floor sweepings—is testified by 15 *Damalinea ?ovis* and two *Melophagus ovinus*. The presence of

household waste is supported by the botanical evidence.

Context 28087: very dark grey, amorphous peat, about 1.8 x 1.5m in lateral extent and up to 0.14m thick; behind the Tenement C building.

Sample 1920 (Spot): a concentration of 66 *Musca domestica* puparia.

Context 37040: collapsed wattle fence (= **36710**), an external structure just inside Tenement C but outside the west wicker building.

Sample 2522 (Wood): This sample of the wickerwork had decayed in store and was too rotten to be identified and measured .

Context 937040 (number assigned by EAU): archaeology unknown, sampled at end of excavation. This may have been part of a cess pit fill.

Sample 937040 (Spot): This material lay immediately beneath **37040** but was not given a separate context number at the time of sampling; it comprised twiggy peat with some hypnoid moss—*Eurhynchium striatum*, *Thuidium tamariscinum* and *Neckera complanata*, along with wheat/rye 'bran' and eggs of *Trichuris* and *Ascaris*, indicating it to be, in part at least, human faecal material with 'sanitary' moss.

Context 28960: a layer of dark grey loamy silt, abutting **28883**, **28886** and **28961**, towards centre of excavated area; to 0.8 x 0.4m across and up to 0.03m thick; behind the structure on Tenement C.

Sample 2239 (Spot): avian eggshell; no further analysis undertaken.

Sample 2240 (Spot): a concentration of 40 *Stomoxys calcitrans* puparia.

Context 28967: very dark grey, slightly clayey, silty loam, 1.2 x 0.8m across, and up to 0.25m thick; a layer in Tenement C, abutting **28966**,

28964 and **28886**; well to the E of the E boundary between Tenements B and C.

Sample 2264 (Spot): has been recorded as a frog skeleton, though the primary source for this is not available at time of compiling this archive.

Miscellaneous layers in Tenement C

Site co-ordinates have not been recorded for these deposits and they cannot be located on plans or sections.

Context 25671: dump.

Sample 1813 (Spot): light-mid grey-brown, crumbly, sandy silt with traces of stones 6-20mm.

Context 35445: a wicker hurdle, not quite 1 x 1m, immediately S of dump **35519**, behind the Tenement C building and in the middle of the tenement.

Sample 2493 (Wood): A total of 73 pieces of roundwood was examined. Thirty-two were identified as willow (diameter 14-25 mm, mean ring count 9.8, SD = 4), 31 were hazel (10-34 mm, 12.4 rings, SD = 3.8), and five each were *Populus* (aspen or poplar; 12-19 mm, 5.2 rings) and oak (14-25 mm, 8 rings). Rather more than half the hazel rods and about one-third of the willow were slightly compressed, the remaining material being variously recorded as uncompressed or moderately strongly compressed.

Context 35486: layer.

Sample 2512 (Chemical): light-mid orange-brown, plastic to indurated, somewhat heterogeneous, silty clay; no further analysis undertaken.

Fills of pits in Tenement C

Cut 22392: [section not available]

Context 22391: black to dark olive-grey, fibrous, peaty, silty loam with matted grassy material.

Sample 1433 (GBA): described at different times as felted reddish-brown (oxidising black) peat in coherent lumps, very much like large herbivore dung, with some leather fragments, and as very dark brown well humified slightly silty amorphous organic material.

Plants (/M): A total of 47 taxa were recorded, making this assemblage an 'average'-sized one. Unusually, dyeplants were more abundant than foodplants, within the 'uses' groups, though the AIV of 10 (from 4 taxa) is actually rather modest for the Period 4 samples (the period mean for the group is 11). The 'grassy' material described on excavation was abundant waterlogged chaff and culm fragments of grass/cereals (both scored an abundance of 3, though no closer identification was possible); it is not clear, however, whether hay or straw—or both—are implicated.

Other quite abundant taxa (score 2) were *Anthemis cotula* (often abundant in Anglo-Scandinavian deposits at Lloyds Bank, 6--8 Pavement, but usually rare at Coppergate), *Juncus* cf. *articulatus* (if correctly identified, something of an indicator of grazed or mown wet grassland), waterlogged *Bromus* sp(p). caryopses, and *Carex* nutlets. Animal hair also scored 2; hair is commonly recorded in deposits of this kind, rich in 'grassy' material and perhaps indicates the presence of livestock.

Parasitic worms: The single subsample examined was barren.

Insects (/T): Rapid scan recorded, the flot was of moderate size, but contained only single individuals of ten beetles and a bug. These constituted a small, typically urban group. Other insects were rare, but there was a human flea.

Cut 35671: a rather substantial cut, up to about 1.8m wide and 1.3m deep, behind the wicker building on Tenement C, containing a series of about five fills; the pit was overlain by layers **35674** and **35673** which appeared to have slumped in as the pit fill consolidated, and then by **35672** and **35519** (q.v.).

Context 35679: the basal layer; dark grey silty clay.

Sample 935679 (BS—VW): The rather low organic content implied by the excavator's description is reflected in the modest assemblage of taxa (30) recovered from this sample. With the exception of bread/club wheat (*Triticum aestivo-compactum*) at 2, all taxa had an abundance of 1. There was, overall, a modest component of foodplants, but weeds were predominant.

Parasitic worms: A hand-collected spot find was tentatively identified as a dog coprolite.

Context 35678: immediately overlying **35679**; very dark grey structured peat.

Sample 935678 (BS—VW): The assemblage here was slightly smaller (28 taxa), though with a slightly higher proportion of 'useful' plants, including dyeplants and foodplants. Two taxa were recorded at an abundance of 2—*Iris pseudacorus* seeds and *Betula* cf. *pendula* bark fragments. The latter is perhaps most likely to have originated in timber brought to the site for a variety of purposes; the former is more difficult to explain, though local concentrations of *Iris* seeds were recorded from time to time at Coppergate and have been noted elsewhere (Hall and Kenward 1990). The record of *Iris* largely accounts for the unusually high AIV for alder carr taxa (group ALNE), though there were four other taxa, including *Alnus* (female cone axes) and *Lycopus europaeus* and it is possible that these arrived with cut fenland vegetation or perhaps arrived with water from the nearby river—they would all be likely to occur in the flotsam at the water's edge. A rare identification of *Phragmites* culm-nodes, on the other hand, perhaps points to the presence of cut vegetation (the AIV of 8, rank 2, for PHRA is based on only 3 taxa, cf. Context **35675**, below).

Context 35677: immediately overlying **35678**; brown, silty peat with wood fragments.

Sample 935677 (BS—VW): Despite the apparently more richly organic nature of this layer, the

assemblage of taxa from it was smaller (26). Of these, only *Bidens* sp(p). scored an abundance of 2, though the AIV for BIDE was not unduly inflated by this, there being only two other taxa scored with *Bidens* in it. Otherwise there was a mixture essentially of foodplants, dyeplants and weeds.

Context 35675: immediately overlying **35677**; structured peat with charcoal fragments.

Sample 935675 (BS—VW): The assemblage of 43 taxa from this sample was near the Period 4 mean for BS samples; none was present in more than very small amounts, however, and the AIVs were all rather modest, except for PHRA which was at rank 2, with an AIV of 8 (though only 4 taxa). This, like *935678*, may indicate the use of wetland resources or merely the presence of water-marginal habitats nearby (though if the latter, this rather modest proportion of PHRA taxa might be expected to have occurred regularly in the deposits).

Cut 35322: a 'scoop' at the rear of the Tenement C wicker building; at least three fills, only the uppermost of which was sampled.

Context 35323: very dark grey, sandy, organic-flecked amorphous peat.

Sample 2491 (BS—VW): A very modest assemblage of 26 taxa was recovered, of which 35% were annual weeds in CHEN and 35% annual weeds in SECA (some will have been scored in both groups, of course); none was present in more than trace amounts. Most of the elements seen in the richer assemblages from Period 4 deposits were present and no further comment is called for.

Sample 935323 (BS—W): Of the 25 taxa recorded from the washover (only) from this sample, 12 were held in common with the assemblage from *Sample 2491* (giving a Jaccard coefficient of similarity between the assemblages of 31%, a not especially high value, but typical—in the authors' experience—of replicate subsamples of a single urban archaeological deposit).

Cut 28992: a pit of uncertain dimensions, containing a single fill.

Context 28988: dark olive-grey structured peat, very compact in places.

Sample 2291 (Spot): a small cache of sloe, *Prunus spinosa*, fruitstones (much decayed, by the time they were examined, by arthropods).

Cut 37086: a 'scoop' of about 0.62m width and 0.2m depth, filled with at least five distinct layers, from one of which a spot sample was taken.

Context 32415: the second-to-lowest fill; very dark grey clay loam with large amounts of organic remains and fruit seeds.

Sample 2391 (Spot): A large cache of sloe, *Prunus spinosa* fruitstones, with three pyrenes of hawthorn, *Crataegus monogyna*. The matrix was rich in eggs of *Ascaris* and *Trichuris*.

A total of 225 whole *P. spinosa* stones was measured, giving the following results:

	length	breadth	thickness
min	5.1	4.3	3.4
max	10.7	8.3	7.8
mean	8.04	6.4	4.8
SD	1.09	0.72	0.73

These figures may be compared with those of Behre (1983) for the contemporaneous material from Haithabu, N. Germany, where the equivalent values for all the material from the site were:

min	5.8	4.4	3.6
max	11.8	10.0	7.8
mean	8.72	8.13	6.26

Cut 32190: a modest pit, about 0.9m across and 1.4m deep, and perhaps sub-rectangular in plan, and containing a complex series of fills.

Context 32189: the basal fill and a substantial layer as seen in one of the two sections illustrating this cut; very dark greyish-brown, slightly clayey, structured peat.

Sample 2334 (BS—VR): Only rough-sorted remains, and those from the residue were recorded; if there was a separate washover, it was not available. The assemblage comprised only 10 taxa, including foodplants (*Corylus*, *Prunus* spp.), dyeplants (*Diphysium* and *Genista*), and moss (*Neckera complanata* scoring an abundance of 2).

There were abundant puparia (72 were counted), all of *Stomoxys calcitrans*

Sample 2336 (GBA): two subsamples examined for parasites were both barren.

Context 32252: probably equivalent to **32186** and therefore lying between **32187** (itself overlying **32189**) and **32184** (immediately beneath **32185**); mixture of black structured peat and very dark greyish-brown amorphous/structured peat.

Sample 2331 (BS—W): Only the washover from this sample was available; it gave a modest assemblage of 27 taxa, all in small amounts. Unusually for these BS samples, but perhaps a function of the lack of rough-sorted remains, foodplants were very poorly represented (only one taxon: *Linum usitatissimum*). Dyeplants were rather more common (three taxa), but the bulk of the assemblage (41%) comprised weeds in CHEN, with many SECA (30%). Interpretation of the nature of the fill is clearly not straightforward.

Sample 2330 (GBA): no action to date.

Sample 2335 (Spot): a lump of vesicular tufa (to 120 x 70 x 40mm) with impressions of leaves and some calcium carbonate-replaced moss.

Context 32185: above **32252** and separated from it by **32184** (the latter was not sampled).

Sample 2324 (BS—VW): a mixture of foodplants, dyeplants, weeds of various kinds, and woodland plants of no particular character or interpretative

significance, although the number of taxa was quite large (41).

Sample 2323 (GBA): dark grey (yellowish in places) clay silt, with much organic detritus.

Plants: A small subsample of this sample examined for vegetative plant remains by P. R. Tomlinson was found to consist almost exclusively of small fragments of flax (*Linum usitatissimum*) stem—shives from the processing of flax stems for fibre extraction. Another small subsample consisted mostly of chaff of oats *Avena* sp. (presumably cultivated oats, *A. sativa*). Clearly several kinds of waste were being deposited in the pit. The flax waste was rich in fly puparia: a subsample examined by J. Phipps yielded 33 *Musca domestica* and 18 *Stomoxys calcitrans*.

The 2.5kg insect subsample was scanned for plant remains; there was a very large assemblage (76 taxa), with flax stem fragments predominant (abundance score 3, and giving a very high AIV for FIBR of 13). Also well represented (score 2) were stem fragments of *Diphysium* and rachis of *Pteridium*, stems of *Genista* and ‘seeds’ of *Apium graveolens* and *Anthemis cotula*. Wood fragments were abundant in the residue, with modest numbers of fly puparia and earthworm egg capsules.

Grassland plants were rather abundant, the AIV for MOAR being 26 (rank 3), though list contains some rather disparate elements that are perhaps unlikely to have been brought together with imported hay or turf. The presence of bracken rachis and pinnule fragments bolstered the AIV for the heath/moor group NACA, to which three part-taxa of *Calluna* also contributed. Grassland and heathland/moorland mosses were also more common than the average for these samples (in fact 2.3 and 2.0 SDs above their respective means for the period as a whole).

Foodplants were rather poorly represented in the sample, though wheat/rye ‘bran’ was recorded; of the larger rosaceous fruits, only *Rubus fruticosus* was present.

Parasitic worms: Three subsamples were examined; each gave a trace of *Trichuris* eggs.

Insects (/T): Examined by rapid semi-quantitative recording, the small flot consisted mainly of insect fragments. There were ‘several’ puparia (numerous *Musca domestica* and *Stomoxys calcitrans*), ‘many’ mites and individuals of the small earwig *Labia minor*. The number of individuals was estimated to be 58, and 25 taxa were noted. Diversity was low ($\alpha = 17$, SE = 4) and the proportion of outdoor individuals very low (%NOB = 3). Decomposers formed the greater part of the assemblage (%NRT = 84) and were of low diversity ($\alpha_{RT} = 9$, SE = 2). There were ‘many’ *Oxytelus sculptus* and ‘several’ *Carpelimus bilineatus*, *Monotoma longicollis* and *Anthicus floralis/formicarius*. *O. sculptus*, *M. longicollis* and the *Anthicus* probably bred in somewhat foul mouldering plant remains and some of the other taxa would be at home in such habitats.

The 2.5kg /1 subsample was processed on the basis of inspection of the /T subsample. A very large assemblage of beetles and a few bugs was recovered (N = 760, S = 79; ‘detail’ recording); there were also ‘many’ scale insects (*Chionaspis salicis*), beetle larvae and mites (more than a hundred of the last), two human fleas, a *Melophagus* puparium, and at least 50 *Labia minor*. Preservation was good. The diversity of the beetle and bug assemblage was low ($\alpha = 22$, SE = 1), and the proportion of outdoor individuals small (%NOB = 3; there were 23 individuals, however, so this is in part at least a dilution effect). Decomposers accounted for 88% of the individuals; neither rd- nor rf-coded taxa were particularly important. The diversity of the RT component was very low ($\alpha = 10$, SE = 1). Twenty-four taxa were represented by more than three individuals, the most numerous being two *Acrotrichis* species (291 and 66 individuals), *Oxytelus sculptus* (46), *Leptacinus pusillus* (35), *Cercyon analis* (32), *Anthicus formicarius* (30), *Carpelimus ?pusillus* and *Lathridius minutus* group (both 21), *C. bilineatus* (18), *Cercyon atricapillus* (13), *Monotoma longicollis* (12), *Falagria caesa* or *sulcatula* (11) and *Anotylus nitidulus*, *Leptacinus intermedius* and *Phacophallus parumpunctatus*

(all 10). These, and many of the other less abundant taxa, could probably have co-existed in fairly damp, mouldering, rather coarse-textured plant remains. The differences between the two insect subsamples are not surprising, and the implications of the two groups coincide.

Sample 2500 (Spot): a small sample of fine plant debris with some fly puparia; no further identification of the plant material was possible.

Context 32243: a small layer of olive ashy loam to one side of the pit, between **32245** and **32235** (neither sampled), in the upper third of the fills.

Sample 2328 (BS—VWR): Although washover and residue were examined, as well as rough-sorted remains, a modest assemblage of only 30 taxa was recovered. The washover was very distinctive, however, in having an abundance (score 3) of debris identified as vegetative remains of woad, *Isatis tinctoria*, with traces of pod fragments, and moderate amounts (score 2) of madder (*Rubia*) root fragments. Not surprisingly, the AIV for DYES was large (25, from 6 taxa)—the largest value for Period 4 BS samples and as large as the maximum AIV for DYES from small subsamples from this period (the other 3 taxa were *Diphysium*, *Humulus* and *Genista*). Interestingly, faecal concretions were also recorded (in trace amounts) from this sample; either pit received more than one kind of waste at this time, or faecal material was being used in the dyeing process (this seems unlikely—herbivore dung might be used to feed bacteria in the woad vat, but human faeces seem less likely to be useable).

There were also moderate quantities of puparia of *Musca domestica* in this sample.

Sample 2327 (GBA): light olive-grey silt (?ash-rich) with some coarse plant fragments.

Plants: A small subsample examined by P. R. Tomlinson for vegetative plant remains was found to consist largely of silty clay; plant material identified within this matrix included fragments of cereal straw, a few twigs of dyer's greenweed (*Genista tinctoria*), some rachis fragments of

bracken (*Pteridium aquilinum*), and tissue thought to be derived from the processing and utilisation of woad (*Isatis tinctoria*) leaves (see BS 2328, above).

Parasitic worms: The subsample examined was barren.

Insects (/T): The flot was quite small and consisted mostly of fine fragments of plant tissue. There were 'several' puparia, the most abundant species being *Leptocera* sp. Recording was by semi-quantitative rapid scanning, with 62 individuals of 42 taxa estimated. The main statistics were not unusual, although the decomposer component was quite large (%NRT = 76). There were 'several' *Oxytelus sculptus* and three each of *Cercyon analis*, *Cryptophagus* sp. and *Lathridius minutus* group, but no other taxa were represented by more than two individuals.

There were 'many' mites and several *Labia minor* (earwigs), and a few other remains, including a pupal *Acrotrichis* sp.

Two individuals of the grain weevil *Sitophilus granarius* were present in the flot. They were very well preserved and one possessed articulated legs, including tarsal segments. Thus, although the pit was cut into the 'natural' and thus through Roman deposits, an origin from the latter seems unlikely (preservation being too good). However, the pit was cut by a later well-shaft, from which the beetles may easily have originated.

Sample 2326 (Soil): light-mid olive-grey-brown, crumbly, somewhat heterogeneous, humic silt, described on excavation as 'green material'; no further analysis undertaken.

Tenement D

The building on the easternmost tenement contained many sampled floor and hearth deposits. The yard at the rear, however, was truncated to the east by the N-S shoring and rather few samples were collected from the limited external deposits available.

Deposits associated with structure

Cut 22813: construction trench, perhaps for wall line **22585**, the west wall of the east wicker building.

Context 22812: dark reddish-brown silty clay loam with 70% total of ash and charcoal; perhaps 0.1-0.15m thick.

Sample 1764 (GBA): no action to date.

Context 35111: part of the rear wall of the wicker building on Tenement D.

Sample 2473 (Wood): Of the 37 pieces of wood examined, all but one were hazel. They had a diameter range of 7-24 mm with a mean annual ring count of 5 (SD = 1.6 for 24 cases where a measurement could be made). The one piece of ash wood was 24 mm in diameter and had 7.5 annual rings. Thirty-three of the hazel rods and the one ash rod showed moderately strong compression, the remainder being strongly compressed.

Floors

Context 25103: floor layer, comprising very dark grey peaty clay loam with some wood flecks and a few ash flecks.

Sample 1586 (GBA): dark grey-brown to slightly reddish-brown, crumbly, slightly sandy, humic silt with hazelnut shell fragments and fragments of limestone, wood, angular stones to 50mm and ash; contamination by modern earthworms.

Plants (/M): A total of 50 taxa was recorded, close to the mean value for assemblages from subsamples of GBAs. Only two weedy chenopods and wood and charcoal fragments reached an abundance of 2. For the rest, there were weeds, woodland taxa and foodplants, none of the AIVs being especially high. Amongst the woodland plants were seeds and petiole abscission plates of wood sorrel, with holly leaves and greater

stitchwort stem fragments, a group suggestive of importation of litter from a woodland floor.

Parasitic worms: Both the subsamples examined were barren.

Insects (/T): this subsample was recorded by semi-quantitative rapid scanning. There were about 70 individuals of 41 bug and beetle taxa, and a variety of other insects as well as 'many' mites. There were 'several' fly puparia, two human fleas, and an adult and a puparium of *Melophagus ovinus*. The main statistics were unexceptional apart from a strikingly low proportion of RD (% N RD = 6). Only *Aglenus brunneus* ('many') and *Xylodromus concinnus* and *Carpelimus fuliginosus* (both 'several') were represented by more than two individuals.

Context 22440: an irregularly-shaped area, approximately 1.4 x 1.8m, abutting **22433**, **22638** (*q.v.*), and **22412**; a floor, comprising light yellowish-brown loamy sandy ash.

Sample 1446 (Chemical): mid grey-brown crumbly, sandy silt or ash with abundant charcoal; no further analysis undertaken.

Context 22638: mixed layer of burning—mainly very pale brown ash and very dark grey ashy silt with much charcoal and some slightly peaty clay loam; a floor.

Sample 1497 (Chemical): light-mid yellow-brown, crumbly, sandy silt or ash; no further analysis undertaken.

Context 22943: a long narrow area, about 3 x 0.8m, lying N and E of Hearth **30288** and inside E wall of building on Tenement D, consisting of black silty clay loam with some flecks of wood and ash.

Sample 1563 (GBA): dark grey-brown, brittle, more or less finely laminated, highly organic silt, with charcoal, eggshell fragments, some coarse plant detritus, hazelnut shell fragments and broken bone; some of the partings sandy.

Plants (/M): This was another subsample with an assemblage whose size was rather below the period mean (36 taxa). Only *Corylus* nutshell and *Anthemis cotula* achenes scored 2. Nearly half the assemblage (47%) were scored as annual weeds in CHEN. The AIVs in general were mostly rather low, though that for ARTE (20) was at rank 5. It includes a record for vervain, *Verbena officinalis* (one of only two for the Anglo-Scandinavian deposits from the site, both being for Period 4B), also scored with HERB, and two other taxa were also scored with this latter group: *Nepeta cataria* and *Genista tinctoria*.

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

Insects (/T): Recording was semi-quantitative and by rapid scanning, approximately 40 individuals of 25 beetle taxa being present. Other arthropods were present in small numbers apart from 'several' human fleas, lice (mainly *Damalinia* sp., but also *Pediculus humanus*), and scale insects. There was a single sheep ked. 'Several' *Xylodromus concinnus*, *Lathridius minutus* group and *Aglenus brunneus* were recorded, but other species were represented by single individuals only. This was a rather typical 'floor' group for this period of the site.

Sample 1564 (Spot): a single specimen of *Blaps* sp. in a matrix of mineral sediment with a little charcoal.

Context 25466: very dark grey, compact, silty loam with wood, charcoal and nutshell fragments; a floor.

Sample 1676 (BS—VR): There were only 15 taxa in this assemblage, making it one of the smallest for Period 4 BS samples, although plant remains were only obtained by rough-sorting and from a small amount of the residue, and it is possible that the washover, if it existed, had been mislaid. The assemblage, perhaps not surprisingly, given that there was a bias in favour of the larger remains, was dominated by foodplants, including *Corylus* nutshell fragments at a score of 3.

Context 25371: layer of very dark grey, sandy, very peaty loam, with 40% ash flecks; floor.

Sample 1650 (BS—VW): This sample gave an assemblage with a near-average sum of taxa of 43, dominated by weeds, but with a rather large component of woodland (QUFA) taxa (23%, AIV for 10 taxa was 21). This component included probable foods like *Corylus* and *Rubus fruticosus*, but also *Oxalis* (seeds) and *Ilex* (leaf epidermis and seeds).

Sample 1651 (GBA): (somewhat yellowish) brown, crumbly, slightly sandy silt with birch bark, hazel nutshell, small patches of ash and twig fragments.

Plants (/T3, 2kg): The moderately large residue was about 60-70% by volume coarse to fine charcoal with rotted bark and wood fragments. The remains of *Diphysium* stems and hazel nutshell (both present with an abundance score of 2 on a four-point scale) were also rather worn, though this decay may largely have been post-sampling. On the other hand, a single achene of hemp (*Cannabis*) was superbly well preserved! A total of 64 taxa was recorded.

Although annual nitrophile weeds formed the biggest single group within the identifiable plant remains, woodland taxa were important (included here were stem fragments of greater stitchwort, *Stellaria holostea*, a plant whose presence in the deposits cannot easily be explained unless it was simply gathered incidentally with other material). Food and dyeplants were also recorded, the former including dill, celery seed and summer savory (all herbs used as flavourings), as well as apple, raspberry and elder; the latter comprised *Genista* and *Rubia*, in addition to *Diphysium*.

Parasitic worms: Two subsamples were examined; one was barren, the other gave single eggs of both *Trichuris* and *Ascaris*.

Insects (/T, /T3): Some 85 individuals of 51 beetle and bug taxa were recorded by semi-quantitative rapid scanning. Other insects were varied and included one *Pediculus humanus*, two human fleas, 'several' fly puparia and adult and puparial

Melophagus. Main statistics were rather undistinguished. The four most abundant taxa were typical of ‘house fauna’ groups—*Aglenus brunneus* (‘many’), *Xylodromus concinnus*, *Cratarea suturalis* and *Lathridius minutus* group (all ‘several’).

The large invertebrate assemblage from the /T3 subsample included 150 adult beetles and bugs (but only 51 taxa), and fly puparia among which *Themira putris*, typically found in very foul material, was recognised. House fauna occupied the upper ranks of abundance: *Aglenus brunneus* (57); *Xylodromus concinnus* (12); *Lathridius minutus* group (6); *Atomaria* sp. (5), and *Ptinus fur* and *Cryptophagus scutellatus* (3 each). Several of the rarer beetle taxa perhaps suggested damper, mouldering, plant litter, but there was no evidence other than from *T. putris* that this floor was unsuitable for domestic occupation. This said, the absence of human ectoparasites is a little surprising.

Context 22655: very dark grey to very dark greyish-brown peaty clay silt, with 30% wood chips and flecks of ash and charcoal; a floor.

Sample 1503 (GBA): dark brown, very crumbly, highly organic, slightly sandy silt with a little brick/tile and wood.

Plants (/M): This subsample yielded an assemblage of 59 taxa, well above the period mean for small subsamples. Wood fragments (including chips) were well represented and charcoal was quite abundant, too. There were scores of 2 for abundance of only two identified taxa: *Diphasium complanatum* and *Papaver argemone* (the latter an unusual record in such amounts). The best-represented groups were weeds in CHEN and SECA, but their AIVs were not especially high within this group of samples. The AIV for MOAR, however, was (at 23) the sixth highest value and was based on twelve taxa, though all were present in small amounts and no clear ‘meadow’ or pasture community emerges.

Amongst the ‘useful plants’ groups, flavourings in FOOS achieved a relatively high AIV of 9 (three taxa), being represented by dill, opium poppy and summer savory. Cat-nip was also present. Foods were otherwise very restricted with ‘bran’ recorded in very small amounts.

Parasitic worms: Two subsamples were examined; one was barren, the other gave two *Trichuris* eggs.

Insects (/T): Insects were rare, and only twelve individuals of nine beetle taxa were recorded (rapid scanning). There were, however, numerous lice, including seven ?*Damalinea ovis*, four *Pediculus humanus* and one *D. bovis*. This group had the appearance of a small random extract from a typical 16-22 Coppergate house floor assemblage.

Context 22659: extensive area abutting cuts 22435, 22680, 22681, 22683, up to the shoring for the excavation between grid 79 and 80E; very dark grey to very dark greyish-brown peaty silt with flecks of charcoal and ash; another floor layer.

Sample 1527 (BS—VW): With 60 taxa, this was one of the larger assemblages from Period 4 BS samples. This was accounted for partly by rather large components of foodplants (the AIV for FOOS, with 13 taxa, was 41, the fifth highest for this series) and perennial nitrophile weeds (there were nine taxa scored in ARTE, giving an AIV of 19, also the fifth highest).

Amongst the foodplants, only *Prunus spinosa* achieved an abundance of 2, all other taxa scoring 1; the list includes apple, hawthorn, blackberry, raspberry, ‘plum’, linseed, and field bean. Flavourings are represented by dill, celery seed, summer savory and hops.

Tentatively identified beeswax was also recorded and there were traces of charred grain and of large branching mosses of the kind probably used for sanitary purposes or perhaps for bedding or stopping gaps in wooden structures.

Sample 1526 (GBA): dark greyish-brown ‘loam’ with a few stones and wood fragments.

Plants (/M): The assemblage of 37 taxa was rather below the period mean. Only *Urtica dioica* scored an abundance of 2, but there were rather large amounts of charcoal and mammal bone amongst the other components of the residue. Weeds in CHEN and SECA predominated; other groups were rather poorly represented.

Parasitic worms: Three subsamples were examined; there were traces of *Trichuris* from all three.

Insects (/T): Recorded by rapid scanning, this subsample produced a very small group of beetles—19 individuals of 17 taxa—which did not lend itself to interpretation. There were ‘several’ mites and scale insects, and a sheep ked.

Context 22896: a smallish patch of dark brown peaty loam with some wood chips, twigs and roots; a floor layer just to the E of the W wall of Tenement D, at the front of the site, bounded by Contexts **22967-8**.

Sample 1565 (GBA): dark brown, richly organic ‘compost’ with twig/wood fragments in a silty matrix; laminated in places.

Plants (/M): a little below the period mean, the 38 taxa in this assemblage included an abundance (score 3) of *Genista tinctoria* stem fragments and many (score 2) legume pod fragments, the latter almost certainly *G. tinctoria*, too. All other taxa scored 1 but there were abundant wood fragments in the residue. Separately scored parts of *Calluna*—capsules, flowers, shoot and twig fragments—account for the rather high AIVs for NACA and OXSP; otherwise, the AIVs were unexceptional and the value for DYES was only 16 (outside the top 10% of value for the parameter for this period), even with *Genista* at an abundance of 3.

Parasitic worms: The subsample examined was barren.

Insects (/T): A rather small assemblage of beetles (and a single bug) was recorded by semi-quantitative rapid scanning—with N

estimated at 62, S = 38. The main statistics were unexceptional, the proportion of decomposers (% N RT = 50) being depressed by a number of likely decomposers coded ‘u’. There were ‘several’ individuals of *Carpelimus bilineatus*, *C. fuliginosus* and a *Quedius* species. The implications of this group are not very clear. (There were two *Acritus nigricornis*—is there perhaps a positive correlation between this and the *Carpelimus*? There were ‘many’ fly puparia, including a single *Melophagus ovinus*, some *Leptocera* sp. and six *Stomoxys calcitrans*, perhaps indicating somewhat foul conditions. ‘Several’ mites, a human flea, a louse and various other arthropod remains were also recorded.

Context 22532: black, burnt organic stratified peat (grass/twigs/leaves) with some traces of ash; floor, abutting **22488** and **22536** (which in turn abut **22259**), about 1.5m N of **22469** (*q.v.*); area about 0.7 x 0.4m.

Sample 1458 (Spot): Although charred plant detritus were observed, together with wood and textile fragments, no further identifications could be made.

Context 22533: pale brown, compact ash, with a very thin layer of charcoal over 30% of its area (which was about 1.2 x 0.5m); floor.

Sample 1459 (Chemical): light-mid yellow-grey-brown and light grey-brown sandy silt or ash with traces of charcoal (the lighter component, it was thought at one point, might have been ‘fuller’s earth’, but it seems more likely that it was simply pale ash, perhaps from burnt peat); no further analysis undertaken.

Context 22460: floor deposit of about 0.5 x 0.5m, abutting Cut **22220** and layers **22450**, **22451**, **22455** and **22461**; light grey sandy ash with a few charcoal flecks.

Sample 1457 (Chemical): light-mid yellow-grey-brown, crumbly, sandy clay silt or ash; no further analysis undertaken.

Context 22890: dark greyish-brown, slightly sandy peaty loam with much ash, charcoal, nutshell and wood; a floor to N and W of Hearth **30288**, and about 1.8 x 2.8m in extent.

Sample 1560 (GBA): dark grey-brown, crumbly, sandy clay, 'ashy' silt.

Plants (/M): A somewhat below-average assemblage of 39 taxa was recovered. Only *Corylus* nutshell scored 2 amongst the identifiable plants; only charcoal scored 2 amongst the other components. The food flavourings dill, celery seed, and summer savory were all present, together with cat-nip. The record of carrot perhaps points to this plant as a further flavouring; it may not be good evidence of the use of carrot as a root vegetable.

Parasitic worms: Both the subsamples examined were barren.

Insect (/T): Recording was by rapid scanning. There were few beetles and bugs (N = 21, S = 19), and only *Lathridius minutus* group (3) with more than a single individual. Other arthropods were rare, but single adult and puparial sheep keds, a cladoceran ephippium, a human flea, and 'several' lice were recorded. This sample provided a specimen of *Abax parallelopedus*, the only one from the site.

Context 25084: a smallish patch by the shoring at the (site) N end of the excavation, up to about 1 x 0.8m, lying against Cut **22310** and layer **25085**; very dark grey silty clay loam, with fragments of wood and charcoal; floor.

Sample 1598 (BS): Amongst the 50 taxa recorded, *Diphysium*, *Rubia* and *Malus* all achieved an abundance of 2. There was, in part a consequence of this, a high AIV for DYES (equal rank 6 amongst the Period 4 BS samples), though that for FOOS was only moderately large (24% higher than the period mean). The six taxa contributing to DYES were *Isatis*, *Genista*, *Humulus* and *Agrimonia*, as well as the two taxa mentioned above.

The record of grape pip from this sample (one of only eight from the Anglo-Scandinavian deposits and the only one for Period 4) must surely represent a chance arrival with some imported commodity; it seems unlikely that a relatively large and easily recognised seed such as this would have been overlooked in the huge amount of material examined archaeobotanically from the site had it been a frequent part of the inhabitants' food or drink.

Sample 1597 (GBA): dark greyish-brown, crumbly, sandy humic silt with patches of ?ash, rotted wood; organic component generally very well decayed.

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

Insects (/T): This subsample was examined by rapid scan recording. There were few insects—the beetle and bug assemblage totalling only about 24 individuals of 22 taxa, while other remains included a sheep ked and a human louse.

Context 25643: floor.

Sample 1769 (Chemical): light-mid gingery grey-brown, crumbly, sandy silt or ash with traces of large burnt mammal bone fragments; no further analysis undertaken.

Context 22789: a grey silty clay loam with flecks of wood, ash and charcoal; floor.

Sample 1531 (Spot): a single snail shell, identified by T. P. O'Connor as *Oxychilus alliarius*.

Context 22331: floor, comprising very dark grey silty clay loam with charcoal flecks and patches of brown clay, about 0.8 x 2.8m in extent.

Sample 1443 (Spot): varicoloured (light yellow to mid-dark red-brown to light grey), crumbly to brittle to indurated (with internal contortions, perhaps suggestive of puddling), somewhat heterogeneous sandy clay silt; no further analysis

undertaken, but it seems likely that the excavators' suggestion that this was daub is correct.

Context 22893: an irregular and smallish patch of dark brown, amorphous peat with patches of light grey sandy ash, bounded by Contexts **22890**, **22897** and **22900**; a floor.

Sample 1558 (GBA): strongly purplish-brown compressed (felted) fibrous herbaceous detritus with much moss and buff silt between the laminae in a blackish sandy silt matrix.

Plants (/M): There were 53 taxa in this assemblage, rather above the period mean. A woodland component was especially prominent here, with scores of 3 for both petiole abscission plates and hairs of *Oxalis acetosella* (there were also small amounts of seeds and rhizome fragments of wood sorrel), and 3 also for holly leaf fragments, and a score of 2 for holly seeds. (These remains were also noted, together with abundant moss, in the flot examined for insects.) Other taxa present in more than small amounts were birch fruits, greater stitchwort (*Stellaria holostea*) stem fragments and the woodland mosses *Thuidium tamariscinum* and *Eurhynchium striatum*, all at 2. There were also leaf fragments and buds/bud-scales of oak, female catkin scales, male catkin fragments and buds/bud-scales of birch, fruits and female cone axes of alder, seeds of rowan, and pyrenes of hawthorn, all of which might point to the importation of woodland floor material. Some flattened circular structures about 3mm in diameter might be 'spangle' galls from oak leaves.

The AIVs of 56 for woodland taxa in QUFA and of 30 for the very similar group QUER (mainly upland oak woods on acid substrates), both at rank 1 and much higher than the next highest values for the parameters, as well as values of 26 (equal rank 2) for mosses in LIGN (and other high values for SLIT and WOOF) indicate the importance of woodland taxa in this deposit, which must surely have received large quantities of woodland moss or leaf litter containing plant remains from a woodland floor.

Other groups are poorly represented, with unusually low values for CHEN and SECA for such a species-rich assemblage.

Parasitic worms: Both the subsamples examined gave a single *Trichuris* egg.

Insects (/T): This sample was recorded by rapid scanning—there were single individuals of 20 beetle and bug taxa, 'many' mites, but few other remains. Almost a third of the taxa on which statistics are based were 'outdoor' forms, and there were specimens of the small stag beetle *Sinodendron cylindricum* and the bug ?*Drymus brunneus*, both perhaps imported from woodland habitats.

Context 25109: a floor layer; part of the surround of a hearth.

Sample 1618 (Chemical): mid pinkish-grey, crumbly, silty clay with mottled grey and orange patches, vivianite and bright red-brown flecks; probably a puddled clay, with internal contortions and gleying.

Context 22469: it was unclear from the excavation record whether this context comprised a timber or a compacted peaty layer, but unless there was confusion in the sample record the latter must be the case since a subsample was examined for parasitic worm eggs; it lay on or in **22259**, approximately 1m to the W of Hearth **22441** (q.v.); over it lay timbers **22538-41** inclusive.

Sample 1475 (GBA): (not described)

Parasitic worms: A small number of *Trichuris* eggs were recorded for the single subsample examined.

Context 22889: floor.

Sample 1582 (Chemical): highly calcareous, light yellowish-grey crumbly silt, originally thought to be fuller's earth, but now considered to be ash, perhaps from peat; no further analysis undertaken.

Context 25586: very dark greyish-brown peaty loam, with much wood and some ash and clay; floor.

Sample 1743 (GBA): no action to date.

Context 22259: very dark grey silty clay loam with charcoal flecks and patches of brown clay; a floor.

Sample 1481 (BS—VW): The assemblage of 42 taxa was very much average for this series, the AIVs all rather modest. Amongst the foodplants, the record for walnut (*Juglans regia*) was one of only eight from Period 4 BS samples (though there were even sparser records for Periods 3 and 5); hazelnut shell fragments were rather common (abundance score 2), the only taxon present in more than small amounts. For the rest, there were traces of dyeplants and representatives of a range of habitat types.

Sample 1480 (GBA): blackish-brown, undense, crumbly silt with much fine charcoal.

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

Insects (/T): Few insects were present, although there were 'several' mites. A single human flea was recorded, and there were single individuals of twelve beetle taxa.

Sample 1482 (Spot): a spot find of at least 19 avian tracheal rings.

Context 22802: floor.

Sample 1836 (Spot): a spot find of bird eggshell, not identified further.

Context 25500: a peaty, silty loam with many large wood flecks, much ash and charcoal; perhaps a floor.

Sample 1682 (GBA): mid yellow-brown, crumbly, rather heterogeneous, sandy humic silt, with much coarse woody detritus, traces of charcoal, ash,

vivianite and large bone fragments and moderate amounts of wood.

Plants (/T): With 58 taxa, this was a rather large assemblage (though the 1kg sample size may account for the higher sum of taxa than for many of the /M samples). Wood fragments scored an abundance of 3, with only *Oxalis* petiole abscission plates at 2; all the rest were present in small amounts. Annual weeds in CHEN formed the largest single group, though the AIV was not especially high. Woodland taxa (including corticolous mosses) were also rather well represented.

Parasitic worms: The single subsample examined was barren.

Insects (/T): A moderately large group of insects was recorded, including 110 beetles (48 taxa). There were 'many' fly puparia, an adult *Melophagus ovinus* and a human flea. Whole assemblage diversity was quite low ($\alpha = 33$, SE = 5), and the value for the decomposer component low (α RT = 15, SE = 3). The more abundant taxa were: *Carpelimus bilineatus* (13); *C. fuliginosus* (10); *Cercyon analis* (8); *Platystethus arenarius* (7); *Acritus nigricornis* (6); *Lathridius minutus* group (6) and an aleocharine staphylinid (4). Some of these, and some of the less abundant species, suggested that conditions were not the same as in the majority of the Period 4B floors, perhaps being considerably moister and fouler. Outdoor forms were not abundant (% N OB = 7) and there is no other evidence to suggest that the deposit formed in the open.

Context 25750: very dark grey, peaty silty loam, with much ash and wood; a floor.

Sample 1795 (BS): Though originally taken as a GBA, this sample was processed in 1981 as a BS sample. It yielded a large assemblage (59 taxa), though with only *Corylus* reaching an abundance of 2. There were high AIVs for annual weeds in groups BIDE (six taxa gave an AIV of 14, equal rank 4), CHEN (23 taxa, giving 49, equal rank 3) and SECA (15, 32, rank 4). There was also rather a high score for woodland plants in QUFA (11, 23,

rank 8), though this was partly a function of the abundant hazelnut shell fragments. Other woodland plants probably present via food remains were *Crataegus monogyna*, *Prunus spinosa*, *Sambucus nigra* and *Sorbus aucuparia*.

Context 22970: floor.

Sample 1611 (Chemical): light-mid yellow-grey crumbly calcareous ash; no further analysis undertaken.

Context 25257: floor layer; very dark grey, sandy silty, clay loam, with wood and charcoal fragments and 20% hazelnut shell fragments.

Sample 1627 (BS—VW): This was another assemblage of ‘average’ size (40 taxa), with no unusually large AIVs, though *Diphysium* and *Rubia*, *Corylus* and *Malus* all scored an abundance of 2. There was some tentatively identified beeswax in this sample, and a range of other dyeplants, foodplants, weeds and woodland/ hedgerow taxa. *Pteridium* stalk fragments may have been a vestige of floor litter, though there were only trace amounts.

Sample 1626 (GBA): dark grey-brown, very crumbly, sandy silt with bone, oyster shell and wood fragments.

Plants (/T3, 3kg): The rather large residue was only about 5% uncharred organic matter, about 20% charcoal, and the rest mineral sediment (mainly sand). In this respect it was different from the bulk of the floor deposits examined during the later phase of analysis (in 1998), which tended to be dominated by bark fragments). A wide range of identifiable plant taxa was recorded (58) of which four (*Anethum graveolens*, *Atriplex*, *Chenopodium album* and *Ranunculus sceleratus*) reached a score of 2 on the four-point scale used. The remainder comprised a mixture of annual weeds, foodplants (including wheat/rye ‘bran’) and woodland taxa with a few dyeplants. A few heather shoot tips had a bleached appearance and may have been used in dyeing prior to being discarded. Sheep keds and bees were also recorded amongst the plant remains.

Parasitic worms: Both the subsamples examined gave a single *Trichuris* and one also a single *Ascaris* egg.

Insects (/T, /T3): Recorded by semi-quantitative rapid scanning, there were not many insects in the /T subsample—about 30 individuals of 23 beetle and bug taxa and a small number of other remains including two human fleas, a puparium and an adult of *Melophagus ovinus*, and an unidentified louse. Among beetles, only *Lathridius minutus* group was represented by more than two individuals. This was probably a small ‘house fauna’ group.

Only human flies (probably modern) and mites were at all abundant in the /T3 subsample. There were only 39 individuals of 31 adult beetles and bugs. An autochthonous house fauna component was probably present, including five *Lathridius minutus* group, three *Xylodromus concinnus*, three human fleas and a human louse, and four *Melophagus ovinus* (the last suggested wool cleaning).

Context 22534: light grey sandy ash with some charcoal flecks, about 0.6 x 0.4m in extent, stratigraphically overlying **22533** and laterally between **22476**, **22480** and **22479**; just W of cut **22223** and S of timbers lying to W of Hearth **22441**; floor.

Sample 1460 (Chemical): light yellow-grey-brown, crumbly, silt. Like the lighter component of *1459* (*q.v.*), this was thought at one point to be very similar to fuller’s earth, but was probably fine ash.

Context 25923: floor along S and E side of a large cut at (site) S end of eastern wicker building; dark reddish-brown ash and silty clay loam with ‘plentiful fruit staining’.

Sample 1854 (GBA): mid brown, rather light-dark mottled, humic sandy silt, with wood, bone, ash and lighter coloured (buff) silt.

Plants (/M): There was an assemblage of 41 taxa, a little below the mean for GBA subsamples, with madder root and wood fragments both scored at 3

as abundant components of the residue; taxa scored at 2 included sedges and toad-rush, the latter perhaps arriving on muddy boots from trampled paths in the vicinity (and contributing with three other taxa to the highest AIV for the site for the pond-margin vegetation group ISNA). Other AIVs were not remarkable, the assemblage including weeds of various kinds, with woodland and dye-and foodplants.

Parasitic worms: The subsample examined was barren.

Insects (/T): Beetles were recorded by semi-quantitative rapid scanning. There were about 36 individuals of 27 taxa, including 'several' *Lathridius minutus* group and three *Xylodromus concinnus*; remaining taxa were mostly decomposers represented by single individuals. A human flea, single adult and puparial *Melophagus ovinus* and other fly puparia (including quite large numbers of *Nemopoda* sp.) were also noted. This appears to have been a small 'house fauna' group.

Floor deposits without co-ordinates

Context 22656: ?floor.

Sample 1517 (Chemical): light yellow-grey-brown, crumbly, sandy silty ash; no further analysis undertaken.

Context 22680: floor, a patch overlying **22659**.

Sample 1502 (Chemical): very dark grey-brown, crumbly, slightly sandy, humic silt with traces of wood fragments, including ?wood chips; no further analysis undertaken.

Context 22894: floor.

Sample 1559 (Chemical): light-mid grey-brown, crumbly, somewhat heterogeneous, slightly clayey silty sand; no further analysis undertaken.

Context 22946: floor.

Sample 1562 (Chemical): mid-dark grey-brown, crumbly, sandy silt with abundant charcoal and some wood chips; no further analysis undertaken.

Context 22954: floor.

Sample 1566 (Chemical): light yellowish-grey, crumbly silt, ?ashy; no further analysis undertaken.

Context 22955: floor.

Sample 1567 (Chemical): mid-dark grey, crumbly, sandy silt with abundant charcoal and some ash lenses and hazelnut shell fragments; no further analysis undertaken.

Context 22962: floor.

Sample 1584 (Chemical): light-mid yellow-brown, crumbly, slightly sandy silt with traces of charcoal and wood chips; no further analysis undertaken.

Sample 1590 (Spot): 28 avian tracheal rings.

Context 22964: a floor, described by the excavator as 'a fruity little number; very dusky red'.

Sample 1583 (Spot): this was a concentration of root fragments of madder (*Rubia tinctorum*), presumably material discarded from a dyebath; the red colour, often described on excavation as being '?fruit' was very typical; no further analysis undertaken.

Context 22971: floor.

Sample 1594 (Chemical): light grey, crumbly, somewhat heterogeneous sandy silt with traces of stones 2-20mm and of wood fragments; no further analysis undertaken.

Context 25066: floor.

Sample 1577 (Chemical): light grey, crumbly, silty sand or ash with traces of charcoal and ?mortar; no further analysis undertaken.

Context 25067: floor.

Sample 1578 (Chemical): light yellowish-grey, crumbly, silty sand with abundant charcoal; no further analysis undertaken.

Context 25125: a floor deposit lying against the E side of the Period 5A Alignment **14801** and to the S of and overlying **25084**, and W of **22943**; very dark greyish-brown peaty silty clay loam, with 30% wood fragments and charcoal fragments; about 1 x 1m in extent.

Sample 1593 (Spot): 28 avian tracheal rings.

Context 25126: floor.

Sample 1589 (Chemical): light pinkish-grey, crumbly, sandy silty clay—perhaps ‘natural’ drift; no further analysis undertaken.

Context 25245: floor.

Sample 1617 (Chemical): mid grey to grey-brown to purplish-grey to light orange-brown, crumbly to indurated, slightly silty clay with traces of wood chips; perhaps puddled clay; no further analysis undertaken.

Context 25425: floor.

Sample 1680 (Chemical): light grey, crumbly, slightly sandy silt or ash; no further analysis undertaken.

Context 25431: floor deposit of black, compact, peaty silt loam, with wood and charcoal.

Sample 2465 (Spot): a high concentration of fly puparia, mostly (63) *Musca domestica*, with a few (4) *Stomoxys calcitrans*.

Context 25496: floor.

Sample 1681 (Chemical): light yellow-grey-brown, crumbly, slightly sandy ash.

Originally thought to be a fine clay mineral, like fuller’s earth, this is now regarded as merely ash, perhaps from burnt peat; no further analysis undertaken.

Context 25498: floor.

Sample 1689 (Chemical): light greenish-grey, crumbly, sandy silt or ash with traces of charcoal.

Context 25499: floor.

Sample 1686 (Chemical): light grey-brown, crumbly, sandy silt with moderate amounts of charcoal; no further analysis undertaken.

Context 25583: floor.

Sample 1726 (Chemical): light grey wood ash with abundant charcoal; no further analysis undertaken.

Context 25628: floor.

Sample 1768 (Chemical): mid grey-brown, crumbly, sandy silt with abundant charcoal and moderate amounts of large bone fragments, and a distinct ashy component; no further analysis undertaken.

Context 25662: layer of black, sandy, peaty loam with a little charcoal; a floor.

Sample 1770 (Chemical): very dark grey, crumbly, humic slightly sandy silt, with traces of large bone fragments, ?shellfish and lumps of natural clay; no further analysis undertaken.

Hearths and associated deposits of Tenement D

Cut 22441: hearth.

Context 22482: small patch of dark yellowish-brown sandy ash with a few charcoal flecks, at S end of hearth.

Sample 1450 (Chemical): light-mid yellow-grey, crumbly, slightly sandy ash; no further analysis undertaken.

Context 22483: layer abutting **22482**—another small patch, here a black silty peaty loam with much charcoal, ash, and wood flecks.

Sample 1451 (Chemical): dark grey-brown, crumbly, humic, slightly sandy silt with traces of hazelnut shell; no further analysis undertaken.

Context 22493: small patch of dark brown, compact ash, with a few charcoal flecks.

Sample 1452 (Chemical): light-mid yellow-grey-brown, crumbly, sandy silt or ash with traces of charcoal; no further analysis undertaken.

Context 22494: small patch of dark brown compact silty ash with charcoal.

Sample 1455 (Chemical): mid grey, crumbly ash with some lighter patches; no further analysis undertaken.

Context 22496: small patch of black, compact burnt silty loam with charcoal flecks and a little ash.

Sample 1456 (Chemical): dark grey, crumbly, layered, rather heterogeneous, sandy silt with abundant charcoal and much lighter ash; no further analysis undertaken.

Context 22525: a modest area of light grey, compact ash with charcoal flecks.

Sample 1461 (Chemical): light yellow-grey to black (and gradations between), crumbly, layered, rather heterogeneous sandy silt or ash; no further analysis undertaken.

Context 22526: a modest area of brown, compact ash with very little charcoal.

Sample 1462 (Chemical): varicoloured—light grey to light-mid yellow-grey-brown, crumbly, slightly layered (within lumps), slightly sandy silt or ash with modest amounts of charcoal and much ash; no further analysis undertaken.

Context 22537: smallish patch of very dark greyish-brown slightly sandy ash, with charcoal.

Sample 1463 (Chemical): light-mid yellow-grey, crumbly, sandy silt or ash, with traces of charcoal

and some lighter grey patches; no further analysis undertaken.

Context 22543: smallish patch of black silty peaty loam with much charcoal and greyish-brown ash.

Sample 1471 (Chemical): dark grey, crumbly, sandy silt or ash with abundant (mostly fine) charcoal and traces of small burnt bone fragments, and patches of lighter grey to white ash; no further analysis undertaken.

Context 22558: occupying about one-eighth of the area of hearth, a brown sandy ash with charcoal.

Sample 1472 (Chemical): light brown, crumbly sandy silt or ash, with traces of stones 2-20mm, and modest amounts of burnt soil; no further analysis undertaken.

Context 22573: smallish patch of black silty clay loam with wood and charcoal flecks and much ash.

Sample 1479 (Chemical): mid-dark grey, crumbly, somewhat heterogeneous ash and charcoal; no further analysis undertaken.

Cut 25596: a scoop fill, cut at the end of a hearth; in it were three small areas of sediment associated with **Hearth 30435**.

Context 25389: brown sandy ash with burnt sandstone chips and charcoal.

Sample 1660 (Chemical): mid grey-brown, crumbly, slightly sandy silt with traces of charcoal and large bone fragments, ?slag, vivianite, light grey ?desiccated clay and mid red-brown burnt clay; no further analysis undertaken.

Context 25393: dark yellowish-brown, burnt sandy ash and burnt compact clay.

Sample 1659 (Chemical): mid grey-brown, crumbly, sandy silt with traces of stones 20-60mm and mid red-brown ?desiccated clay; no further analysis undertaken.

Context 25453: strong brown burnt ash with flecks of silty clay loam and some charcoal.

Sample 1684 (Chemical): varicoloured (white to light pink to light grey-brown, the last predominant), crumbly, slightly sandy silty clay; no further analysis undertaken.

Cut 30288: hearth.

Context 22442: an irregular area of about 0.6m square, abutting **22331**, **22412**, **22439**, **22443**, and **22259**; mixture of light grey sandy ash and yellowish-brown silty ash with charcoal.

Sample 1454 (Chemical): light yellowish-grey, crumbly, sandy silt or ash with traces of charcoal; no further analysis undertaken.

Context 22443: modest area of very dark grey peaty silt abutting **22331**, **22412** and **22434**.

Sample 1453 (Chemical): mid-dark yellowish-grey-brown, crumbly to slightly plastic, slightly clayey, sandy silt with traces of stones 6-20mm, fine charcoal and wood fragments, and light yellow-grey ash patches; no further analysis undertaken.

Context 22467: smallish area in the middle of Hearth **30288**, comprising black silty peaty clay loam with a few flecks of wood and charcoal.

Sample 1447 (Chemical): very dark grey, crumbly, sandy silt with traces of charcoal and rotten sandstone, vivianite and white (?burnt bone) fragments.

Context 22568: a patch of sandstone and gritstone blocks in the middle of Hearth **30288**.

Sample 1474 (Spot): very weakly-cemented/rotten, pale sandstone (?gritstone).

Sample 1476 (Spot): weakly-cemented/rotten, medium-grained, whitish-grey sandstone.

Sample 1478 (Spot): very soft, weakly-cemented/rotten, grey, medium-grained sandstone.

Context 22569: smallish patch of yellowish-brown decayed sandstone and gritstone.

Sample 1473 (Chemical): light yellow, unconsolidated coarse sand; no further analysis undertaken.

Context 25173

Sample 1601 (Chemical): light-mid grey, crumbly, layered (lighter and darker bands), slightly sandy silt; no further analysis undertaken.

Context 25174

Sample 1605 (Chemical): mid red-brown, crumbly, sandy silt or ash; no further analysis undertaken.

Context 25178

Sample 1610 (Chemical): light grey, crumbly, silty sand or sandy silt, with traces of stones 20-60mm and lumps, to 20mm, of ?decalcified sandstone and inclusions of ?ashy silt; no further analysis undertaken.

Context 25179

Sample 1608 (Chemical): light grey, crumbly, silty sand with angular fragments of ?hardened mortar 2-20mm; no further analysis undertaken.

Context 25182

Sample 1606 (Chemical): light-mid yellow-grey, crumbly silty sand with traces of charcoal and angular clasts of mortar-like material and tile; no further analysis undertaken.

Context 25186

Sample 1609 (Chemical): light-mid yellow-grey, crumbly, sandy silt or ash with traces of charcoal; no further analysis undertaken.

Context 25187

Sample 1607 (Chemical): mid yellow-grey-brown, crumbly, sandy silt with traces of stones 2-6mm; no further analysis undertaken.

Context 25216

Sample 1612 (Chemical): mid red-brown, crumbly, slightly clayey silt—?burnt silty soil; no further analysis undertaken.

Context 25234

Sample 1614 (Chemical): light-mid grey, crumbly, sandy silt or ash with traces of charcoal and stones 6-20mm; no further analysis undertaken.

Context 25235

Sample 1615 (Chemical): light yellow-red-brown, crumbly silt; no further analysis undertaken.

Context 25274

Sample 1629 (Chemical): light grey, crumbly, sandy silt or ash with lighter pinkish and off-white patches of burnt soil; no further analysis undertaken.

Cut 30435: hearth.

Context 25352

Sample 1687 (Chemical): red-brown to light grey baked clay; no further analysis undertaken.

Context 25454

Sample 1688 (Chemical): light yellow-grey, crumbly, sandy silt or ash; no further analysis undertaken.

Context 25455

Sample 1683 (Chemical): mid yellowish-grey-brown, crumbly, ?slightly humic, sandy silt with traces of charcoal; no further analysis undertaken.

Context 25495

Sample 1685 (Chemical): light yellow-grey, crumbly, slightly sandy ash; no further analysis undertaken.

Context 25594

Sample 1756 (Chemical): mid gingery-brown, crumbly, sandy silt with red and yellow lumps of ?burnt clay and ?iron-rich material; no further analysis undertaken.

Cut 30757: hearth.

Context 30895

Sample 2191 (Chemical): mid grey-brown, crumbly, silty sand; no further analysis undertaken.

Sample 2192 (Chemical): sent to Dr J. Hunter, formerly of University of Bradford.

Cut 30800: hearth cut.

Context 25167: very dark grey, coarse ash with a little charcoal.

Sample 1599 (Chemical): mid yellow-grey, crumbly, sandy silt; no further analysis undertaken.

Cut 30817: hearth.

Context 25294

Sample 1630 (Chemical): dark grey, crumbly, humic, slightly sandy silt with traces of twig fragments and large bone fragments (some burnt); no further analysis undertaken.

Context 25301

Sample 1636 (Chemical): light grey-brown, crumbly ash with traces of charcoal; no further analysis undertaken.

Context 25305

Sample 1637 (Chemical): mid-dark grey-brown, crumbly, humic, sandy silt with traces of small bone fragments and some lighter ashy material; no further analysis undertaken.

Context 25306

Sample 1638 (Chemical): mid-dark yellowish-grey-brown, crumbly, humic sandy silt.

Other deposits associated with hearths, but without hearth cut numbers

Context 22933: ?hearth, E of Tenement D.

Sample 1561 (Spot): mid-dark grey, crumbly, sandy silt or ash; no further analysis undertaken.

Context 25164: layer associated with hearth.

Sample 1600 (Chemical): light-mid yellow-grey-brown, crumbly, silty sand with lighter patches; no further analysis undertaken.

Context 25577: hearth layer.

Sample 1723 (Chemical): light yellow-grey, crumbly, sandy silty or ash; no further analysis undertaken.

Context 25578: hearth layer.

Sample 1724 (Chemical): dark grey-brown, crumbly (slightly laminated within coherent lumps), sandy silt, rich in ash; no further analysis undertaken.

Other internal deposits

Context 14938: layer of dusky red sandy material [no plan or section, but context co-ordinates indicate it to have been in the southern (site south-western) corner of the Tenement D wicker building].

Sample 1159 (Spot): very dark slightly reddish-brown, crumbly, slightly silty, slightly

sandy amorphous organic material in a matrix of arthropod ‘frass’—mainly rotted wood.

Context 22803: dump.

Sample 1535 (Spot): a spot find of bird eggshell, not identified further.

Context 25934: layer of very dark grey silty, peaty clay loam, with charcoal and wood flecks.

Sample 1870 (BS—VW): This sample gave a very large assemblage (64 taxa), all scored with an abundance of 1. Nitrophile weeds in BIDE (AIV 14, equal rank 4) and CHEN (46, rank 6) were abundant, and weeds of trampled places (group PLAN) proportionately well represented (AIV = 10, based on only 4 taxa, but rank 2 in the Period 4 BS samples). The last of these surely comprises remains of plants growing at or near the site of deposition—plants of paths near the buildings, the fossils probably brought on feet. There were rather modest proportions of ‘useful’ taxa, though four were scored in HERB, as large a number as in any Anglo-Scandinavian sample from the site.

Sample 1871 (GBA): no action to date.

Fills of features within Tenement D structure

Cut 25928: a small pit or depression, about 0.4m across and 0.1m deep, within the front building on Tenement D and containing two fills.

Context 25927: the lower fill; a mixture of olive grey ‘cessy’ silty material and olive grey clay.

Sample 1856 (GBA): no action to date.

Context 25924: olive-brown ash with a very little charcoal.

Sample 1853 (Chemical): mid grey-brown, crumbly, silty fine sand with traces of charcoal; no further analysis undertaken.

Sample 1857 (Spot): avian eggshell; no further analysis undertaken.

External deposits on Tenement D

Alleyway deposits E of Tenement D building

Context 22745: dark grey, slightly ashy, silty, peaty loam with patches of ash, flecks of charcoal and mortar and traces of wood; a dump in the alleyway E of Tenement D.

Sample 1536 (BS-VW): All the 37 taxa recorded in this near-average-sized assemblage were scored at an abundance of 1. Most were either foodplants or annual weeds (groups CHEN and SECA) and the AIVs were all rather modest. Wool fragments were also recorded from this sample.

Sample 1537 (GBA): (not described)

Parasitic worms: There were single eggs of *Trichuris* and *Ascaris* in the subsample examined.

Cut 22798: a linear cut immediately outside the E wall of the eastern wicker building (Tenement D) and thus in the far (site) north-eastern corner of the excavation.

Context 22797: very dark grey, crumbly, ashy, silty sandy loam, with flecks of wood, tile, hazelnut and charcoal.

Sample 1532 (BS—VW): All the 39 taxa from this average-sized sample were recorded at an abundance of 1. Foodplants and annual weeds predominated, the AIVs all being rather ordinary. The foodplant component included *Crataegus monogyna* and *Sorbus aucuparia*, as well as the more usual *Prunus spinosa* and *Malus sylvestris*. Tentatively identified beeswax was also recorded.

Context 22848: black, crumbly deposit with 20% wood chips and charcoal and occasional patches of ash.

Sample 1540 (GBA): mid grey-brown, crumbly, sandy silt with some gravel and charcoal.

Plants (/M): With only 18 taxa this was one of the smallest assemblages from subsamples of this kind. All the taxa scored 1 and the residue was otherwise dominated by charcoal (score 3) and wood fragments (2). There is little interpretatively useful information in the assemblage; weeds in CHEN and BIDE predominated and possible useful plants were restricted to three taxa—*Diphasium*, *Sambucus nigra* and *Brassica rapa*, of which the latter two might be discounted as being ‘weedy’ in origin.

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

Insects (/T): There were not many insects—an estimated 38 individuals of 20 beetle taxa and a few other remains, including ‘several’ mites and a cladoceran ephippium (recorded via semi-quantitative rapid scanning). Only one beetle species had more than two individuals, there being ‘many’ *Anobium punctatum* (including a single charred individual). The tiny residual group were typical Anglo-Scandinavian taxa of indefinite origin, although subjectively an indoor origin would have been guessed. Presumably this layer formed near heavily infested timber, or the ‘wood chips’ noted by the excavators were derived from such.

Context 22958: layer in alleyway E of Tenement D, immediately E of ?internal partition of E side of building; very dark grey silty, peaty clay loam, with wood and charcoal flecks and many patches of ash.

Sample 1569 (GBA): mid-dark grey clay silt with some sand, eggshell, wood and tile fragments and some fine gravelly material.

Plants (/M): Of the 36 taxa in this somewhat below-average assemblage, all scored an abundance of only 1 and all the components of the residue—which included baked clay/daub, mammal and fish bone, charcoal, eggshell and wood fragments—were present in small amounts, too. Useful plants were very limited, the assemblage being dominated by annual weeds in CHEN (36% of taxa, AIV = 27). Further useful interpretative information is not to be derived from this material.

Insects (/T): Recorded by semi-quantitative rapid scanning, this subsample gave about 39 individuals of 31 beetle and bug taxa. There were also ‘many’ mites and fly puparia (mostly *Leptocera* sp.), and a few other remains including ‘several’ larval abdominal apices which have been provisionally identified as of *Blaps* sp. by reference to the figure given by Kuhnt (1913, p. 1113, fig. 250). Of adult beetles, only *Aglenus brunneus* was at all numerous (‘several’), but this group probably included ‘house fauna’.

Context 22983: layer at (site) N end of alley to E of Tenement D, beyond **22958** (*q.v.*); a silty peaty clay loam with many wood flecks and ashy patches.

Sample 1570 (GBA): grey-brown silt with reddish-brown ?ash lenses; rather heterogeneous, with inclusions of bone and tile.

Plants (/M): There were 42 taxa in this assemblage, a little below the period mean. Scores of 2 were achieved only by *Oxalis acetosella* petiole abscission plates and bark fragments, with a score of 3 for wood fragments. About one-quarter of the assemblage was annual weeds in CHEN, just over one-fifth woodland taxa (in addition to *Oxalis* plates and seeds, there were seeds and leaf fragments of holly). The AIV for QUFA (25) was at rank 5, that for QUER (11) at equal rank 3. Other groups were not well represented.

Insects (/T): This subsample was recorded by semi-quantitative rapid scanning. There were about 77 individuals of 42 beetle taxa, together with a few other remains including fly puparia, a ?*Blaps* sp. larva, an adult sheep ked, a human flea and ‘several’ mites. Diversity of the beetle group was estimated to be quite low, the outdoor component small and the decomposer component large. The more abundant taxa (*Aglenus brunneus*, ‘many’, and *Cercyon analis*, *Xylodromus concinnus* and *Carpelimus bilineatus*, all ‘several’), as well as the less common ones were all typical of house floors at Coppergate, and there was little evidence that these remains had been deposited outdoors. Perhaps this material was dumped from within the adjacent building, or spread during its demolition.

External deposits behind buildings

Context 29459: a long strip (at least 8m long and about 1.1m maximum width) of structured peat with many wood flecks, 5% charcoal and with wicker fragments; E of Fenceline **5852**, adjacent to Cut **29389**, and with a line of large posts in its W side and therefore probably associated with Tenement D rather than C; an external layer.

Sample 2340 (Spot): a concentration of fly puparia, mainly (115) *Musca domestica*, but with a trace (2) of *Stomoxys calcitrans*. Dyeplant fragments, including *Genista* were also noted from this sample.

Sample 2353 (Spot): avian eggshell; no further analysis undertaken.

Sample 2451 (Spot): a fragment of ?marine gastropod; no further identification attempted.

Context 29936: an extensive stretch of horizontal wicker, probably deliberately laid, rather than collapsed; at rear end of E wicker building, on the W side of Tenement D.

Sample 2423 (Wood): Twenty-one pieces of roundwood were examined; of these, 18 were oak (diameter 11-53 mm, mean ring count 11.4, SD = 5.1) and three willow (diameter range 15-41, mean ring count 14.7, from individual counts of 8, 10 and 26 years). Amongst the material of both taxa were specimens showing no compression or slight to moderate compression. They seem neither to have been specially selected on the basis of size, nor to have originated in managed woodland.

Context 35519 (=35560): a ?dump, spread over pit **35671**, and topmost of the sequence **35674-35672** (*q.v.*), consisting of black silty ‘cessy’ peat with thick strawy material within it; about 1m maximum lateral dimension as seen on plan; it was an external layer.

Sample 2514 (BS—VW): The ‘straw’ element of this deposit is not clearly identifiable from the rough-sorted remains and from examination of the

washover. Apart from *Diphasium* at 2 and *Corylus* at 3, all the 28 taxa were present in small amounts, and the assemblage is not marked in any way that is of particular interpretative value. It may be of significance that, comparing the lists of taxa from the samples from this context with those from underlying layers, **35673-5**, the assemblage from *2514* is most highly correlated (Jaccard coeff. = 58%) with that from the uppermost pit fill from cut **35671**, viz. the sample from **35675**, and rather less well correlated with assemblages from layers **35673** and **35674** (the assemblages from *2515* and *2516* are similarly more closely correlated with that from **35675** than with those from **35673-4**).

Sample 2515 (BS—VW): A total of 24 taxa were recorded here, with only *Corylus* achieving a score of 2. There was a high correlation on presence/absence of taxa with the last sample (Jaccard coefficient = 53%), and two taxa not commonly encountered in the Anglo-Scandinavian deposits at Coppergate but present in both samples were *Juglans* and *Pisum*.

Fly puparia from this sample included small numbers of *Stomoxys calcitrans*, Sepsidae, and *Musca domestica*.

Sample 2516 (BS—VW): (originally recorded as coming from Context **35560**, equivalent to **35519**). There was a larger assemblage (39 taxa) from this sample, and consequently lower similarity coefficients between it and the previous two samples (Jaccard coeff. between *2514* and *2516* = 37%, between *2515* and *2516* = 34%). Neither *Juglans* nor *Pisum* was recorded, though there was a fairly large foodplant component. It may be of significance that wool fragments were recorded from each of these BS samples.

Context 35524: layer of olive-yellow, crumbly, silty, amorphous and structured peat with ash patches; an extensive strip between the cut for the rear Tenement D sunken building (of Period 5B) and the wicker fenceline between Tenements C and D.

Sample 2504 (Spot): light brown clay with plant debris embedded in it; this sample was rewetted

and found to contain endocarp and a seed of apple (*Malus*), perhaps part of an entire core, since the seed was enclosed within the endocarp layers.

Context 29835: a layer immediately below **29459** (*q.v.*), lying E of Fenceline **5852**, and of similar lateral extent; very dark grey, compact, structured peat with 20% sand.

Sample 2409 (BS—VW): There were surprisingly few taxa (18) from a this sample, coming as it did from a deposit described as a peat. Both *Diphasium* and *Corylus* were recorded at an abundance of 2, the remainder at 1. There were traces of *Rubia* and *Genista* and a small range of foodplants and weed taxa. Unusually, the weed group CHEN was poorly represented (only three taxa).

Sample 2408 (GBA): no action to date.

Sample 2531 (Spot): no action to date.

Context 9510: layer of olive-grey clay with wood chips and charcoal flecks, backyard deposit.

Sample 453 (GBA): Of two subsamples, the larger consisted of mid-dark grey-brown, crumbly to brittle silty amorphous organic material with traces of twig fragments and white greasy flecks, and modest amounts of greyish-yellow stained ash. (The other subsample was a spot find of puparia, apparently not examined.)

Insects (/T): The processed subsample gave a small assemblage of beetles and one bug (N = 43, S = 30). While statistics of such a small group may be misleading, decomposers were proportionally abundant (% N RT = 84), and foul matter taxa especially so (% N RF = 19). There were six *Lathridius minutus* group and five *Aglenus brunneus*; there were also records of ‘many’ fly puparia and mites (but few other remains). It seems likely that a breeding decomposer community was present in the organic matter contributing to this layer. Its origin is uncertain. A specimen of *Barys ?picicornis* was recorded.

Context 9450: layer of very dark grey peaty loam with wood and charcoal fragments, about halfway down site and about 3-4m from shoring on E side; backyard deposit [no coordinates available, but appears to be located close to Context **9510**].

Sample 387 (Spot): a single shell of the snail *Cepea hortensis* from 0.5kg soil.

Context 29725: originally thought to be the lowermost fill of the Period 5B box-like structure (**29726**) this is now considered to be an underlying Period 4B dump to the rear of the Tenement D wattle building.

Sample 1999 (GBA): a single parasite subsample was examined; it yielded a single *Trichuris* egg.

Miscellaneous layers on Tenement D

Context 25076: dump.

Sample 1579 (Chemical): mid grey-brown, crumbly, silty sand, with traces of stones 2-60mm, and of wood fragments; no further analysis undertaken.

Context 35149: wicker hurdle, cut by the Period 5B structure on Tenement D; about a 3m length surviving.

Sample 2322 (Wood): no action to date.

Fills of pits on Tenement D

Cut 35766: a large scoop outside the limits of the E wicker building, but overlain by a building of Period 5B date; a single fill context, overlain by layer **29693** (not sampled).

Context 29736: very dark grey, silty structured peat with wood chips.

Sample 2006 (GBA): dark brown to blackish-brown, fine twiggy debris in organic silt, with small fragments of bone and wood; some

patches of lighter grey or light brown sandy silt; rather loosely consolidated.

Plants (/M): The assemblage of 60 taxa was a rather large one, and the matrix included large amounts of wood (with many chips, as recorded by the excavators), and abundant twig fragments, together with a wide range of organic occupation debris (especially eggshell, but also including charcoal, fish bone and scale, and leather).

Amongst the identifiable plant remains, heather (*Calluna*) made up a considerable portion of the residue, capsules, shoot and twig fragments all scoring an abundance of 2. There were also considerable amounts of *Genista* stem fragments, and of hazelnut shell. The abundant heather remains largely account for the high AIV for NACA (at 25, this was at rank 3 for the Period 4 samples).; however, four other taxa also contributed to this statistic—*Pteridium*, *Danthonia*, *Potentilla* cf. *erecta* and *Rumex acetosella*, suggesting that vegetation from acid soils was perhaps exploited for more than merely heather. Material from grassland, too, was perhaps exploited, for the AIV for MOAR was quite high (22, equal rank 7). Inspection of the list of taxa contributing to it reveals a rather heterogeneous mixture representing a range of possible grassland types from that likely to have occurred in areas of heathland (*Danthonia*, *P.* cf. *erecta*), of wet meadow (*Eleocharis palustris*, *Apium graveolens*) and even disturbed grassland communities (*Plantago major*). It is not impossible that turf was a component of this deposit.

For the rest, there were modest components of weeds, principally those of nutrient-rich substrates in disturbed places, and a small number of useful taxa (mainly foodplants) in addition to three dyeplant taxa.

Fly puparia were abundant in this subsample; the majority were *Stomoxys calcitrans* (all or most unemerged), with moderate numbers of *Musca domestica* (again mostly unemerged) and a few individuals of some other species.

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

Insects (/T2 (there was no /T1), /M): The quality of preservation differed between these two subsamples, being poor in the /T and more normal in the /M. Both were recorded by rapid scanning: they gave somewhat different faunas, but with essentially similar character. The /M1 gave the larger assemblage (N = 33, S = 28). No taxon was at all abundant and the assemblages may have been entirely of background origin. However, subjectively, the species list suggests the addition of some invaders of the pit fill, and perhaps even fauna from a building. The concentration of fossils was too low for examination of a larger sample to be worthwhile.

The /T2 subsample gave single individuals of 26 beetle taxa typical of the Anglo-Scandinavian Coppergate assemblages. There were also single adult and puparial sheep keds, 'many' fly puparia (mostly *Stomoxys calcitrans* and *Musca domestica*) and a few other remains.

There were 'several' mites in both subsamples.

Sample 2005 (Spot): avian eggshell; no further analysis undertaken.

N.B. Cut **25707** and its fill have been abandoned because of ambiguity in the archaeological record.

Gully fills on Tenement D

Cut 35062: a gully fill, underlying a horizontal wattle hurdle, **29936**.

Context 35012: very pale brown compact ash with 5% charcoal flecks and laminations of very dark grey amorphous and structured peat.

Sample 2435 (Spot): recorded by the excavator as eggshell, but sample not available.

Sample 2447 (Spot): avian eggshell; no further analysis undertaken.

Tenement R

Layers to rear of site (south of 30N)

(i) *western group (behind Tenement B)*

Context 24500: layer, backyard.

Sample 1616 (Spot): mid-dark grey, indurated, somewhat heterogeneous, sandy silty clay with modest amounts of charcoal, traces of small bone fragments, and light grey clay lumps; no further analysis undertaken.

Context 24561: a layer of very dark grey silty loam, with a few small patches of brown clay, 2.1 x 0.9m, up to 0.03m thick, underlying **24560**, in the 'backyard' of Tenement B.

Sample 184302 (GBA): mid-dark grey, plastic to crumbly, slightly sandy silty clay, with abundant small limestone fragments, traces of wood, small bone fragments and tile, buttery humic patches and paler clay flecks.

Insects (/T): A small group of beetles (N = 45, S = 25) and a variety of other remains including adult and puparial sheep keds and 'several' other dipterous puparia were recorded. Of the beetles, only *Lathridius minutus* was particularly numerous, with eleven individuals. There were three *Carpelimus ?bilineatus* and *Anotylus complanatus*. This may have been primarily a randomly accumulated group in an area where only the rather eurytopic and rapidly invading *L. minutus* group and perhaps a few flies had been able to establish.

Context 24918: dump at rear of Tenement B.

Sample 1653 (Spot): bird eggshell; no further analysis undertaken.

Context 26256: a strip to the E of gully (fill = **26267**), between two alignments and to the E of alignment **37140**, in S half of the Tenement B strip; lateral extent to 1.3 x 0.5 m, 0.6m thick, dark grey silty loam.

Sample 184303 (GBA): dark grey-brown, plastic to crumbly, humic, slightly sandy clay silt, with traces of large and small limestone fragments and of yellow flecks.

Insects (/T): few insects were recovered and preservation was rather poor. There were single individuals of ten beetle taxa and very small numbers of a few other insects.

In addition, a 13kg subsample was bulk-sieved after the main phase of processing. It yielded a range of occupation debris, including pottery, iron objects, slag, and some charred grain and bone fragments.

Sample 184304 (GBA): no action to date.

Sample 184305 (GBA): no action to date.

Sample 184307 (GBA): mid-dark grey, plastic to crumbly, slightly sandy silty clay, with traces of stones 2-20mm, small limestone fragments, and charcoal, and with some paler streaks of sediment ?filling root channels or cracks; no further analysis undertaken.

Context 28122: layer, rear of site

Sample 1859 (Spot): black wood charcoal with a little soil; no further analysis undertaken.

(ii) *extreme rear of site, broadly behind Tenement C*

Context 20341: a layer of very dark grey, sandy silty clay loam with flecks of ash, about 1.6 x 0.9m in extent, and 0.03m thick, towards the (site) south-west corner of the excavation.

Sample 1230 (GBA): mid-dark grey, crumbly, slightly humic silty clay with traces of 6-20mm stones and small limestone fragments.

Plants (/T): Plant remains from the residue of the /T subsample were recorded as part of a student placement and are treated here as a 'spot' sample. There were modest numbers of *Sambucus nigra* seeds, and traces of *Apium graveolens* and *Rubus*

fruticosus agg. but otherwise only trace amounts of a variety of probable weeds.

Insects (/T): Arthropods were poorly preserved. There were 'several' fly puparia but only a few other insects including ten individuals of nine beetle and bug taxa

Context 20411: layer of very dark grey silty clay loam with flecks of mortar, charcoal and tile, towards (site) south-west corner of excavation, extent about 2.8 x 2.2m.

Sample 1317 (Spot): A spot find of a single whelk (*Buccinum undatum*) shell.

Context 26636: a layer of very dark grey, peaty, silty loam, up to 4.8 x 4.6m in extent and 0.18m thick, towards the rear of the site (on the Tenement C plot).

Samples 1740 (BS), *1741* (BS) and *1742* (BS): The results from analysis of these samples have been amalgamated for the purposes of discussion, under *Sample 1742*.

The assemblage of 41 taxa was at the mean for Period 4 BS samples. Several taxa scored an abundance of 2—*Urtica urens*, *Chenopodium album*, *Aethusa cynapium* and *Carex* sp(p), the first three of these resulting in a large (though not exceptionally large) AIV for the annual nitrophile weed group CHEN. Grassland taxa in MOAR were reasonably well represented (the AIV of 14, from 7 taxa, was at rank 7). The foodplant component was very modest and only one dyeplant (*Diphasium*) was recorded. P. R. Tomlinson examined some vegetative plant remains recovered from sample originally numbered *1742*; they included a small fragment of cereal straw epidermis, many short lengths of fibres, perhaps animal hairs, and some unidentified epidermis.

Parasitic worms: Subsamples of samples originally numbered *1740* and *1742* were examined; the former was barren, the latter yielded a trace of *Trichuris* eggs.

(iii) at extreme rear of site, broadly behind Tenement D

Context 19719: layer of dark brown silty, peaty loam, with patches of clay and including some cobbles, bone, tile, limestone fragments and charcoal; rear of site, towards (site) south-east corner.

Sample 2339 (Spot): a spot find of a single *Cepea nemoralis* snail shell.

Cuts to rear of site

Pits to the rear of the site (S of 30N)

Cut 27127: (to rear of Tenement B) this pit was about 1.3m across, approximately subrectangular in outline, and up to 0.45m deep; it was cut in turn by **26950** (q.v.).

Context 26249: very dark brown, compact, silty, peaty loam.

Sample 1754 (GBA): (from the middle of the context) crumbly, richly organic, well-humified compressed ‘platy’ detritus, with some silt and concretions.

Plants (/M): There was a rather large assemblage from this subsample (62 taxa), dominated by foodplants and annual nitrophile weeds. The AIV of 61 for foodplants in FOOS was the highest for any Period 4 sample, and reflects a large number of taxa (15) and an abundance of many of them—*Malus* scored 2 for both seeds and endocarp, and there were scores of 2 for *Prunus spinosa*, *Vicia faba* (waterlogged testa fragments), and a score of 3 for ‘bran’. In addition faecal concretions scored 3 and there can be little doubt that faeces formed a major component of the deposit. There was a modest component of moss, too, with *Neckera complanata* at 2, a typical ‘toilet tissue’ taxon. In addition to bean testa, fragments of leaf epidermis of *Allium*, probably leek, *A. porrum*, were also recorded.

Potential oil-plants achieved their highest AIV for Period 4 (11), on the basis of five taxa (*Cannabis*, *Papaver somniferum*, *Linum usitatissimum* seeds and capsule fragments and *Brassica rapa*—this last perhaps more likely a weed). Somewhat unusually, flavourings were represented by a single taxon—*Papaver somniferum*—and DYES only by *Isatis tinctoria* (pod fragments).

The weed component in CHEN comprised 20 taxa, giving an AIV of 41; only *Chenopodium* Section *Pseudoblitum* achieved an abundance of 2, however. This also partly accounts for the relatively large AIV for nitrophile weeds of wet places (BIDE).

Parasitic worms: A single subsample was examined; it yielded modest numbers of *Trichuris* (some of which were measured) and a trace of *Ascaris*.

Insects (/T): Rapid scan recorded, the large flot contained ‘bran’ and abundant puparia (the latter forming a large proportion of the flot by volume). Insect preservation was good. There were small numbers of beetles and bugs (N = 43, S = 35). Almost a third of the individuals were outdoor forms, and about half of these were coded ‘d’. The only beetle represented by more than two individuals was *Bruchus ?rufimanus* (4). This may have been a short-lived faecal layer, whose contents were too foul and liquid for beetles to breed. The *Bruchus* may have entered with faeces (having been eaten with the field beans, for which there was good archaeobotanical evidence, see above), but the remainder were probably unsuccessful colonisers and background fauna.

A particularly significant record for this assemblage was a joined head and part thorax of *Cimex lectularius*, subspecies *lectularius* of which is the human bedbug, of which no other Anglo-Scandinavian records are known. There were various other insects, including a sheep ked and a human flea, and ‘several’ mites.

Cut 26950: (to rear of Tenement B) a pit of about 1.8m diameter and 1.6m deep as seen on section;

there were at least five fill contexts, of which two, from the middle of the sequence, were sampled.

Context 26964: the second-to-lowest context.

Sample 1849 (Spot): This was a spot find of faecal concretion with sloe (*Prunus spinosa*) fruitstones (some with flesh ‘mummified’ around them), and apple (*Malus*) seeds and endocarp fragments.

Context 26949: immediately overlying **26964**; very dark grey amorphous/structured peat.

Sample 1782 (BS—VW): This sample gave an average-sized assemblage (39 taxa), with a clear component of foodplants, probably originating in faeces. Both endocarp and seeds of apple scored an abundance of 2, as did sloe stones and ‘bran’, and the less abundant taxa included *Crataegus monogyna*, *Prunus domestica* sl., cf. *Vicia faba* (mineralised testa fragments) and *Vaccinium* sp(p). seeds. There were also traces of four dyeplants and a rather large component of mosses, though all were present in small amounts.

Fly puparia were immensely abundant with large numbers of *Nemopoda* sp. and a small sepsid, and substantial numbers of *Leptocera* sp., *Tephrochlamys tarsals*, *Paregle radicum*, *Muscina stabulans*, and *Muscina assimilis*. A large proportion of these flies was unemerged. Smaller numbers of several other species were also noted.

Sample 1780 (GBA): highly organic, dark reddish brown organic silt or silty detritus with abundant large plant fragments; apple endocarp and fly puparia observed.

Parasitic worms: A single subsample was examined; it yielded a small number of *Trichuris*, some of which were measured.

Insects (/T): Abundant, well-preserved insects, especially fly puparia and beetles, were recorded semi-quantitatively (and perhaps a little incompletely). An estimated 86 individuals of at least 60 taxa of beetles and bugs were present. The index of diversity was estimated at 88 (SE = 19), %NOB as 19. The decomposer component was

modest (%NRT = 64), with the foul matter group fairly large (%NRF = 16). There were ‘several’ individuals of *Anotylus nitidulus* and *Platystethus arenarius*, and three each of *A. complanatus*, *A. rugosus* and *Lathridius minutus* group. The pit may have presented an open water surface since four individuals of three aquatic taxa were present. Most of the remains could have been background fauna, but the record of ‘several’ *P. arenarius*, together with two each of *Cercyon haemorrhoidalis* and *C. unipunctatus* suggest exposed foul matter. There were abundant non-beetles: ‘many’ fly puparia including *Muscina* sp., Sepsidae sp. (the most abundant) and *Nemopoda* sp., ‘several’ Syrphidae larval respiratory processes and mites, and a single flea.

Cut 26011: (to rear of Tenement B) only the basal fill of this cut was sampled.

Context 26012: described on excavation as black, structured peat.

Sample 1663 (BS—VW): the assemblage of 39 taxa was close to the Period 4 mean for BS samples with regard to this parameter. Two taxa scored an abundance of 2—*Prunus spinosa* and *Neckera complanata*—the remainder only 1. There is little doubt that some, at least, of this deposit was faecal, for faecal concretions were recorded in trace amounts

For the rest, there was a rather large component of foodplants (walnut, hazelnut, apple, blackberry, raspberry, dill, and celery seed were recorded, in addition to sloe stones, but only traces of dyeplants (two taxa). The AIVs for mosses were quite large, especially that for taxa of bark, LIGN, which at 12 reached rank 6 of the BS samples from Period 4. They were presumably largely imported as toilet tissue.

Parasitic worms: The subsample examined gave modest numbers of *Trichuris* and *Ascaris* eggs, a third of the former being complete and the remainder lacking any polar plugs. There were some measurements of *Trichuris* eggs.

Sample 1652 (GBA): soft, dark brown humic silt, with some greyish, more clay-rich patches and ‘ash’.

Parasitic worms: There were small numbers of *Trichuris* eggs from the subsample examined.

Insects (/T): The flot contained ‘bran’ and woody plant tissue as well as a moderate number of well-preserved insects, which were recorded by rapid scanning. Coleoptera were not numerous (N = 41, S = 29). The main statistics, inasmuch as they are reliable for a small assemblage recorded in this way, were unexceptional. The most abundant beetles, with three individuals, were *Omalium rivulare*, a large *Philonthus* sp. (probably *P. politus*—this species has frequently been confirmed by male genitalia in samples from this site), and a second, smaller, *Philonthus*. These, and other foul matter taxa, may have been rapid invaders, but most of the assemblage may have been background fauna and initial colonisers. This layer was probably composed of rapidly deposited faecal matter which was quickly sealed.

There were ‘many’ fly puparia (those identified were *Leptocera* sp. or *Nemopoda* sp.), ‘several’ beetle larvae and a sheep ked among the varied arthropod remains from this subsample.

Cut 26993: (to rear of Tenement B) two separate cut numbers were assigned to this pit and its fills have been recorded as two sequences. The basal layer was **27019** (= **27387** = **28061**, not sampled), and this was overlain in turn by **27368**, **27018**=**27299**, **27017** and **26992**.

Context 27368: the lowermost sampled context, immediately overlying **27019**, the lowest; black, peaty, clay loam.

Sample 1824 (GBA): dark brown to blackish, distinctly organic silt with well-humified to coarse plant debris; somewhat laminated; twigs, limestone and wood fragments; some lighter greenish-grey silt.

Plants (/M): the assemblage comprised 45 taxa, of which 16 (36%) were annual nitrophile weeds (group CHEN), some of them scoring abundances of 2 or 3, and accounting for the rather high AIV (41). The presence of *Chenopodium* Section *Pseudoblitum* at 3 also accounts for the unusually high AIV (18, equal rank 5) for BIDE. Faecal material was certainly present, however, since faecal concretions were recorded; wheat/rye ‘bran’ scored 2 and was probably faecal in origin. The assemblage was otherwise rather poor in foodplants and, indeed, in useful plants in general. Two interesting records for this sample were bog myrtle (*Myrica gale*) leaf fragments—the plant might have been brought to the town for one or more of several purposes—and a tentatively identified seed of ?basil-thyme (cf. *Acinos arvensis*), a plant of arable fields and short, usually calcareous, turf.

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

Insects (/T): The rather small flot was rich in insects, including abundant fragments of larvae and pupae, probably coleopterous (there were certainly at least ‘several’ beetle larvae) and dipterous. Recording was semi-quantitative. Among 44 taxa of beetles and bugs (47 individuals), only *Platystethus degener*, of which there were three, was represented by more than two individuals. *P. degener* being coded ‘oa’, and there being 13 other outdoor taxa, the outdoor component was large (%NOB = 32). This assemblage may simply have been background fauna formed at a time when *P. degener* was swarming.

The fly puparia included some *Nemopoda* sp. and single *Leptocera* and *Tephrochlamys* sp. There were also ‘several’ mites and syrphid larval respiratory processes.

Sample 1823 (Spot): avian eggshell; no further analysis undertaken.

Contexts 27018 and **27299** were equivalent; the first was described as a black peaty clay loam, the second as black, silty, peaty clay loam, with numerous twigs and ?wattle fragments. The samples are all considered under the first number.

Context 27018 (=27299)

Sample 1806 (BS—VW): There were 33 taxa from this sample, most of them annual weeds or foodplants. Only linseed achieved an abundance of 2; the remaining foodplants included *Rubus fruticosus* and *Malus*, *Prunus spinosa* and *P. Section Cerasus*. No other comment is called for.

Sample 1807 (GBA): crumbly dark brown organic silt; loamy in places; a few small stones.

Plants (/M): A total of 39 taxa was recorded from this subsample, rather below the mean for the period. Weeds were well represented—group CHEN forming nearly half (46%) of the assemblage, and scoring abundances of 3 (*Chenopodium* Section *Pseudoblitum*) and 2 (*Capsella bursa-pasternis*, *Urtica urens*). The AIV for this group was, not surprisingly, high—and at 48, it was rank 5 for this series. There was a modest component of foodplants, the presence of wheat/rye ‘bran’ at an abundance of 2 and traces of faecal concretions suggesting that faecal material was present in this fill. *Agrostemma githago* seed fragments also scored 2; these were probably a flour contaminant, ingested and voided with the ‘bran’.

Parasitic worms: Traces of *Trichuris* were recorded from the subsample examined.

Insects (/T): the small flat contained a large proportion of insect remains, apparently mainly immature stages of Diptera. Other remains included ‘several’ mites and a sheep ked. Recording was semi-quantitative. Preservation was generally good. A modest assemblage of beetles and bugs was recorded semi-quantitatively. An estimated 67 individuals were present, and there were 47 taxa. Diversity was quite high ($\alpha = 70$, SE = 17), and the outdoor component large (a quarter of the individuals). The decomposer component was relatively small (% N RT = 55), with RF high (% N RF = 16). The latter was mostly accounted for by *Platystethus arenarius* (‘several’), however.

In addition to the taxa already mentioned, there were several *Cercyon analis* and three *Platystethus*

nitens and *Stenus* sp. No other species were represented by more than two individuals. The assemblage could have been mainly background fauna, although some species may have been attracted to foul matter and *P. cornutus* group and *P. nitens* may have invaded the moist sides of the pit.

The following samples were originally sampled as Context 27299:

Sample 1822 (GBA): very dark brown, organic silt with an ‘earthy’ texture; humified plant material; yellow flecking; large bone and twig fragments.

Plants (/M): Another assemblage of 39 taxa was recorded from this subsample, rather below the period mean. Although faecal concretions were not recorded, the presence of ‘bran’ at an abundance of 2 perhaps points to the faecal nature of part of this deposit. Other taxa recorded in abundance were *Chenopodium* Section *Pseudoblitum* (3) and *Urtica urens*, *Polygonum aviculare* agg., and *Sambucus nigra* (all at 2). There was a rather high AIV for BIDE (18, equal rank 5), but otherwise the statistics were not especially unusual. *Pteridium* stalk fragments may indicate litter from floors.

Parasitic worms: Two *Trichuris* eggs only were recorded.

Insects (/T): Preservation was somewhat poor. The modest (N = 52, S = 47) group of beetles and bugs had no clear ecological character, although a fifth of the individuals belonged to the outdoor component and the decomposer component was unusually small (coded decomposers accounting for less than half of the individuals). No species was represented by more than two individuals. This was probably background fauna, perhaps with some invaders of rotting matter. There were ‘many’ mites and a variety of other remains, including larval abdominal apices of *Melanotis rooftops* and an *Athous* species, not quite like *A. haemorrhoidalis*.

Context 27017: very dark greyish-brown structured peat, lying immediately over 27018.

Sample 1805 (BS—VW): The assemblage from this sample was unusually small (18 taxa), but the deposit clearly consisted largely of faecal material. Faecal concretions scored an abundance of 3, with *Triticum/Secale* ‘bran’ also at 3. Nine of the 18 taxa were foodplants, and included linseed at 2. Intriguingly, *Bryonia* seeds scored 2 and it is tempting to conclude that they had been used as a purgative. Only one moss was present—*Thuidium tamariscinum*—but it achieved an abundance of 2 and is a species regularly associated with faecal deposits as ‘toilet tissue’.

Sample 1804 (GBA): dark brown to black, highly organic silt, with faecal concretions and very well humified faeces.

Plants (/M): With 70 taxa, this was the seventh largest assemblage of plant remains from the Period 4 samples, though its diversity, judged by the number of ecological and use groups represented was somewhat smaller than for other assemblages of similar size. The deposit was evidently largely faecal in origin, ‘bran’ scoring 3 and faecal concretions 2, and the AIV for FOOS being 35 (rank 3). With the exception of linseed, all the other taxa scored with an abundance of 2 were weeds—*Urtica urens*, *Chenopodium* Section *Pseudoblitum*, *Agrostemma githago* (both whole seeds and fragments)—or mosses (*Thuidium tamariscinum* and *Homalothecium nitens*). (This last is an interesting taxon; *H. nitens* was formerly widespread in fens and marshes in lowland Britain but has become very restricted through drainage and cultivation; it was probably common in the Vale of York until the last century. It occurs together with a small suite of fen/marsh taxa, giving the highest AIV for groups FENS and MARS for this series of samples; they were probably imported, though it is possible that some or all were growing at no great distance from the site in undisturbed riverside marsh habitats.)

Other well-represented components of this assemblage were perennial nitrophile weeds (ARTE, AIV = 22, equal rank 2), annual weeds (CHEN, AIV = 46, equal rank 7), and cornfield weeds (SECA, AIV = 32, rank 6). The tentative identification of reed culm-nodes perhaps indicates

roofing or flooring material. There were a few puparia of *Leptocera* sp.

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

Insects (/1, /T1, /T2): The abundant insects from the 1kg /1 subsample were recorded fully quantitatively. Beetles were abundant and there was a single bug, the MNI being estimated as 207, with 58 taxa observed. Diversity was low ($\alpha = 27$, SE = 3), but the outdoor component was quite substantial (% N OB = 19). This component was accounted for mostly by *Platystethus cornutus* group (8 individuals), *Aphodius prodromus* (7), *P. nitens* (5) and *Aphodius granarius* (4), all of which may have been attracted to moist, organic-rich matter. The large proportion of damp-ground forms consisted mostly of the to *Platystethus* already mentioned. Decomposers were relatively abundant (% N RT = 74), with the foul-matter component relatively substantial (% N RF = 29). In addition to *A. prodromus* and *A. granarius*, foul-matter taxa included *Platystethus arenarius* (24, the most abundant taxon), *Cercyon terminatus* (10), *C. unipunctatus* (8) and *C. haemorrhoidalis* (5). Most of the remaining more abundant species seem likely to have lived with these in quite foul, dung-like matter, while a few others probably required rather drier conditions. ‘House fauna’ taxa were present, but in small numbers.

There were 4 individuals of *Bruchus rufimanus*, perhaps from pulses used for food (though none were recorded amongst the plant remains). ‘Many’ fly puparia and a single flea were noted among the other insect remains, and there were ‘several’ mites.

The plot from the /T1 subsample was bulky, and consisted of coarse plant matter, including moss. Dipterous puparia (mainly Sepsidae with a few *Leptocera* sp.) were abundant. A modest beetle assemblage was recorded by semi-quantitative rapid scanning (N = 58, S = 32). Diversity was fairly low ($\alpha = 30$, SE = 7), and outdoor forms proportionately quite important (%NOB = 22). The species list had much in common with the /1 subsample, and clearly indicated essentially similar

conditions, although of course the concentration of insect remains was strikingly lower. Other remains included a single *Apis mellifera* wing.

The /T2 subsample gave a flot containing 'red plant remains' (?'bran'). There were 63 beetles and bugs of 45 taxa (recording being fully quantitative). Diversity was much higher than in the previous subsamples ($\alpha = 70$, $SE = 18$), and the outdoor component smaller (% N OB = 13), but other statistics were somewhat similar. The more abundant species included many found in the higher ranks of the previous two subsamples, but in the present case only *Platystethus arenarius* (4 individuals) and *Anotylus nitidulus* (3) were represented by more than two individuals. There were 'several' fly puparia (mostly *Leptocera* sp.) and beetle larvae, adult and puparial sheep keds, and a human flea.

This group of subsamples well illustrate variability within single contexts. Although essentially similar faunas were present, the foul decomposer group was developed to different degrees in the three assemblages. This is not surprising, considering the strong zonation found in living decomposer communities.

Context 26992: the uppermost sampled context, lying directly on top of **27017** and comprising very dark grey peaty loam.

Sample 1793 (BS—VW): A rather small assemblage of 29 taxa was recovered from this sample, nearly half of the taxa being annual weeds in group CHEN (45%, AIV = 32). The next largest component was foodplants, the eight taxa mainly comprising fruits from woodland or hedgerows. One of the two Period 4 records of tentatively identified scotch thistle, *Onopordum acanthium*, came from this sample; the plant is likely to have been a component of the Artemisietea community, assuming it was not deliberately cultivated. Fly puparia from this sample were quite numerous: they comprised *Fannia* sp. (2), *Tephrochlamys* sp. (1), *Teichomyza fusca* (1) and *Leptocera* sp. (23)

Parasitic worms: A subsample from a sample of faecal concretion gave modest numbers of

Trichuris eggs, mostly with two polar plugs; some were measured.

Sample 1792 (GBA): crumbly, dark grey-brown, organic silt, with leather fragments and some bone.

Plants (/M): More than 40% of the rather modest assemblage (36 taxa) were weeds in group CHEN, the AIV of 40 reflecting both the large number of taxa and abundance scores of 2 for *Chenopodium* Section *Pseudoblitum*, *C. album* and *Urtica urens*. One reason for the modest assemblage might be the presence of a high proportion of wood (abundance score 3), bark, charcoal and bone (all 2) in the sample, 'diluting' the component of identifiable plant macrofossils.

An interesting, if insubstantial, aspect of this assemblage was the presence of two tentatively identified salt-marsh taxa: cf. *Aster tripolium* and *Juncus* cf. *gerardi*. The former is the only record for Period 4 (there are isolated records, also tentative identifications, for Periods 3 and 5); *J. gerardi* is regularly recorded both as tentative and secure identifications from all Anglo-Scandinavian phases. Whilst the rush may perhaps have grown beyond the usual upper limit of salt-marsh, on meadows abutting tidal waters, the *Aster* is a much more strictly a salt-marsh plant.

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

Insects (/T) The flot was small and insects other than fragments of ?Diptera immatures were rare and not very well preserved, often fragmentary. A single *Daphnia* ephippium was noted; other arthropods included 'several' mites. The number of Coleoptera was estimated as 53, with 36 taxa. The main statistics had no special character. 'Several' *Carpelimus ?bilineatus* and *Anotylus nitidulus* were noted and there were three *C. fuliginosus* and *Neobisnius* sp. This assemblage may have originated entirely as background fauna and rapid invaders, but has the character of a number of the Coppergate pitfill assemblages where oxytelines were important, often in company with *Neobisnius* sp.

Cut 21431: This was a neatly wicker-lined pit towards the S end of the site (to rear of Tenement C), about 1.3m across and 1.1m deep. There was no sign of a ditch running into it. Material from BS samples of the fills of this pit were examined by Nic McConaghey, Rachel Holt, and Angela Jones in undergraduate projects. The results are held in the EAU archives.

Context 21458: the lowest fill, not described on excavation.

Sample 1737 (GBA): grey-brown clay silt with pinkish natural clay patches; angular limestone fragments, bone and fragments of well-rotted plant material.

Plants (/M): There was a rather large assemblage of 54 taxa from this subsample, 37% of them weeds in group CHEN (the AIV for this group was very large—50 (rank 4)—based on 20 taxa. The AIV for BIDE at 20 (7 taxa) was at rank 2, that for PLAN (12, from 4 taxa) at rank 1, perhaps suggesting that disturbed weedy conditions with seasonal standing water were prevalent near the pit at this time.

Triticum/Secale ‘bran’ was recorded with an abundance of 2, but no faecal concretions were noted, so this perhaps derived from flour-based foods prior to ingestion and defaecation; the lack of worm eggs (see below) does not refute this argument.

Other components of the residue were well represented, including wood and charcoal fragments (both at an abundance of 2), bees, bark, bone, leather, glass, fish scale and even ostracods, these last perhaps suggesting the presence of standing water.

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

Insects (/T): The flot was rather large and contained modest numbers of insect remains whose preservation was mostly excellent. There was some ‘bran’, and fragments of fibrous plant tissue were

noted. The fauna included 53 beetle and bug taxa (recorded by rapid scanning). In all, 61 individuals were estimated to be present. Diversity was estimated to be very high, although the standard error was large ($\alpha = 190$, SE = 70). Half of the taxa were classified as ‘outdoor’ forms (%SOB = 49, %NOB = 54) and eleven taxa were from aquatic or waterside habitats (%NW = 13). All the species were represented by one or two individuals, except for *Heterogaster urticae*, with three. There were two individuals of each of two *Amara* species, and of *Helophorus aquaticus* or *grandis*, *Aphodius granarius*, *Anotylus rugosus* and *Ceutorhynchus ?contractus*. The fauna strongly suggested that insects were not being attracted to decaying matter (%NRT = 30); rather, the assemblage appears to consist of background fauna, ‘pitfalls’, and water beetles attracted to open water in the pit. There were species that might have originated from an area of weedy waste ground, not so heavily trampled or grazed by stock as to exterminate insects associated with semi-natural habitats. The pit was probably open for quite a long time as this layer formed.

There were ‘several’ mites, but hardly any other remains.

Context 21457: this layer incompletely covered **21458**.

Sample 1701 (GBA): mid grey-brown crumbly sandy clay silt.

Plants (/M): There were 45 taxa in the assemblage from this sample, a little below the period mean. Of these, one third were scored in group CHEN and one fifth each in SECA and ARTE. There were abundance scores of 2 for several weed taxa (*Urtica dioica*, *U. urens*, *Polygonum aviculare* agg., *P. persicaria*, *Chenopodium album*, *Stellaria media* and *Ranunculus sceleratus*), accounting in large measure for the high AIVs for CHEN, BIDE (19, rank 4), ARTE (18, equal rank 6) and PLAN (11, equal rank 2). The range of ‘useful’ taxa was rather small, by contrast, with no clear evidence for faeces, though ‘bran’ was present. That the fill layer was mainly composed of other kinds of waste is perhaps attested by the abundance score of 3 for

?glass fragments and 2 for ?slag (perhaps parts of the same component) and of 3 for charcoal. Ostracods were recorded again (cf. Sample 1737 from Context 21458, see above).

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

Insects (/T): Recorded by rapid scanning, the fauna, of well-preserved remains, was small (N = 46, S = 42) but essentially similar to that of the previous sample (1737), with an even higher proportion of species associated with water (%NW = 22) and other semi-natural habitats (26 taxa falling into these categories; % NOB = 63). Decomposers were rare (% NRT = 24). The four most abundant taxa (all with two individuals) were *Helophorus* sp., *Ochthebius* sp., *Platystethus degener* and *Anotylus rugosus*, all able to exploit or tied to aquatic or waterside habitats. Again, a pit containing open water and slow formation of the deposits, possibly with incorporation of taxa from circumjacent open ground, with sparse weedy vegetation, is indicated.

There were 'several' unidentified insect larvae, but few other arthropod remains.

Context 21451: immediately overlying 21451 and 21457; very dark grey, silty, sandy clay loam with 20% total of limestone, tile, charcoal, ash and wood fragments.

Sample 1700 (BS—VW): There was an assemblage of 40 taxa (at the period mean) from this sample, with three taxa scoring an abundance of 2 (*Urtica urens*, *Polygonum aviculare* agg. and *Stellaria media*). There were, consequently, quite large AIVs for CHEN and SECA, though these were by no means exceptional. The AIV for BIDE was quite large, too. The foodplant component was rather small, but FOOS included *Coriandrum* (the only Period 4 record for a taxon which, curiously, was most abundant in Period 3 and which later became very rare).

Sample 1699 (GBA): dark grey-brown clay silt with few inclusions.

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

Insects (/T): The fairly small assemblage was rapid scan recorded (N = 58, S = 55). The flot consisted mainly of insect remains, which were very well preserved. The proportion of outdoor insects was still very high (% N OB = 50, with % N W = 21), and the decomposer component small (% N RT = 29). The implications were similar to those for the previous samples (1737, 1701). Only *Ochthebius* sp., *Helophorus aquaticus* or *grandis* and a second *Helophorus* species, of each of which there were two, were represented by more than one individual. There were few other insect remains, but 'several' mites were noted.

In addition, a 9kg subsample was bulk-sieved to 1mm after the main period of processing; it yielded small amounts of a range of animal and plant remains and other components of occupation debris, but these components have not been examined in detail.

Context 21441: immediately overlying 21451; very dark grey, slightly silty, clay loam with limestone fragments, wood chips and clay flecks.

Sample 1720 (BS): N. McConaghey's samples. The data pertaining to these has not yet been included in the databases of records of plant remains.

Context 21430: immediately overlying 21441 and the uppermost fill; sandy clay loam with flecks of clay, charcoal and ash.

Sample 1713 (BS—VW): A modest assemblage of 27 taxa was recovered, more than half of them weeds in group CHEN and more than a quarter scored in SECA and also in ARTE; none was recorded at more than trace amounts. The assemblage provides little interpretative value, other than that it apparently contained very little evidence for the nature of the fill; it may therefore largely have been slump onto the more richly organic layers in the pit.

The insect assemblages from bulk samples from this pit did not resemble the generalised 'background fauna' of the period as deduced from observations of other Anglo-Scandinavian material. The evidence strongly suggests that the pit contained open water, was open for quite a long period of time (months), was not used for dumping large quantities of rubbish, and stood in an area where there was some vegetation and where a variety of 'outdoor' insect species were able to live, so that a specialised circumjacent background fauna was present. There is no reason to suspect an origin in bird droppings on the basis of the condition of the fossils, but this pit, and Context **21451** in particular, gave large numbers of frog (*Rana temporaria*) bones. It is thus conceivable that some of the insect remains originated in the guts of these amphibians. Blackith and Speight (1974) have shown that insect remains in frog guts are identifiable, although they did not comment on their condition—whether, for example, they are damaged by the predator's teeth.

The most interesting observation concerning the insect remains from the bulk samples examined during the undergraduate projects is the abundance of large ground beetles, especially *Pterostichus melanarius*, suggesting that the cut acted as a 'pitfall trap', something rarely encountered in the Coppergate pits.

Cut 21396: a pit with two fills in the southern third of the excavated area (to rear of Tenement C), itself cut by **6953** (not sampled). The cut was at least 0.5m across and 0.4m deep.

Context 21397: the basal fill; very dark grey silty, sandy amorphous peat.

Sample 1698 (GBA): no action to date.

Sample 1791 (GBA): no action to date.

Cut 25392: Cut at least 1m across and about 0.3m deep (its location a matter of some ambiguity).

Context 25391: very dark grey peaty organic [deposit].

Sample 1657 (BS—VW): Of the 45 taxa, only *Rubia* achieved a score of 2; the AIV for DYES was not especially high, however (4 taxa, giving an AIV of 13). Foodplants were rather poorly represented, so the fairly high AIV for woodland plants in QUFA reflects the presence of several taxa that did not arrive as imported foodstuffs—notably *Oxalis* seeds and seeds and leaf epidermis of *Ilex*. Woodland mosses were also quite well represented, with the AIV of 12 for LIGN being equal rank 6.

Sample 1656 (GBA): reddish-brown, very humic silt with some fine twigs, bone, eggshell, well rotted sandstone and ?ash ('with the appearance of good potting compost').

Plants: The remains were not recorded systematically, though petiole abscission plates of *Oxalis* and leaf fragments of *Ilex*, together with some moss, were recorded from the /T flot indicating the presence of a woodland floor component.

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

Insects (/T): The very large (40 cm³) flot contained abundant woody fragments and some moss. Insect preservation was good and fossils numerous (N estimated as 90 by semi-quantitative rapid scan recording, S = 45). Diversity was quite low ($\alpha = 36$, SE = 7) and outdoor taxa not particularly numerous (% N OB = 12). Decomposers were proportionately not especially abundant (% N RT = 64; although this value would be much higher if the uncoded *Carpelimus fuliginosus* were included). There were 'many' *C. fuliginosus* and 'several' *C. bilineatus*. *Lathridius minutus* group, *Oxytelus sculptus*, *Cercyon analis* and *Cryptophagus* sp. This somewhat unusual fauna probably included autochthones which bred in a damp, but not foul, pit fill, together with background fauna.

In addition to beetles and those bugs included in the calculation of statistics there were the following: *Melophagus ovinus* (adult), coccids, and mites (both 'several'), a human flea and various other remains. The fly puparia included abundant *Nemopoda* sp.

Cut 19748: this was a scoop at the very rear of the excavation (to rear of Tenement C), cut into layer **19743** and sealed by layer **19719**; it contained one fill. The scoop was about 1.2m in diameter and 0.2m deep.

Context 19738: very dark grey silty, peaty loam with patches of pale brown silty loam and wood chips.

Sample 2357 (BS—VW): There was a rather large assemblage of 54 taxa from this sample, though with only *Genista* stem fragments and *Ilex* leaf fragments scoring an abundance of 2. The AIVs were mostly rather modest for this group of samples, though those for mosses in groups LIGN and SLIT (mostly taxa scored in *both*) were quite high (both were 13—for LIGN, this was the fifth highest value, for SLIT the fourth highest). Given the location of the context at the riverward end of the site, it may be tempting to see some significance in the fact that one of only two records from Anglo-Scandinavian deposits at Coppergate for the lesser water-plantain, *Baldellia ranunculoides*, was obtained from this sample (a further member of emergent waterside vegetation, *Alisma* was also present as was alder, *Alnus*, in the form of female cone axes). The other record, from Sample 2490, Context **33094** (Period 3) was from a pit fill at the very northern corner of the excavation, suggesting an origin in water carried to the site in buckets rather than by rising water levels.

In addition to the modest amounts of *Genista*, three other taxa scored as dyeplants were present, and there was a small component of foodplants, mostly woody taxa likely to have been collected from the wild.

Sample 2356 (GBA): mid-dark grey, crumbly, humic silt with ?ash, wood fragments and some fine to coarse plant detritus.

Plants (/M): this subsample yielded one of the largest assemblages of taxa (71), for this series of Period 4 samples. There were large quantities of wood fragments (score 3), and also of small, circular plates identified as petiole abscission plates from *Oxalis acetosella*. Wood sorrel was also represented by seeds, fragments of stem epidermis and the very characteristic hairs that clothe the vegetative parts. These records naturally account for the unusually high AIVs for the woodland groups QUFA (32, rank 3) and QUER (19, rank 2). Woodland mosses were also quite well represented (nine taxa, albeit all in small amounts), giving an AIV for WOOF of 18 (rank 4). Another moss group that was well represented was HEMO (mosses of heaths and moorlands); there was no correspondingly large component of taxa in NACA, but it should be remembered that all of the taxa scored in HEMO also score for at least one other group—particularly WOOF or GRAS—and they may not therefore necessarily have originated in heathland/moorland vegetation.

Although there was clearly a component of woodland floor material—perhaps moss, with which the *Oxalis* (and *Ilex* leaf fragments) were collected incidentally?—there were small components of foodplants (including wheat/rye 'bran') and dyeplants. However, the largest single component was of annual nitrophile weeds of disturbed places (group CHEN, with an AIV of 43, accounted for 25% of the taxa). Within this group there were records for the four *Chenopodium* species—*CC. album*, *ficifolium*, *murale*, and Section *Pseudoblitum*, all strong indicators of Chenopodietea communities. The only contributor to this group with an abundance score of 2 was *Urtica urens*, however. *Ranunculus sceleratus* also scored 2 but other taxa scored in BIDE were not especially common and the AIV for this group was consequently not greatly above the period mean.

Insects (/T): This subsample produced a small flot consisting mainly of arthropod remains, with good preservation. 'Several' mites and fly puparia were

recorded, but the beetle assemblage was fairly small (N = 69, S = 51). Recording was by semi-quantitative rapid scanning: there were 'several' *Cercyon analis* and *Anotylus nitidulus*, three *Carpelimus elongatulus*, and six taxa at a frequency of two, the remaining taxa being represented by single individuals. A quarter of the assemblage was made up by 'outdoor' forms. A background origin for much of the fauna seems likely, although there were 'several' fly puparia (mostly *Nemopoda* sp.) and scale insects, an adult and a puparial sheep ked, and a flea. Possibly therefore there was a component of house ejectamenta in the layer. Apart from *Pediacus dermestoides* and *Leperisinus varius*, specifically woodland insects were lacking—and indeed, these two subcortical beetles, both recorded a number of times from Coppergate, may have come from firewood or even have lived under the bark of structural timber.

Sample 2355 (Spot): one shell of the dog whelk, *Nucellus lapillus*.

Sample 2358 (Spot): one shell of cockle, *Cerastoderma edule*.

Gully to rear of site

Cut 19642: a gully in the far south-eastern corner of the site (to rear of Tenement D); it was rather broad and shallow, being about 1.8m across and 0.5m deep

Context 19626: this fill context comprised black silty amorphous and structured peat with 90% wood chips, wicker fragments, twigs, cess, etc.

Sample 1773 (BS—VW) and *Sample 1783* (BS—VW): As might be expected from the description of this context, there were rich assemblages of plant remains from these two samples. A total of 63 taxa was recovered from 1773 and 72 from 1783, the third and sixth largest assemblages, respectively, for BS samples in Period 4. They shared only 35 taxa in common, however, giving a similarity coefficient on the basis of presence/absence of taxa of 32% (not atypical

for subsamples of the same context for urban archaeological deposits). There were quantitative differences, too, for from 1773 all the taxa were recorded at an abundance of 1, whilst from 1783 there were scores of 2 for several weed taxa (*Polygonum aviculare*, *P. persicaria*, *Chenopodium album* and *Atriplex* sp(p). and for *Genista* stem fragments, and a score of 3 for *Prunus spinosa*.

Though neither sample gave any incontrovertible evidence for the presence of faeces, there were traces of 'bran' from 1783. The AIV for FOOS for 1783 was 38—equal rank 9—compared with 27 for 1773—equal rank 31, and close to the period mean for BS samples. Other groups were much better represented however. Thus the AIV of 20 for grassland taxa in MOAR for 1783 was at rank 1 for this series of samples, whilst the AIV of 10 for GRAS (grassland mosses) in 1773 was likewise the highest value. Some other moss groups were quite important in 1773 (LIGN and SLIT achieved AIVs of 15 and 14, respectively, both the third highest for Period 4 BS samples (though it should be remembered that seven of the eight taxa concerned were scored in both groups). The taxa accounting for these high values of GRAS and MOAR did not form especially coherent groups, however.

Sample 1783 also achieved high scores for woodland taxa (the AIVs for QUER and QUFA being 21 and 33, both rank 4 for their respective series) and the weed taxa noted above as being more abundant in 1783 accounted for the high AIV for CHEN (51, rank 2). There is some evidence that marsh or fen taxa were present in somewhat larger than usual amounts: the AIV for SCCA (plants of poor to intermediate fen communities on acid to mildly basic peat) in 1773 was 7 (rank 1, based on *Hydrocotyle vulgaris*, *Pedicularis palustris*, *Potentilla palustris* and *Valeriana* cf. *dioica*). It may be significant that this context formed in that part of the site nearest the River Foss.

Altogether, it is rather difficult to characterise these assemblages; they have the same components as many from this site at this period, but none predominates unless it be annual nitrophile weeds

in 1783, perhaps reflecting a position at some distance from the most heavily trampled part of the site, where such weeds might grow in quantity.

A large number (74) of Sepsidae fly puparia were recorded from Sample 1783.

Parasitic worms: One subsample from 1773 was examined; it was barren; Two subsamples were examined from 1783 and gave small numbers of *Trichuris* eggs, of which several were measured.

Sample 1771 (GBA): no action to date.

Sample 1772 (Spot): although originally intended as a spot sample, a small subsample of 0.1kg was examined for plant remains in the usual way. It was found to consist mainly of *Rubia* root fragments, with smaller amounts of *Genista* stem material and traces of *Diphysium* and a range of other taxa scored as foodplants, weeds or imported mosses—the assemblage of 22 taxa is really too small to discuss in more detail.

This was clearly a localised patch of madder-rich dyebath waste within the gully-fill and not typical of the whole context. The remainder of the sample was passed to Mrs S. Grierson of Perth, Scotland, who extracted dyestuffs from it and succeeded in dyeing modern wool with a series of pale pink and pinkish-yellow shades (using a variety of mordants). Figure 196(l) of Kenward and Hall (1995) shows the results.

Sample 1774 (GBA) (formerly labelled with Context **19634**, equivalent to **19626**): no action to date.

Sample 1784 (GBA): mid-dark grey, crumbly, slightly layered, humic, slightly sandy clay silt rich in coarse and fine woody and herbaceous detritus, with traces of wood, small bone and shellfish fragments.

Parasitic worms: Two subsamples were examined; both gave modest numbers of *Trichuris* and a few *Ascaris*. Some *Trichuris* were measured.

Insects (/T): Insect preservation was quite good, although there was some fragmentation. Insects of the groups excluded from calculation of main statistics were numerous and varied, with ‘several’ scale insects and syrphid larval spiracular process and ‘many’ fly puparia of various kinds. A single human flea and an adult *Melophagus* were noted. The assemblage of beetles and bugs was quite large (N = 131, S = 79), with high diversity ($\alpha = 84$, SE = 13) and a substantial and fairly diverse outdoor component (% N OB = 21, α OB = 45, although SE = 21). Aquatics and damp ground forms were a little more abundant than normal (% N W = 3, % N D = 11). The commonest outdoor forms were *Platystethus nitens* (4), *Helophorus* sp., *P. degener* and an *Aphodius* sp. (all at 2). These may constitute background fauna, but hint at open water in the pit, at least temporary. The phytophages may have originated on weeds around the cut, but neither they nor their hosts could be accurately identified within project constraints.

Decomposers made up over half the assemblage (%NRT = 55); some may have bred in the layer, or at least been attracted to it, but it is not impossible that the greater part of this component was background fauna. The value of the index of diversity of the RT component certainly gave no evidence of breeding (α RT = 33, SE = 7).

This subsample produced a rare record of the bug *Empicoris* sp.

Well fill

Cut 28794: (see account of Period 3 for details of cutting and filling of well) Well cut **28794**, though of Period 3 date, had wickerwork originally considered to have been inserted from above during Period 4B. It is now included with the Period 3 deposits, but was not discussed under that period for the purpose of these technical reports.

Context 28451

Sample 1922 (Wood): hazel (*Corylus*) rods of which nine measured specimens were found to be of 16-23 mm diameter and with a mean annual ring

count of 13.7. Seven of the rods were recorded as uncompressed, the rest as moderately strongly compressed.

Period 4B layers of uncertain type and/or location

Context 20972: apparently from a pit fill on Tenement B, formerly dated to Period 5A.

Sample 1346 (Spot): a fragment of wood with a curved grain internally, perhaps 'curl' wood from a junction between branch and trunk.

Context 22444 (=22586):

Sample 1484 (BS—VW) (originally numbered 1483 at time of processing): An assemblage of 43 taxa, close to the period mean; the only plant taxon recorded with an abundance of more than 1 was hazelnut shell (score 2), and there were traces of walnut (the latter accounting in part for an AIV for oil-plants at rank 2, though with only three taxa contributing to it). Other groups were not especially well represented, but the usual mixture of foodplants, woodland taxa and weeds was present.

Sample 1483 (GBA): dark reddish-brown, crumbly, humic sandy silt with wood chips and eggshell fragments.

Parasitic worms: Two subsamples were examined, both proving barren.

Insects (/T): The flot was scanned rapidly. Twelve beetles were recorded; only *Lathridius minutus* group, of which there were three, was represented by more than one individual. There were a sheep ked, a human flea, a louse (*Damalinia* sp.) and a few scale insects. This group was too small for interpretation but resembled a small random extract from a typical floor deposit at the site. It was only unusual in including a *Carabus* species and a probable *Onthophagus* sp.

Context 23843

Sample 1513 (BS—VW): A total of 52 taxa were recorded from this sample, well above the Period 4 mean for this parameter for assemblages from BS samples. There were scores of 2 for *Diphysium*, *Corylus*, *Chenopodium album* and *Atriplex* sp(p)., the last two accounting in part for the high AIV (45) for weeds in CHEN (rank 7), which made up nearly 40% of the list of taxa. Cornfield weeds in SECA were also well represented (AIV 29, rank 6, over one-quarter of the taxa). Most noticeable, though, was the high AIV for perennial nitrophile weeds in ARTE (AIV 21, rank 1 for this series of samples). The ten taxa scored in ARTE included four which were not often recorded from the Anglo-Scandinavian deposits at Coppergate but which form a group that today might be expected in a hedgerow—*Chelidonium majus*, *Silene alba*, *Torilis japonica* and *Reseda lutea*. Another possible habitat would be the base of a fence or wall, where disturbance—or perhaps shade—was sufficient to limit a dense sward but low enough to permit these herbs to flourish. *Silene* and *Reseda* perhaps point to a calcareous substrate, as does *Picris hieracioides*, also recorded in this group. They point to an area with a sufficient long period of abandonment or lack of disturbance for perennial communities to develop.

Sample 1512 (GBA): no action to date.

Context 25304: dump (= 35451).

Sample 1634 (Chemical): light-mid grey-brown, crumbly, silty fine sand with traces of wood fragments; no further analysis undertaken.

Context 29924: backyard deposit, Tenement A/B.

Sample 2413: (Chemical): light yellowish-grey, crumbly, silty fine sand, with traces of charcoal; no further analysis undertaken.

Context 29926: layer (= 29922)

Sample 2440 (Spot): avian eggshell; no further analysis undertaken.

Context 35077: horizontal wicker, E of wicker Fenceline **29681** and W of line **35080**, between Tenements C and D, behind the Period 4B buildings (and underneath the position of the Period 5 rear buildings).

Sample 2446 (Wood): Twelve pieces of wood were examined; nine were willow (diameter range 12-30 mm, mean ring count 9.8, SD = 1.7), two were oak (diameter 18-24 mm) and one was hazel (20 mm diameter, 10 years). The willow rods all showed moderately strong compression; for the rest, slight to moderate compression was recorded.

Context 35086: layer on which wicker **35077** was laid, between Tenements C and D, and apparently quite extensive, being at least 1.2m across; a mixture of dark brown structured and amorphous peat with some ash.

Sample 935086 (BS—VW): A large assemblage (50 taxa) was recovered from this sample, though all the taxa scored an abundance of 1. No group was especially well represented, though there were relatively large components of foodplants, dyeplants and weeds of waste places and arable fields. Wool and leather fragments were also recorded from the washover.

Sample 2474 (Spot): Although sampled by the excavator for possible fly puparia, only hazelnut shell and wood fragments were recorded when the sample was examined.

Context 35147: a large area either side of alignment **35080**, ?the Tenement C/D boundary; very dark grey, sandy amorphous peat with 10% wood chips.

Sample 2480 (Spot): no action to date.

Context 35160: a dark grey to brownish-grey compact clay, at least 1m across as seen in section and up to 0.05m thick; Tenement C/D.

Sample 2464 (GBA): no action to date.

Context 35250: a hurdle, at least 3.5m long and nearly 1m across, to W of Fence **35063**, on Tenements C/D.

Sample 2485 (Wood): A total of 36 pieces of wood were examined for this sample. The largest group (27) were of hazel (diameter range 10-26 mm, mean ring count 7.6, SD = 2.3). The other material comprised four pieces of oak (17-45 mm, 7.5 rings), three of willow (19-25 mm, 5.8 rings) and one each of birch and Pomoideae (hawthorn, apple, rowan, etc.). All but one of the hazel rods, together with the oak and one of the willow, were moderately strongly compressed; the rest were uncompressed apart from the other two willow rods which were only slightly flattened.

Context 35335: layer, Tenement C/D.

Sample 2486 (Chemical): light grey, crumbly ?ash; no further analysis undertaken.

Context 35451: dump deposit (= **25304**).

Sample 2494 (Chemical): light grey, crumbly ?ash with modest amounts of charcoal and traces of *Diphysium* stems; no further analysis undertaken.

Deposits not covered by any of the foregoing

Cuts for which site grid co-ordinates are unavailable

Cut no 29928: ?linear cut, its fill truncated by a building cut of Period 5B.

Context 29927: mixture of 50% very pale brown ash with black charcoal.

Sample 2414 (Chemical): two major components: light grey-brown sandy silt and mid-dark grey-brown humic silt; there were abundant wood chips, hazelnut shell fragments and other woody detritus but no further analysis undertaken. Note that the ash and charcoal of the excavator were not seen in this sample.

Alignments and fences

(other wattle structures are considered under the various other feature types)

Context 20671: alignment/fence towards front of site, a N-S division between Tenements A and B.

Sample 1342 (Wood): A single fragment of hazel rod was examined; its mean diameter was 1.95 mm and a ring count of 8 years was recorded. It was moderately strongly compressed.

Context 20865: alignment/fence of wattle, E of cut for Period 5B Structure 5/3 and thus equivalent to Fence **20671**, on other side of Tenement B.

Sample 1358 (Wood): This sample comprised 33 pieces of wattle of which two were hazel (diameter 14-18 mm, mean annual ring count 8), nine ash (8-22 mm, 13 years, SD = 3.4) and 22 were willow (8-22 mm, 10.1 years, SD = 1.6). With regard to compression of the rods, 13 of the willow specimens were uncompressed, whilst seven each of willow and ash were moderately strongly compressed. The rest were slightly compressed.

Context 20883: a short stretch of wattle fence between Tenements A and B.

Sample 1343 (Wood): Twenty pieces of willow in this sample were examined; their diameters were in the range 13-38 mm and their mean annual ring count was 9.45 (SD = 2.5). There were roughly equal numbers of rods which were uncompressed or which showed slight or moderate compression.

Context 22059: alignment/fence towards the front of the excavation on the (site) north-eastern side, Tenement D.

Sample 1344 (Wood): Of the 43 pieces of wood examined, 20 were hazel (diameter range 7-29 mm, mean annual ring count for the 14 specimens where a count could be made 6.0, SD = 3.1); the remainder were willow (11-28, 9.6, 2.2). About half the specimens were moderately strongly compressed, the remainder a mixture of uncompressed and strongly compressed rods.

Context 22225: alignment towards (site) north-east corner, Tenement C.

Sample 1492 (Wood): There were 17 pieces of wood in this sample; 13 were hazel with a diameter range of 7-18 mm and a mean annual ring count of 10 (SD = 4.4); one was ash (12 mm, 8 years); and three were identified a 'Pomoideae' (includes hawthorn, rowan, apple, pear) with a range of 27-46 mm and a mean ring count of 26 (SD = 2.1). All the rods except the ash were moderately strongly compressed; the ash rod was uncompressed.

Context 22492: alignment on Tenement C.

Sample 1491 (Wood): Fifty-one pieces of hazel and one of ash were identified from this sample; the former had a diameter range of 6-25 mm and a mean annual ring count of 11.5 (SD = 4.1) for the 47 specimens for which a count could be made. The equivalent figures for the specimen of ash were 17.5 mm and 14 years. Two-thirds of the hazel rods and the ash were moderately strongly compressed; the remaining hazel rods were uncompressed.

Sample 1554 (Wood): Six specimens of hazel were examined; they ranged in diameter from 10 to 16 mm and the mean ring count was 6.8. They ranged in degree of compression from slightly to strongly compressed, most being moderately strongly compressed.

Context 23055: fence between Tenements B and C.

Sample 1408 (Wood): A total of 36 pieces of willow were examined from this sample; they ranged in diameter from 4 to 19 mm and their mean annual ring count was 4.1 (SD = 1.4). The bulk of the material was moderately strongly compressed.

Context 23610: a fenceline on the E side of Tenement B, perhaps part of the boundary between Tenements B and C.

Sample 1552 (Wood): The wood in this sample was all hazel; there were 26 pieces, with a diameter range of 5-24 mm and a mean annual ring count of

6.1 (SD = 3.7). The bulk of the specimens were moderately strongly compressed.

Context 25640: alignment (= 36591).

Sample 1810 (Wood): no action to date.

Context 29681: a not very substantial alignment running N-S, underneath the Period 5B structure on Tenement C (and formerly dated to Period 5A).

Sample 2460 (Wood): Of the 56 pieces of wood examined from this sample, 33 were willow (with a diameter range of 16-31 mm and a mean ring count of 7.7, SD = 2.3), 21 were hazel (11-33 mm, 8.1 rings, SD = 1.3) and two were ash (14-19 mm, 8.8 rings, SD = 1.3). Apart from three hazel rods and one of willow (which were slightly compressed), all the material in this sample was recorded as uncompressed. There is perhaps evidence from these figures for use of roundwood from managed woodland.

Context 29857: alignment.

Sample 2421 (SPOT): Ten pieces of wood, all identified as hazel and all uncompressed, were examined; their diameter range was 13-22 mm, and their mean ring count 6.3 (SD = 2.1).

Context 35080: alignment.

Sample 2508 (SPOT): There were seven pieces of roundwood in this sample, of which four were hazel (18-22 mm, mean ring count 7.8), two were oak (19-26 mm, 6 rings) and one hazel (20 mm, 13 rings). With the exception of one of the oak rods (which was moderately strongly compressed), all the material in this sample was uncompressed.

Context 35296: alignment on Tenement C.

Sample 2509 (SPOT): There were 15 pieces of wood in the sample, of which eight were hazel (diameter 17-35 mm, mean ring count 20.9, SD = 9.5), four ash (20-25 mm, 8 rings) and three willow (17-25 mm, 9.3 rings). Eleven specimens (some of each taxon) were recorded as uncompressed; the

remainder were slightly to moderately strongly compressed.

Post-hole fills

Cut 22881: post-hole.

Context 22862

Sample 1546 (Spot): described as *?opus signinum* by the excavator, but not available for examination.

Cut 24574: post-hole, Tenement B.

Context 24539

Sample 1674 (Spot): a calcareous concretion, rich in ferric oxides and with much coarse mineral matter of coarse sand and grit size; very dense and having an appearance perhaps best described as 'a baked lump of urban occupation debris'.

Cut 25171: a post-hole in Area IV.I, Tenement C or D.

Context 25172: post-hole fill of very dark greyish-brown sandy deposit, with 60% ash flecks and 20% wood fragments, and what was recorded by the excavators as a sheep skull.

Sample 1595 (Chemical): mid-dark brown, crumbly, slightly silty sand or ash with traces of charcoal, wood fragments and ?mortar.

Sample 1596 (Spot): skull, mandible and atlas vertebra of a young *Bos f. domestic*.

Cut 25755: a small cut extending into the top of Stake-hole 25758; about 0.05m thick.

Context 25756: a small patch of black charcoal.

Sample 1803 (Spot): very dark grey-brown, crumbly, humic, sandy silt with abundant charcoal; no further analysis undertaken.

Cut 25806: post-hole cut, inside E wall of Tenement C wicker building, between wall and internal wattle line; cut about 0.55 by 0.3m across and 0.25m deep.

Context 25807: black silty clay loam with 20% mixture of ash, charcoal, clay and burnt clay.

Sample 1821 (Spot): approximately 30 whole seeds of yellow flag, *Iris pseudacorus*.

Cut 34732: ?post-hole fill [not on any plan or section].

Context 34733: loose, fibrous organic material, dusky red, slightly loamy.

Sample 2417 (Spot): a sample predominantly of madder root fragments.

Cut 34734: post-hole between Tenements B and C?

Context 34735: loose fibrous organic matter, dusky red; also greyish loam mixed with it.

Sample 2418 (Spot): a sample rich in madder root fragments and in charcoal.

Cut 35010: post-hole ?between Tenements C and D.

Context 35011: very dark grey, sandy peaty loam with ash, charcoal, wood and 70% cobbles of limestone and sandstone.

Sample 2437 (Spot): Recorded by the excavators as ?fishscale but apparently not examined further.

Period 4/5

A small number of samples were taken from deposits excavated by York Excavation Group to the rear of Tenement A. They could not be dated more accurately than 'Period 4/5'.

Context 3646: layer.

Sample 993646 (SF5704): some cleanings from bone comb 5704 were identified initially as eggs of a louse (*Damalinia* sp.) by C. Lyall, British Museum (Natural History) and widely reported verbally as such; on inspection subsequently by ARH, they proved to be seeds of rush (*Juncus* sp.)

Context 3659: a patch of ash.

Sample 1654 (Spot): this spot find of an insect was *Blaps* sp.

Context 3691: area of burnt charcoal and ash.

Sample 1283 (GBA): black crumbly charred plant debris, including abundant charcoal, with some silt and sand.

Insects (/T): The only insects recorded were fragments of a staphylinine beetle and an unidentified bug.

Cut 3726: gully with some posts and wattle lining.

Context 3661: gully-fill.

Sample 993661 (BS—V): Rough-sorting yielded only traces of hazelnut and 'plum', with large numbers (abundance score 2) of sloes.

Cut 3777: one of a series of intercutting pits (this one was in turn cut by 3775).

Context 3520: pit fill.

Sample 1039 (BS—VW): This sample was rich in fruitstones (the washover was recorded during rough sorting as consisting mostly of such remains), the majority being *Prunus spinosa*, with a few *P. domestica* s.l. With one exception (*Raphanus raphanistrum* pod fragments), all the other remains recovered were probable foodplants—hazelnut and charred wheat and oats.

Very small numbers of fly puparia of *Musca domestica* and *Muscina assimilis* were also recorded.

Sample 1038 (GBA): no action to date.

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