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**Assessment of biological remains from
excavations at 14-16 and 48-50 Newmarket
Street, Dublin, Republic of Ireland
(site code: 02E1692)**

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**Assessment of biological remains from excavations at 14-16 and 48-50
Newmarket Street, Dublin, Republic of Ireland (site code: 02E1692)**

by

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Summary

Twenty-one bulk sediment samples from deposits of medieval and post-medieval date, encountered during excavations at 14-16 and 48-50 Newmarket Street, Dublin, Republic of Ireland, were submitted to for an assessment of their bioarchaeological potential.

*Plant remains were usually present and in some cases preservation was excellent, though overall proportions of organic material were generally quite low. Wood fragments of some kind were almost always present, hemp and weld both occurred regularly and hop achenes were present in a fifth of the samples. Food remains were present, notably in the sample from privy pit 161/3. The importation of peat (presumably for fuel) and heather and gorse (both potentially for a variety of different uses) was attested from several of the samples. The site provided some very remarkable assemblages of insects from a poorly-represented period in which much ecological change was probably occurring. The assemblages were dominated by species typical of intensive occupation sites and most also included a few remains of species normally found in rather foul decaying matter. Grain beetles were present in a substantial proportion of the deposits, but never in large numbers. The presence of clean water aquatics in several deposits, mostly cistern fills, was notable. Most likely they (and various other aquatics) arrived in a clean water supply during the use phase of these features. Several samples yielded *Cercyon ?depressus*, a beetle which inhabits decaying stranded seaweed and other salt-soaked decaying matter. These remains may conceivably be migrating strays from estuarine shores, but the possibility that they colonised some material on the site must be entertained. Seven of the samples contained some eggs of intestinal parasitic worms though the numbers were small and might be attributed to a 'background' level indicating that the deposits contained some, but were not primarily of, faecal material. Small quantities of shellfish remains were recovered from several of the samples. There was too little material to be of any great interpretative value but the shells of cockle and mussel most likely represent food waste. The vertebrate remains recovered from the samples were mostly well preserved and those which could be identified were mainly fish. All the vertebrate remains are likely to represent domestic household refuse from the preparation and consumption of food.*

Some further study of the biological remains, particularly of plants and insects, is certainly warranted. It is highly recommended that further excavation at this site should be accompanied by a comprehensive sampling strategy for the recovery of useful faunal and floral assemblages.

KEYWORDS: 14-16 AND 48-50 NEWMARKET STREET; DUBLIN; REPUBLIC OF IRELAND; ASSESSMENT; MEDIEVAL; POST-MEDIEVAL; PLANT REMAINS; CHARRED PLANT REMAINS; PEAT; INVERTEBRATE REMAINS; BEETLES; GRAIN PESTS; INTESTINAL PARASITE EGGS; VERTEBRATE REMAINS; FISH BONE

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Assessment of biological remains from excavations at 14-16 and 48-50 Newmarket Street, Dublin, Republic of Ireland (site code: 02E1692)

Introduction

An archaeological excavation was carried out by Margaret Gowan and Co. Limited, at 14-16 and 48-50 Newmarket Street, Dublin, Republic of Ireland.

The excavations identified five main phases of archaeological activity. The first phase of activity (Phase 1) dated from the medieval period (AD 1200-1500) to about AD 1670, and consisted of a large ditch and remnants of predominantly agricultural activity. The second phase (Phase 2) dated to the mid-late seventeenth century, and consisted of a fence of postholes that also served as a tenter-frame and an adjacent ditch. The remains are associated with the activities of the newly-established Newmarket in the early years of the 1670s (e.g. an activity area/stockyard for the skimmers, tanyards, and slaughteryards).

The majority of the archaeological remains belonged to Phase 3, dating from about 1673-1725. A series of plots fronting onto Newmarket Street (formerly Skimmers Alley) were revealed, with buildings to the front and yards to the back. Excavation showed that, as the old name for the street suggests, some of the inhabitants of Skimmers Alley were involved in the processing of animal products. These properties were provided with water by a complex arrangement of cisterns and pipes. The water system did not last long, however, and the fourth phase of activity, dating from early eighteenth century into the nineteenth century (Phase 4, *circa* 1725-1830) documents the period after most of the water system was abandoned. During this phase some of the structures were subdivided and converted to tenements as the area descended into slum living conditions.

The final Phase 5 encompasses everything from *circa* 1830 to the present. Material of this timespan was heavily truncated by late

nineteenth and twentieth-century building, and was thus very incomplete.

Twenty bulk sediment samples ('GBA'/'BS' *sensu* Dobney *et al.* 1992) were submitted to Palaeoecology Research Services Limited (PRS), County Durham, UK, for an assessment of their bioarchaeological potential.

Methods

The sediment samples were inspected and their lithologies were recorded, using a standard *pro forma*, prior to processing. In each case, a subsample (or, for the smaller samples, all of the submitted material) was disaggregated in water and sieved to 300 microns. The sieved material was then subjected to a washover or paraffin flotation (or both where appropriate) broadly using the techniques of Kenward *et al.* (1980; 1986). Flots were stored in alcohol.

Plant remains (and the general nature of the wet residues, flots and washovers) were recorded briefly by 'scanning', identifiable plant taxa and other components being listed directly to a PC using *Paradox* software. Notes on the quantity and quality of preservation were made for each fraction.

Insects in the flots were recorded using 'assessment recording' *sensu* Kenward (1992), creating a list of the taxa observed during rapid inspection of the flot, with a semi-quantitative estimate of abundance, and a subjective record of the main ecological groups. A record of the preservational condition of the remains was made using scales given by Kenward and Large (1998). This scheme provides scales for chemical erosion and fragmentation (0.5-5.5, the higher figure representing the greatest degree of damage), and colour change (0-4), in each

case giving a range and a value for the position and strength of the mode (Kenward and Large 1998, tables 2, 3 and 5-7).

When the residues were primarily mineral in nature they were dried, weighed and the components recorded. Where possible, bone fragments in the residues were identified to species or species group, using the reference collection at PRS. Fragments not identifiable to species were described as the ‘unidentified’ fraction. Within this fraction fragments were grouped into a number of categories: large mammal (assumed to be cattle, horse or large cervid), medium-sized mammal (assumed to be caprovid, pig or small cervid), unidentified fish, and totally unidentifiable.

Seventeen samples were examined for the eggs of intestinal parasitic nematodes using the ‘squash’ technique of Dainton (1992). Assessment slides were scanned at 150x magnification with 600x used where necessary. Although primarily for the detection of parasite eggs, the ‘squash’ technique routinely reveals other microfossil remains, and, where present, these have been noted.

Results

The results are presented by Feature/Context in chronological order according to the latest phasing received. Archaeological information, provided by the excavator, is given in square brackets. A brief summary of the processing method and an estimate of the remaining volume of unprocessed sediment (of that submitted) follows (in round brackets) after the sample number.

Feature/Context 288/- [late medieval – c. 1673/4; from early truncated firepit]

Sample 87/T (2.2 kg sieved to 300 microns with washover; no unprocessed sediment remains)

Moist, mid brown to mid grey-brown to dark grey to black (charred material)—colours quite jumbled—crumbly (working plastic), slightly silty clay. Stones

(>60 mm) were present. Charcoal and possibly other fine charred material was common.

The small residue (dry weight 0.5 kg) was of stones and sand, with a little pot (1 g), charcoal (<1 g) and a single burnt fragment of bone (< 1 g).

The moderate-sized washover of about 125 ml consisted almost entirely of flaky angular charcoal (to 15 mm in maximum dimension), mostly oak (*Quercus*). There were traces of grit and mortar (to 5 mm). No further analysis of this deposit is warranted.

Feature/Context 17/2 [c. 1674-1700; basal fill of barrel cistern]

Sample 6/T (2.7 kg sieved to 300 microns with paraffin flotation; no unprocessed sediment remains)

Moist to wet, mid to dark brown to mid to dark grey-brown, soft to crumbly (rubs brown), slightly silty, amorphous organic sediment with fine herbaceous detritus. Clasts of mid grey-brown, sticky, clay silt (to 25 mm), wood, ?marine shell and ?eggshell were present.

The rather large residue of about 600 ml largely comprised woody detritus, mainly from hardwoods, the fragments (to 30 mm) being soft and rather decayed. The remainder (about 200 ml) was mineral material, mainly sand, grit, and gravel. There was very little other than wood in the organic fraction—a few rather poorly preserved seeds and traces of twig fragments of heather (*Calluna vulgaris* (L.) Hull). Both flot and residue contained a few seeds of weld or dyer’s rocket (*Reseda luteola* L.).

The flot was small, consisting of woody and herbaceous debris, sand grains and some undisaggregated sediment lumps. Insects were present in small numbers, and there were some earthworm egg capsules and numerous mites. Preservation of the remains was good (E 1.5-2.5, mode 2.0 weak; F 1.5-3.0, mode 2.0 weak). There were rather few beetles, the only species which was at all common being the subterranean ground beetle *Trechus micros* (Herbst). The remaining beetles were a mixture of species commonly found in intensive occupation deposits, mostly associated with decaying matter in dryish to foul moist conditions. A trace of grain pests (*Sitophilus granarius* (Linnaeus) and *Oryzaephilus* sp.) was noted. A very much larger subsample would be needed to obtain an interpretatively useful group of remains, but even those from the present subsample would be usefully recorded for site level synthesis and comparison.

The ‘squash’ subsample was mostly of organic detritus but with quite a large inorganic component (~15%). Large numbers of fragments of plant tissue, some

pollen grains/spores, a few ?phytolith fragments and a single very poorly preserved *Trichuris* egg were all noted.

Feature/Context 17/3 [c. 1674-1700; basal fill of barrel cistern]

Sample 7/T (2.1 kg sieved to 300 microns with paraffin flotation; no unprocessed sediment remains)

Moist, mid grey-brown, brittle to slightly sticky (working soft and sticky, rubs brown), ?slightly humic, clay silt. There were no obvious inclusions.

The medium-sized residue (dry weight 0.76 kg) was mostly sand and stones, with traces of slag (<1 g), coal and cinder (2 g) and glass (<1 g). Three bone fragments, none of which were identifiable, were also noted.

The smallish washover of about 80 ml consisted of woody debris (mainly wood fragments to 10 mm, amongst them conifer wood to 3 mm, and a little bark). There were a few fruits and seeds, including traces of well-preserved fig (*Ficus carica* L.) seeds and moderate numbers of weld seeds. No interpretatively useful assemblage was present, however.

The rather small flot contained a limited invertebrate fauna, but one with some notable components. Preservation was very good (E 1.0-2.0, mode 1.5 strong; F 1.0-3.0, mode 1.5 strong). Most of the remains were insects, but there were also a few earthworm egg capsules and rather larger numbers of mites. Subterranean fauna was represented by *Trechus micros* ('several') and probably also by *Coprophilus striatulus* (Fabricius) (at least two). The most significant ecological component was two species of elminthid ('riffle') beetles, *Limnius volckmari* (Panzer) (one individual) and *Oulimnius* sp. ('several'). These require clean moving water, and must indicate the nature of the supply to this cistern. Some other water beetles may have arrived with them. The remaining fauna was contributed by a range of species common in occupation deposits, probably strays, although 'several' *Anotylus rugosus* (Fabricius) may represent a species living at the edge of a stream providing water. Although this fauna was limited, it is certainly worthy of further investigation, preferably using a larger subsample (or combining the remains from the present subsample with a further one of similar size—if additional sediment is available or can be obtained by further excavation).

The 'squash' subsample was mostly of organic detritus, with some inorganic material. Many pollen grains/spores (including fungal spores) and diatoms (of at least 5 different forms) were present. No eggs of intestinal parasites were recorded.

Feature/Context 38/3 [c. 1681-1725; main backfill of barrel cistern]

Sample 5/T (3 kg sieved to 300 microns with paraffin flotation and washover; approximately 2 litres of unprocessed sediment remain)

Moist, mid grey-brown, sticky (working soft, rubs brown), ?slightly sandy clay silt. Stones (2 to 6 mm) and fragments of ?coal were present.

There was a rather large residue of about 450 ml of which barely 100 ml formed a washover of wood with some coal and cinders and traces of what may have been charred peat (to 5 mm). The wood included fragments of conifer (to 3 mm) and wood chips (to 10 mm). There were also moderate numbers of animal hairs. Identifiable plant remains included half-achenes of hemp (*Cannabis sativa* L.), seeds of fig, and endocarp ('core') of apple (*Malus sylvestris* Miller), together with a few taxa which may well have arrived with hay or perhaps in herbivore dung/stable manure, or which were weeds in the vicinity. A single fragment of leather (approximately 50 mm by 7 mm) was also recovered. The mineral fraction of the residue consisted mainly of sand, grit and gravel, with some brick/tile and coal shale. The flot added some leaves (spines) of gorse (*Ulex* sp.).

The small flot was rich in insect remains, whose preservation was variable but often good (E 1.5-3.0, mode 2.0 distinct, F 1.5-3.5, mode 2.5 weak). Mites were also fairly abundant, and there were a few earthworm egg capsules. Most of the beetles were species typical of occupation sites with a strong bias towards drier decaying matter and habitats within buildings. There were several woodworm beetles (*Anobium punctatum* (Degeer)), at least two *Tipnus unicolor* (Piller and Mitterpacher), and a human flea (*Pulex irritans* Linnaeus). Grain pests were represented by single *Oryzaephilus surinamensis* (Linnaeus), *Cryptolestes* sp. and *Sitophilus granarius*. There were several *Cercyon depressus* Stephens, a species found in stranded wrack (see below). This assemblage included some plant feeders (*Sitona ?lineatus* (Linnaeus), *Apion* sp. and *Ceutorhynchus ?contractus* (Marshall)), and the open-air ground beetle *Amara* sp., though all of these are likely to have been strays in such small numbers. It is just possible that the *Sitona* and *Apion* were brought with gorse. This material deserves detailed recording, preferably with the addition of remains from a further subsample.

The 'squash' subsample was mostly inorganic but with quite a large organic component (~20%). A few fragments of plant tissue, pollen grains/spores and diatoms were recorded. A single poorly preserved *Trichuris* egg was also present.

Feature/Context 38/4 [c. 1681-1725; basal fill of barrel cistern]

Sample 8/T (2.5 kg sieved to 300 microns with paraffin flotation and washover; no unprocessed sediment remains)

Moist, mid grey-brown, crumbly to slightly sticky, very stony, ?slightly sandy, slightly clay silt. Small stones (2 to 6 mm) were abundant, whilst those of 6-20 mm were present.

The fairly large residue (dry weight 1.3 kg) was mostly stones and sand, with traces of brick/tile (4 g), pot (1 g), coal and cinder (10 g), ?glass/glassy slag (1 g), leather (<1 g), hazel nut shell (<1 g), eggshell (<1 g), shellfish (mostly unidentified fragments but including mussel, *Mytilus edulis* L.) and bone. The vertebrate material (20 fragments) recovered from this sample was mostly quite reasonably well preserved. Sixteen of the fragments were unidentifiable, and nine of these were burnt or scorched. Fish bones included herring (*Clupea harengus* L.) and Gadidae remains, whilst a pig metapodial (burnt) and an amphibian vertebra were also recorded.

The very small washover of about 25 ml consisted of cinder, coal, bark and a little wood (to 5 mm), with a few poorly preserved seeds (though with traces of well-preserved fig seeds). The small flora included various remains of hemp, weld, gorse and a small variety of weeds.

The flot was minute, consisting of plant detritus and small numbers of insect remains. Preservation of the latter was fairly good (E 2.0-3.0, mode 2.5 weak; F 2.0-3.0, mode 2.5 weak). The fauna was somewhat nondescript, consisting of typical intensive-occupation taxa from various habitats. There were grain pests (*Oryzaephilus* sp. and *Sitophilus granarius*), and a 'wrack' *Cercyon* (see discussion of results, below). A substantially larger subsample would be needed to recover a significant fauna, but the remains deserve recording for site-level analysis.

The 'squash' subsample was approximately half inorganic and half large organic detritus. Some pollen grains/spores and a single very poorly preserved *Trichuris* egg were recorded.

Feature/Context 365/5 [late 17th/early 18th century; main backfill of wood-lined butter storage pit]

Sample 96/T (3.1 kg sieved to 300 microns with paraffin flotation and washover; approximately 2.5 litres of unprocessed sediment remain)

Moist, mid to dark brown to mid to dark grey-brown, crumbly (working slightly sticky), ?slightly ashy, slightly clay, sandy silt. Coal and ?wood were present.

The rather small residue (dry weight 0.9 kg) was mostly of sand, with some stones and coal (124 g), and traces of brick/tile (4 g), mortar/plaster (30 g), glass (<1 g), metal (5 g, including a coin - 4 g) and clay pipe stem (2 g). Organic remains included wood (6 g plus a wooden bead or button of approximately 17 mm in diameter), nutshell (including hazel, 2 g), eggshell (<1 g), a few seed fragments (<1 g), a single cockle (*Cerastoderma edule* L.) valve fragment (<1 g) and a little bone (6 g). The last consisted of twenty-four well preserved fragments including several fragments identified as herring, flatfish (Pleuronectidae) and gadid. Additionally, there were some small mammal remains (murine/microtine), a rabbit (*Oryctolagus cuniculus* L.) tooth and a pig phalanx.

There was a rather small washover of about 175 ml of woody debris (mainly wood to 30 mm, including conifer wood to 5 mm, with some bark) with some hemp achene fragments and pieces of hazel (*Corylus avellana* L.) nutshell. Traces of material thought to be peat (to 5 mm) were also noted, along with cinders, coal and charcoal. Preservation of fruits and seeds was generally good, the assemblage including achenes of hop (*Humulus lupulus* L.), leaves and twig epidermis of gorse, and seeds of weld, with some weed taxa. The leaves of the bog moss, *Sphagnum imbricatum* Hornsch. ex Russ., probably originated in peat and suggests that the tentative identification of some material as peat may well be correct. Leafless twig fragments of heather might also have arrived in peat. Traces of very decayed leather (to 5 mm) were also noted.

Insect remains were rather abundant and very well preserved (E 1.0-2.5, mode 1.5 distinct; F 1.0-3.0, mode 2.0 weak). The fauna was dominated by species typical of occupation sites, many of which would be able to exploit indoor habitats but some requiring rather more foul conditions than might be tolerated in a building of this date. House fauna elements included 'many' *Cryptophagus* and *Tipnus unicolor*, 'several' *Lathridius minutus* group, *Cryptophagus scutellatus* Newman, *Ptinus ?fur* (Linnaeus) and *Mycetaea hirta* (Marshall), and two *Laemostenus* sp. The grain weevil *Sitophilus granarius* was quite abundant, and there was at least one *Oryzaephilus surinamensis* (Linnaeus) (saw-toothed grain beetle). Elements of 'subterranean' fauna were present. A very significant component of the fauna was abundant fragments of a cockroach, probably *Blattella orientalis* Linnaeus, the common or 'oriental' cockroach; several individuals were apparently represented. Detailed analysis of this material is essential, using this and the additional remains discussed below.

Botanical analysis revealed numerous insects in the washover after paraffin flotation so a further paraffin extraction was carried out. This gave a substantial

insect fauna which was very similar to that from the previous subsample, including the presence of numerous fragments of cockroach. Here, however, there was also a single *Oulimnius* sp. (clean flowing water) and two human fleas (*Pulex irritans*).

Feature/Context 207/- [?late 17th/18th century; ashy organic rear garden dump]

Sample 59/T (2.5 kg sieved to 300 microns with washover; approximately 1.5 litres of unprocessed sediment remain)

Just moist, mid to dark grey-brown, unconsolidated, very ashy, slightly sandy silt, with lumps of mid grey-brown indurated clay. Large mammal bone and white flecks of ?ash were present. During processing a sheen was noted which indicated the presence of some contaminant oil in the deposit.

The medium-sized residue (dry weight 1.0 kg) was mostly of coal and cinder, with some stones and sand. Other components included brick/tile (26 g), pot (22g, to 50 mm), glass (4 g), metal (8 g), clay pipe stems (6 g) and a copper/copper alloy object (<1 g). This sample also produced 99 fragments of bone (weighing 76 g), of which approximately 20% were burnt and somewhat fragile. The other remains were moderately well preserved and most were less than 50 mm in overall dimension. Caprovid remains were identified, together with large and medium-sized mammal rib, vertebra and shaft fragments. Several fish bones were present which included the remains of Gadidae (probably cod, cf. *Gadus morhua* L.), herring and possible flatfish.

This sample yielded a moderate-sized washover of about 160 ml of cinders (to 25 mm), with (unusually) little material in the less than 4 mm fraction. Traces of charcoal, coal and ?modern elder (*Sambucus nigra* L.) seeds and tree leaf fragments were also observed. No further analysis of this deposit is warranted.

Feature/Context 40/4 [c. 1720-1750; basal fill of brick cistern]

Sample 30/T (3 kg sieved to 300 microns with paraffin flotation and washover; approximately 1 litre of unprocessed sediment remains)

Moist, mid to dark grey-brown, with some areas mid brown, crumbly (working soft and slightly sticky, rubs brown), slightly clay silt. Small stones (2 to 6 mm) were present.

The medium-sized residue (dry weight 0.72 kg) was mostly sand, with some stones and traces of brick/tile (2 g), pot (6 g) and glass (2 g). Bone from this sample amounted to six fragments (6 g), three of which were burnt. Fish remains were present but not identified. A

chicken bone was the only identified fragment. Other biological remains included eggshell (1 fragment, <1 g), three fragments of cockle shell (1 g) and three freshwater snails (*Planorbis ?contortus* (L.)).

There was a very small washover of about 75 ml of very decayed wood (to 10 mm) with coal and cinders; the wood included small (<2 mm) flecks of softwood and there were also traces of peat (to 5 mm). A few unidentified freshwater snails were also noted. Seeds were sparse; they included hemp and weld.

The small flot consisted primarily of invertebrate remains, mostly insects but with some earthworm egg capsules, numerous mites, some spiders, and an ostracod. There were elements of subterranean fauna (*Trechus micros*, and a second *Trechus* species). Aquatics were represented by the ostracod, a corixid bug ('water boatman'), and *Oulimnius* sp., the last of these being indicative of clean flowing water. While these creatures may have invaded an exposed water surface, it is more likely that the arrived in the supply. The remaining fauna was mixed but consisted of species typical of occupation sites, other than *Cercyon ?depressus* Stephens, characteristic of stranded wrack and other salt-soaked debris. This material would usefully be investigated using a larger, or additional, subsample.

The 'squash' subsample was mostly inorganic but with quite a large organic component (~20%). Some diatoms (at least two types) and pollen grains/spores were noted, as were two live soil nematodes. No eggs of intestinal parasites were seen.

Feature/Context 29/7 [c. 1725; lower fill of stone privy]

Sample 3/T (3.2 kg sieved to 300 microns with paraffin flotation and washover; no unprocessed sediment remains)

Moist, mid brown, crumbly and slightly sticky to soft (rubs brown), moderately stony, slightly sandy clay silt. Stones (2 to 20 mm) were common and larger stones (20 to 60 mm) were present.

The rather large residue (dry weight 1.9 kg) was of sand and stones, with traces of coal (2 g), glass (2 g), ?wood (<1 g) and shell (a cockle valve and another small unidentified bivalve, <1 g). Bone from this sample (2 g) was rather poorly preserved and none of the four recovered fragments were identifiable.

The very small washover (of about 50 ml) contained some coal, wood (to 5 mm, including small fragments of conifer) and very decayed fragments of textile. The few, rather decayed seeds included various fruits—fig, strawberry (*Fragaria* cf. *vesca* L.) and blackberry

(*Rubus fruticosus* agg.), all consistent with the nature of the feature, and a few weeds (with weld).

The small flot, consisting mainly of fine plant fibres, contained only a few insect remains, whose preservation was a little poor (E 3.5; too few remains for the creation of a full record). Bearing in mind the large size of the subsample assessed, no further action can usefully be taken.

The 'squash' subsample was inorganic, with only traces of organic detritus and a few pollen grains/spores.

Feature/Context 29/8 [c. 1725; basal fill of stone privy]

Sample 4/T (2 kg sieved to 300 microns with paraffin flotation and washover; no unprocessed sediment remains)

Moist, mid brown to mid grey-brown, sticky (working soft), slightly sandy, clay silt. Stones (2 to 20 mm) and charcoal were present.

The medium-sized residue (dry weight 0.85 kg) was mostly stones, with some sand and small amounts of brick/tile (6 g), cinder (10 g) and shellfish (2 unidentified fragments, <1 g). The sample also produced ten fragments of bone (2 g), six of which were burnt. Most were not identifiable, but a single fish vertebra was tentatively identified as ray (*Raja* sp.).

This subsample yielded a very small washover of about 25 ml of wood (to 5 mm), bark and charcoal with a few rather poorly preserved seeds, mainly weed taxa. There were traces of weld seeds, but also root-basal twig fragments of heather and leaf epidermis of gorse. Some peat (to 5 mm) was also noted.

The minute flot, mainly plant detritus, contained only a few insects, although these included some *Helophorus* water beetles and a terrestrial member of the same genus, probably *H. rufipes* (d'Antic), a 'turnip mud beetle'. Preservation was fairly good (E 2.0-3.0, mode 2.0 weak; F 2.0-3.5, mode 2.5 weak). There is probably no point in carrying out further work on this material, other than confirming the identification of this *Helophorus* as a record of a rarely recorded beetle in space and time.

The 'squash' subsample was inorganic, with only traces of organic detritus.

Feature/Context 31/3 [c. 1725?; basal fill of stone cistern]

Sample 28/T (3.5 kg sieved to 300 microns with paraffin flotation and washover; approximately 4 litres of unprocessed sediment remain)

Moist, light to mid brown to mid grey-brown, stiff and sticky (working soft and sticky, rubs brown), slightly stony, slightly sandy silty clay. Stones (2 to 20 mm and >60 mm) and charcoal were present.

There was a fairly large residue (dry weight 1.8 kg) of stones and sand, with some coal/cinder (8 g) and a little brick/tile (1 g), slag (8 g), mortar/plaster and unidentified bone (2 g).

The very small washover of about 85 ml from this subsample consisted of woody debris—the wood (to 25 mm) moderately well preserved and perhaps including 'chips'. Conifer wood (to 5 mm) was present amongst these fragments. There was also a well-preserved fragment of woven textile. Seeds and fruits were sparse but mostly well preserved. They included one specimen which appeared to be the introduced purslane, *Portulaca oleracea* L., along with weld and a few weed taxa. Purslane was initially introduced as a garden plant (presumably as the subspecies *sativa*), at least as early as 1200 (reference cited by Preston *et al.* 2002) and it is described by Clement and Foster (1994) as an alien arriving with bird-seed, wool, cotton, and tan-bark and becoming established in various (southern) parts of the British Isles today. It appears not to have become part of the naturalised flora of Ireland, however, and the fossil, if correctly named, probably represents an imported seed rather than a seed originating in a plant which grew in the city. Intriguingly, this plant has also been recorded, tentatively, from post-medieval (17th/18th century) deposits in Chester (Hall *et al.* 2002 and Jaques *et al.* forthcoming) and would perhaps come to be a typical plant for the period were more deposits with good preservation to be examined.

The flot was small, and contained moderate numbers of insect remains, mostly beetles but also some fly puparia, and a few mites and earthworm egg capsules. Preservation varied somewhat but was often good (E 1.5-3.0, mode 2.0 weak; F 1.5-3.0, mode 2.0 weak). The beetle assemblage consisted of an ecologically mixed intensive occupation fauna, but only *Dienerella* sp. was certainly represented by more than one individual. This genus included species typically found in fairly dry plant material, including domestic litter and stored products—a habitat favoured by many of the other species noted. However, there were foul-matter beetles too; most of this fauna was probably strays from the immediate surroundings, with some perhaps from further afield. There were specimens of the saw-toothed grain beetle, *Oryzaephilus surinamensis*, and of one of the 'wrack' *Cercyon* species (see discussion of results,

below), as well as traces of 'subterranean' fauna. This material deserved further investigation, preferably using a larger additional subsample.

The 'squash' subsample was inorganic, with only traces of organic detritus.

Feature/Context 250/4 [early/mid 18th century; basal (privy) fill of barrel cistern]

Sample 67/T (2.2 kg sieved to 300 microns with paraffin flotation and washover; approximately 1 litre of unprocessed sediment remains)

Moist, mid brown to mid grey-brown, soft to crumbly (working soft and slightly sticky), humic, slightly sandy, slightly clay silt. Cockle shell was present.

There was a small residue (dry weight 0.6 kg) mostly of sand, stones and coal/cinder (42 g). Brick/tile fragments (40 g), mortar/plaster (30 g), pot (2 g), glass (<1 g), metal (2 g), clay pipe bowl (4 g), wood (1 g), a cockle valve (1 g) and some bone (62 g) were also present. In total, 88 fragments of bone were recovered, most of which were fish remains. Preservation was variable, ranging from poor to very good, whilst some fragments were burnt and slightly brittle. Identified fish include Gadidae (some of which were haddock, *Melanogrammus aeglefinus* (L.)), flatfish, herring and ?grey gurnard (cf. *Eutrigla gurnardus* (L.)). The last was represented only by a single vertebra. Additionally, a pig atlas was recorded.

The small washover of about 125 ml comprised granular debris, mainly cinders and very decayed wood (to 20 mm), together with some flakes of spongy tissue thought to have originated in bark. Some fragments of peat (to 15 mm) were noted and these may be the source of some of the seeds, as well as the *Sphagnum imbricatum* leaves, though most of the identifiable remains were from weed taxa. There were also traces of heather (as seed capsules and perhaps also charred root/twig fragments).

Insect remains were rare in the small flot, but their condition was mostly quite good (E 1.5-2.5, mode 2.5 weak; F 1.5-3.0, mode 2.0 weak). Only four beetle species were noted, one of them being the wood-boring weevil *Caulotrupidoides aeneopiceus* (Boheman), of which there were at least two. These may have been modern contaminants, from timber used on site, for example, but their preservational condition was compatible with their being contemporaneous with the deposit. The weevil is found in rotten timber, 'especially of casks' according to some authors, so it would have been at home in Dublin in the past. Probably nothing more can usefully be done with this material, other than creating a record for site-level analysis.

The 'squash' subsample was approximately half organic detritus and half inorganic, with many scraps of plant tissue and pollen grains/spores, and some ?phytolith fragments. No eggs of intestinal parasites were seen.

Feature/Context 250/5 [early/mid 18th century; main (privy) fill of barrel cistern]

Sample 66/T (2 kg sieved to 300 microns with paraffin flotation; approximately 1.5-2 litres of unprocessed sediment remain)

Moist, mid/dark grey-brown to dark grey to black (internally), crumbly (working soft), ?humic, ?slightly sandy, slightly clay silt. Stones (2 to 6 mm) and concretions were present.

The residue was examined as two fractions. The dried component was mostly of sand and stones, with brick/tile (88 g), pot (4 g), glass (4 g), metal (6 g), leather (<1 g), wood/heather (<1 g), a few seeds (<1 g), shellfish (mostly cockle, 6 g) and bone (20 g). The last consisted of 83 fragments most of which were well preserved fish bone. These included the remains of haddock, herring and flatfish. Several pig fragments (a metapodial and a second phalanx) were also identified. The small wet fraction of the residue was of about 200 ml and consisted of woody detritus with one large (to 90 mm) fragment of (?worked) conifer wood, other wood fragments, 'strawy' debris, and peat fragments (to 10 mm). The peat was probably the source of the *Sphagnum imbricatum* leaves (in one case present in a dense cluster). Some material of heather (buds, flowers and shoot fragments) represents another aspect of peatland exploitation. Some grassland material (?hay) seems to have been present, and there were also well-preserved achenes of hop. Some very decayed leather (to 5 mm) was present, too.

Sphagnum leaves and herbaceous debris made up most of the small flot, which contained modest numbers of insect remains and appreciable quantities of mites. Preservation was generally good, although some taxa were represented only by small scraps of cuticle (E 1.5-2.5, mode 2.0 weak; F 1.5-4.0, mode 2.0 weak). The most abundant insects were human fleas, *Pulex irritans*, the small staphylinid *Anotylus complanatus* (Erichson), and the wood-boring weevil *Caulotrupidoides aeneopiceus* (all 'several'); like the specimens in the sample from 250/4, the latter showed no sign of being modern contaminants. Most of the remaining, very restricted, fauna was typical of houses, with a few species which may have lived with *A. complanatus* in moister decaying matter. There were two abdomens of bug nymphs of the right general form for the bedbug, *Cimex* sp. This assemblage should be recorded in detail, and supplemented by the remains from a further

subsample (of 3-4 kg or at least of all of the sediment know to remain).

The 'squash' subsample was mostly organic detritus (including many fragments of plant tissue) with a little inorganic material. A few pollen grains/spores and diatoms were present, and there were two rather poorly preserved *Trichuris* eggs.

Feature/Context 191 [post c. 1725; from pump apparatus in brick cistern]

Sample 89/T (3 kg sieved to 300 microns with paraffin flotation and washover; approximately 4 litres of unprocessed sediment remain)

Moist, mid to dark grey-brown, sticky, very slightly sandy, clay silt. Stones (2 to 6 mm) were present. The sample smelled very strongly of oil/petrol – presumably modern contamination.

The small residue (dry weight 0.55 kg) was mostly sand, with some stones and brick/tile (130 g). Small amounts of pot (4 g), slag (2 g), coal/cinder (28 g), mortar/plaster (12 g), glass (<1 g), wood (<1 g), shellfish fragments (mostly cockle, < 1 g) and bone (4 g) were also present. The small assemblage of bone amounted to ten fragments and included mammal, bird and fish remains. Birds were represented by a single chicken fragment, whilst caprovid remains were also noted. The three fish bones could not be identified more closely.

There was a small washover of about 150 ml, mainly woody debris including some slivers of well-preserved conifer wood to 60 mm (?from boards), as well as fine fragments of softwood, perhaps representing sawdust. Other wood was much less well preserved, soft and decayed and with 'worm' holes through it. Cinders and coal were also present, but only a very few fruits and seeds: a curious combination of traces of hemp achenes and embryos of water-plantain, *Alisma*.

The small flot consisted mostly of insect fragments, and there were very large numbers of mites. Preservation varied rather, from quite good to poor (E 2.0-4.0, mode 2.5, weak; F 1.5-5.0, mode 2.5 weak). Among the beetles, only the typically subterranean *Trechus micros* was at all common ('several'); it was accompanied by a *Rhizophagus*, perhaps one of the burrowing species. Foul to rather dry decomposing matter was represented by a few individuals. There was a single *Cercyon ?depressus* (see below), and a flea head, perhaps an aberrant human flea (*Pulex irritans*). This material is worth recording as a characteristic group, to provide data for site-level analysis, and perhaps, using a larger subsample, to investigate sources for the fill.

The 'squash' subsample was inorganic, with only a little organic detritus and a few pollen grains/spores.

Feature/Context 296/5 [post c. 1789?; organic backfill of stone cistern]

Sample 93/T (2 kg sieved to 300 microns with paraffin flotation and washover; approximately 1.5 litres of unprocessed sediment remain)

Moist, mid brown to black (black internally – sulphides), soft and slightly sticky (working soft and sticky and rubs brown), humic, very slightly sandy, slightly clay silt. No obvious inclusions were present.

The tiny residue (dry weight 0.18 kg) was of sand and stones, with a little slag (10 g), cinder (6 g), charcoal (2 g), a few unidentified freshwater snail shell fragments (<1 g) and two unidentified fragments of burnt bone.

The very small washover of about 125 ml comprised fine debris including some very decayed wood (to 10 mm, conifer wood to 2 mm), and traces of bark. The few identifiable fruits and seeds (amongst which hemp was again present) were of little interpretative value.

Most of the small flot consisted of insect fragments, with some mites, ostracods, and a single *Daphnia*. Most of the beetles were species typical of occupation sites, including the spider beetle *Tipnus unicolor* and the ground beetle *Laemostenus* sp., and there was a single human flea, *Pulex irritans*, but there were other ecological components. There were 'several' *Trechus micros* and a second related species, probably also a subterranean element, and at least two *Cercyon ?depressus*, one of the 'wrack' species, discussed below, and a single *Ptenidium* with strongly punctate elytra, perhaps *P. punctatum*, another 'wrack' element. A range of aquatic invertebrates was present, including the ostracods and *Daphnia* mentioned above, a chironomid midge larva, and at least two *Oulimnius* sp, the last requiring clean flowing water. This material clearly deserves full investigation using an additional subsample.

The 'squash' subsample was mostly organic detritus, with some inorganic material. Some pollen grains/spores and many diatoms (of at least eight different forms) were present. One rather poorly preserved *Trichuris* egg and one *?Ascaris* egg were present.

Feature/Context 296/6 [post c. 1789?; organic backfill of stone cistern]

Sample 94/T (2.65 kg sieved to 300 microns with paraffin flotation and washover; approximately 3 litres of unprocessed sediment remain)

Moist, mid brown to black (internally – sulphide staining), soft and slightly sticky (working soft and

sticky, rubs brown), humic, very slightly sandy, slightly clay silt. There were no obvious inclusions.

There was a small residue (dry weight 0.6 kg) of sand and stones, with some coal and cinder (6 g). Traces of brick/tile (4 g), pot (6 g), shellfish (2 fragments each of cockle and mussel, *Mytilus edulis* L., 3 g) and bone (2 g) were all present. The five fragments of bone from this sample were well-preserved. Fish remains included a ling (*Molva molva* (L.)) vertebra fragment and a gadid finray, whilst a small hare (*Lepus* sp.) or rabbit vertebra was also identified.

The very small washover of about 90 ml consisted of wood and cinders with a few unidentified snails. The wood fragments (to 25 mm) included conifer wood (to 2 mm). A few other identifiable plant remains were present, including hemp achene fragments.

The small flot was (proportionally) rich in insects, which were rather well preserved (E 1.5-2.5, mode 2.0 weak; F 1.5-3.0, mode 2.0 weak). The outstanding ecological components were subterranean fauna (*Trechus micros*, at least two individuals of a second *Trechus* species, and several *Coprophilus striatulus*), and the clean-water aquatic *Oulimnius* sp. (at least three). The latter presumably arrived in the water supply, and may have entered an underground culvert or the cistern itself, if they were not post-depositional intrusions (this is discussed below). A single *Tipnus unicolor* was noted (see below), and there was also a grain beetle, *Oryzaephilus* sp., and a single flea (not identifiable to species). Although insect remains were dilute in the subsample examined, this material deserves further investigation.

The 'squash' subsample was approximately half inorganic and half organic detritus, with some pollen grains/spores and many diatoms (of at least 4 different forms). No intestinal parasite eggs were seen.

Feature/Context 272/5 [?18th century; ?basal backfill of brick cistern]

Sample 77/T (3.3 kg sieved to 300 microns with washover; approximately 3 litres of unprocessed sediment remain)

Moist, mid grey-brown to mid grey, stiff and sticky to soft (working very sticky, rubs brown), sandy clay silt, with some stones (2 to 60 mm) present.

The medium-sized residue (dry weight 1.1 kg) was mostly of sand and stones, with coal/cinder (8 g), brick/tile (14 g), slag (4 g) and glass (<1 g). Two shellfish valves (<1 g) were present, one of cockle and the other of *Donax vittatus* (da Costa). Nine fragments of bone (1 g) were recovered from this sample, most were burnt and none were identifiable.

The small washover of about 20 ml was mostly cinder-like material, but with some decayed wood fragments (to 10 mm, including conifer wood to 2 mm) and ?peat (to 5 mm). The rather small assemblage of fruits and seeds and other remains included hemp and weld, together with a single seed of opium poppy (*Papaver somniferum* L.), fragments of leafless heather twig and a modest group of weeds. Although not subjected to paraffin flotation, there were small numbers of insect remains in the washover; they were typical of the site and included *Tipnus unicolor*, and the storage pests *Oryzaephilus* sp. and *Cryptolestes* sp. It would probably be worth recording insects from a much large subsample if additional sediment can be obtained.

The 'squash' subsample was inorganic, with only a trace of organic detritus.

Feature/Context 161/1 [late 18th /early 19th century; basal fill of wood-lined privy pit]

Sample 40/T (2.5 kg sieved to 300 microns with paraffin flotation and washover; approximately 2.5 litres of unprocessed sediment remain)

Moist, mid brown to mid grey-brown, soft and slightly sticky, to crumbly (working soft, rubs brown), ?humic, slightly sandy slightly clay silt. Stones (6 to 60 mm, including quartz) and fine plant material were present.

There was a moderately large residue of about 700 ml, mainly mineral material, including some large (to 110 mm) fragments of purple slate, with some brick/tile and mortar as well as sand, grit and gravel. There were also some fragments of peat (to 20 mm).

The very small washover (of a few tens of ml in volume) was of woody debris, coal, cinder, and further peat (this last also represented by *Sphagnum imbricatum* leaves). Fruits and seeds were sparse, and preservation variable; the remains included some well-preserved but mostly fragmentary hop achenes, seeds of rose (*Rosa*), blackberry and raspberry (*Rubus idaeus* L.) and leafless shoot fragments of heather.

The flot, consisting mostly of very humified plant debris, contained only a few insects other than numerous remains of the burrowing beetle *Anommatus duodecimstriatus* (Müller), which was presumably intrusive, as probably were two *Trechus micros*. Other insects included the spider beetle *Tipnus unicolor*, and *Cercyon ?depressus*—both are discussed below. Preservation was variable and sometimes poor, but this did not explain the surprisingly low concentration of insect remains in a feature of this kind (E 1.5-4.0, mode 2.5 weak; F 1.5-3.5, mode 2.5 weak; some fossils showing patchy decay). It may be worth examining an additional subsample of this material in the hope of finding a patch of sediment with a higher concentration

of remains. The main fill of the feature contained many more insects.

The 'squash' subsample was mostly organic detritus with some inorganic material. Many pollen grains/spores (including fungal spores) and fragments of plant tissue were present. Five, mostly very poorly preserved (very pale), *Trichuris* eggs were noted.

Feature/Context 161/3 [late 18th /early 19th century; main fill of wood-lined privy pit]

Sample 41/T (3 kg sieved to 300 microns with paraffin flotation and washover; approximately 4 litres of unprocessed sediment remain)

Moist, mid grey-brown to black internally (sulphide staining), soft to slightly sticky (working soft, rubs brown), humic, slightly clay silt and amorphous organic sediment. Small stones (2 to 6 mm) were present.

The large residue of about 1150 ml included some 700 ml of mineral material, the rest forming a washover of flaky organic material including spongy fragments thought to originate in some kind of bark. There were also some wood fragments (to 30 mm, including material that had been worked and which bore 'worm' holes), and also conifer wood (to 4 mm). A component evidently originating in food (perhaps from faeces, though, if so, this was not a major component of the deposit) included some fragments of fruit 'skin' (epidermis), amongst which some specimens with large multicellular processes appeared to be gooseberry (*Ribes uva-crispa* L.). There were also seeds and endocarp fragments of apple, seeds of blackberry and a few well-preserved seeds with an angular shape and characteristic surface texture which could not be identified but which seem quite likely also to be from an unusual (in terms of the fossil record) food or flavouring plant. Other well preserved material included hop achenes, heather shoot tips (with leaves surviving), flowers and buds, gorse needles, and some flax (*Linum usitatissimum* L.) seed. A single well-preserved charred barley (*Hordeum*) grain was also noted as well as a fragment of charred textile. The mineral fraction of the residue was mainly sand, grit and gravel, with some peat, cinder, and coal.

The small flot consisted almost entirely of insect remains, with rare earthworm egg capsules and moderate numbers of mites. Chemical preservation was good, but some remains were fragmented (E 1.0-2.0, mode 1.5 distinct; F 1.5-3.0, mode 2.5 weak). This was primarily an assemblage of beetles typical of intensive occupation, with habitats ranging from rather dry to foul, together with rarer water beetles and plant feeders. There were at least three *Tipnus unicolor*, a spider beetle very typical of later- and post-medieval towns, and other storage and domestic species such as *Oryzaephilus* sp., *Stegobium paniceum* (Linnaeus), and

Tenebrio obscurus Fabricius. Remains of fleas were common, but the easily-identified heads were not seen. There was an abdomen of a bug nymph which may just possibly have been the bedbug, *Cimex*, on size and shape. Parts of at least two 'wrack' *Cercyon* were noted. Insects in this deposit deserve detailed analysis using an additional subsample.

The 'squash' subsample was mostly organic detritus with some inorganic material. Many pollen grains/spores and diatoms (of at least 5 types) were present, as were some ?phytolith fragments and three live soil nematodes. Four rather variably preserved *Trichuris* eggs were seen, one of which retained both polar plugs and would be measurable, and a single ?*Ascaris* egg was also noted.

Feature/Context 24/2 [18th century/pre-1847; formal garden plant bole]

Sample 1/T (1.5 kg sieved to 300 microns with washover; approximately 0.1 litres of unprocessed sediment remain)

Just moist, dark grey-brown to very dark grey, unconsolidated very ashy, slightly sandy, slightly clay silt. Stones (2 to 6 mm) were present.

The residue was rather small (dry weight 0.6 kg) and mostly of coal and cinder, with some stones and sand. Other remains included brick/tile (1 g), glass (<1 g), ?copper wire (<1 g), a cockle valve fragment (<1 g) and some bone (26 g). Most of the fifty bone fragments were burnt or scorched. They included the remains of large and medium-sized mammals, together with a few fish fragments, one of which was identified as herring.

The moderate-sized washover of about 125 ml of (predominantly) cinders and coal 'char' also contained some coal and a little charcoal; there were some small charred twigs which may well be gorse, of which charred leaves were identified amongst the finer fractions.

The 'squash' subsample was approximately half organic detritus and half inorganic, with some ?phytolith fragments. No eggs of intestinal parasites were seen.

Discussion and statement of potential

Plant remains preserved by anoxic 'waterlogging' were usually present and in some cases preservation was excellent (notably the fill of a wood-lined privy pit, Feature/Context 161/3), though overall proportions of organic material were generally

quite low. Wood fragments of some kind were almost always present, with fragments (usually <5 mm, often smaller) of conifer wood (softwood, not identified further at this stage) observed in nearly three-quarters of the samples; the frequent small fragments perhaps originated in sawdust. Some of the charcoal was also from softwood.

For those samples yielding more than a trace of fruits and seeds, diversity of plant remains was rather low, with only hemp and weld both occurring regularly. Perhaps both were part of the urban flora rather than crop plants; it would certainly be interesting to explore published floras of Dublin from the 19th and 20th century to see if such plants were recorded as denizens of the town at this period (as for example in the English port of Kingston-upon-Hull, cf. Robinson, 1902; Crackles 1990). Hop achenes were present in a fifth of the samples, but generally plants likely to have been of utility to the inhabitants of the site were rather rare and most of the other taxa recorded were probably weeds of gardens or waste ground, or remains likely to have arrived in peat (of which charred and uncharred material was rather frequently observed in small amounts), or perhaps in hay or straw (there was really only one assemblage hinting at the presence of litter-rich material like stable manure). The sample from privy pit 161/3 gave some good evidence for food, but did not indicate a primary faecal deposit and the range of taxa was low. Fig, recorded in four other samples, was (perhaps surprisingly) not present here. The importation of both heather and gorse—potentially for a variety of different uses—is attested from several of the samples.

The site provided some very remarkable assemblages of insects, from a poorly-represented period in which much ecological change was probably occurring as towns became more controlled and species were imported from overseas (e.g. the cockroaches at the present site, only the fourth record from a site in the British Isles). The assemblages were dominated by species typical of intensive

occupation sites, including 'house fauna'. Most also included a few remains of species normally found in rather foul decaying matter, but not in large numbers (an exception being *Anotylus complanatus* in privy fill 250/5). Most of these remains appear to have been from stray individuals, as do the very rare 'outdoor' forms. The rarity of the latter at this site is striking, and presumably this testifies to deposition in very protected situations. The repeated occurrence of *Tipnus unicolor* is typical of later medieval to early modern deposits. Grain beetles (*Oryzaephilus surinamensis*, *Cryptolestes* sp. and *Sitophilus granarius*) were present in a substantial proportion of the deposits, but never in large numbers; there was no indication of the disposal of spoiled grain, for example.

The presence of clean water aquatics in several deposits, mostly cistern fills, is notable. Much the most likely explanation of their presence (and that of the various other aquatics) is that they arrived in a clean water supply during the use phase of these features.

Subterranean taxa were present in a large proportion of the assemblages. These may have invaded post-depositionally, but it is possible that they actually lived in the cut features during their use, or entered underground water supplies or accidentally fell into cisterns. These remains did not show any evidence of a post-depositional origin, as they were in deposits with superb preservation (presumably lacking voids to burrow down, and probably never de-watered), and their preservation is the same as that of the rest of the fauna.

Several samples yielded the 'wrack' *Cercyon ?depressus* (the identification is almost certainly correct but requires careful confirmation; the alternative is the ecologically-related *C. littoralis* (Gyllenhal)). *C. depressus* and *C. littoralis* are found in decaying stranded wrack (seaweed) and other salt-soaked decaying matter. The remains may conceivably be migrating strays from estuarine shores, but the possibility that they

colonised some material on the site must be entertained. *C. depressus* was recorded from post-medieval occupation deposits in Chester by Jaques *et al.* (forthcoming). There are also a few less surprising records, for example from estuarine occupation and creek deposits at the Magistrates' Courts site, Hull (Hall *et al.* 2000a; b).

Seven of the samples (Samples 5, 6, 8, 40, 41, 66, 93 – most interpreted as either privy pit fills or later 'privy' fills of a barrel cistern) contained some eggs of intestinal parasitic worms. In each case the numbers were small and might be attributed to a 'background' level indicating that the deposits contained some, but were not primarily of, faecal material. This is perhaps most interesting for those deposits interpreted as 'privy' fills, indicating that (as noted above from the plant remains from privy pit fill 161/3) this was probably not their sole, or even primary, function. Two fills of a drystone privy pit (Samples 3 and 4, 29/7 and 29/8 respectively) gave no parasite eggs suggesting no faecal content—though these fills were largely inorganic, and the preservation of other biological remains poor, so that any eggs originally present may have completely decayed. The *Trichuris* eggs seen were generally rather poorly preserved, rarely retaining even one polar plug. Comparison of these eggs (via a few spot measurements) with data for modern trichurids (Ash and Orihel 1984; Kassai 1998) indicated that the eggs seen were almost certainly of either *Trichuris trichiura* (Linnaeus) or *T. suis* (Schrank), the whipworms of humans and pigs respectively, or perhaps of both. It is particularly difficult to distinguish these two species purely by visual examination of their eggs as the normal size range for the eggs of *T. trichiura* is a wholly contained subset of that for *T. suis*. When large numbers of measurable trichurid eggs are present, a statistical approach to their identification, or the determination of the presence of more than one population, may be attempted, but this is not true of the current material. Similarly, the eggs of the ascarids *Ascaris lumbricoides* (Linnaeus) and *A. suum*

(Goeze), the roundworms of humans and pigs, respectively, (though some parasitologists believe that there is just one species of *Ascaris* that infests both humans and pigs) are morphologically almost identical. Taylor (1955) has remarked (in relation to medieval remains) that a high ratio of *Ascaris* to *Trichuris* eggs, may indicate pig rather than human faeces. Conversely, the low ratios observed here (single *Ascaris* eggs being only tentatively identified in two deposits) may suggest the faecal content to be of primarily human origin.

Small quantities of shellfish remains were recovered from several of the samples. There was too little material to be of any great interpretative value but the shells of cockle and mussel most likely represent food waste.

The vertebrate remains recovered from the samples were mostly well preserved and those which could be identified were mainly fish. The largest accumulations of material were recovered from the barrel cistern fills, 250/4 and 250/5, of 18th century date, and an ashy garden dump (207/-) dated to the late 17th/18th century. Scorched and burnt bones were common within the deposits resulting in some fresh breakage damage because of the brittle nature of these fragments. The identified fish bones included the remains of Gadidae (including haddock, ling and ?cod), herring and flatfish, together with single fragments of ?ray and ?grey gurnard. These taxa, particularly the gadids, are typically recovered from medieval and post-medieval urban deposits and clearly formed an important element of the diet. Mammal and bird remains in the sample were not particularly numerous, but included caprovid, pig, hare/rabbit and chicken. All the vertebrate remains are likely to represent domestic household refuse from the preparation and consumption of food.

It is clear that some of the deposits from this site show considerable potential for the preservation of vertebrate remains, particularly those of fish. Systematically recovered fish assemblages of medieval and

post-medieval date are rare and there is a lack of understanding of the exploitation of past fish stocks and the trade/supply relationships between the coastal fisheries and the urban settlements.

Recommendations

Well-preserved plant remains from deposits of this late date are very rare (though assemblages from a site in the city centre of Chester (Hall *et al.* 2002 and Jaques *et al.* forthcoming) have some very similar characteristics to those from the present site). To date, the only post-medieval material examined from Dublin appears to be a small number of records for sites in the Winetavern Street/Fishamble Street/Wood Quay area mentioned by Mitchell (1987) and Geraghty (1996), both of whom were essentially concerned with much earlier material. At least a few of the richer assemblages should be recorded in more detail, preferably using some larger subsamples in order to increase the chances of recovering rare but interpretatively significant taxa.

Several of the insect assemblages from Newmarket Street were remarkable in themselves, and most certainly should be recorded, using larger or supplementary subsamples to provide sufficient remains for interpretation. However, it is also desirable to record the remains for site-level analysis and inter-site comparison, as well as for studies of the diversity of synanthropes (insects favoured by human activity) in occupation sites (Kenward 1997). Although this is an ecologically and historically important period, groups of post-medieval insects are very rarely analysed and every opportunity should be taken to put such material on record.

No further study of the eggs of intestinal parasites from these deposits is warranted. However, some additional study of other microfossils (the diatoms for example) and invertebrates (ostracods, freshwater snails)

present might be of value in support of further work on the insect remains.

The current vertebrate assemblage [from the samples] is too small to warrant further consideration unless additional sediment were to be processed.

In the light of the 'Review of Urban Archaeology Research' produced by The Heritage Council [Ireland] which suggests that '...many urban deposits are not even being sampled for their environmental content...' (Johnson 2000), it is highly recommended that further excavation at this site should be accompanied by a comprehensive sampling strategy for the recovery of useful faunal and floral assemblages.

Retention and disposal

All of the remaining sediment, together with the remains extracted from the processed subsamples, should be retained for the present.

Archive

All material is currently stored by Palaeoecology Research Services (Unit 8, Dabble Duck Industrial Estate, Shildon, County Durham), along with paper and electronic records pertaining to the work described here.

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