

Reports from the Environmental Archaeology Unit, York 97/51, 12 pp.

**An evaluation of biological remains from excavations at
British Gas, Davygate, York (site code: 1997.102)**

by

John Carrott, Paul Hughes, Deborah Jaques, Harry Kenward, Frances Large
and Darren Worthy

Summary

Five samples of sediment and five boxes of hand-collected bone from deposits of ?late Roman to modern date excavated at British Gas, Davygate, York, were submitted for an evaluation of their potential for bioarchaeological analysis.

Plant and insect remains were present in small numbers in all of the subsamples, but, further work on the plant and invertebrate assemblages is probably unjustified given the low concentration of remains and their poor preservation. Localised concentrations of useful remains would almost certainly be recovered if further excavation were carried out.

The small assemblage of bone was, on the whole, reasonably well preserved and set within a tight dating framework. Variability of preservation, angularity and colour was observed within material from some deposits, possibly implying the inclusion of redeposited or residual bone. It is extremely likely that should further excavation be undertaken a moderately large, well preserved bone assemblage would be recovered. Few large bone assemblages of early to late medieval date have been recovered in this region and most of those remain unpublished.

Keywords: BRITISH GAS; DAVYGATE, YORK; EVALUATION; ?LATE ROMAN; MEDIEVAL; POST-MEDIEVAL; PLANT REMAINS; CHARRED PLANT REMAINS; INTESTINAL PARASITE EGGS; INVERTEBRATE REMAINS; INSECTS; BONE

Authors' address:

Palaeoecology Research Services
Environmental Archaeology Unit
University of York
Heslington
York YO1 5DD

Prepared for:

York Archaeological Trust
Cromwell House
13 Ogleforth
York YO1 2JG

Telephone: (01904) 434485/433843/434487/434486
Answerphone: 433846
Fax: 433850

28 November 1997

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Introduction

Excavations at British Gas, Davygate, York, undertaken in October 1997 by York Archaeological Trust, revealed deposits of ?late Roman to modern date in four trenches. Five samples of sediment and five boxes of hand-collected bone from these deposits have been examined to evaluate their bioarchaeological potential.

Methods

Sediment samples

Five samples of sediment ('GBAs' *sensu* Dobney *et al.* 1992) were submitted (all from Trench 2). The samples were inspected in the laboratory and a description of their lithologies recorded using a standard *pro forma*. Subsamples of 1 kg were taken from four of the samples, and of 3 kg from the fifth, for extraction of macrofossil remains, following procedures of Kenward *et al.* (1980; 1986).

Plant macrofossils were examined from the residues, flots and washovers resulting from processing, and the flots and washovers were examined for invertebrate remains.

Concretions from two of the samples (Samples 2 and 3) were examined for the eggs of parasitic nematodes using the 'squash' technique of Dainton (1992).

Artefacts were removed from the residues to be returned to the excavator.

Vertebrate remains

A total of five boxes (each of approximately 20 litres) of hand-collected animal bone were recovered from Trenches 2 and 3. The material from thirty-two of the thirty-seven bone-bearing contexts were recorded in detail; subjective records were made of preservation, angularity (i.e. the nature of the broken surfaces) and colour, whilst quantities and identifications were noted where appropriate. Additionally, semi-quantitative information was recorded for the assemblage from each context concerning fragment size, dog gnawing, burning, butchery and fresh breaks. Fragments not identified to species were, where possible, grouped into the categories of large mammal (assumed to be horse, cow or large cervid), medium mammal (assumed to be sheep, pig or small cervid) and unidentifiable. Material from the remaining five contexts was not included in the evaluation as the deposits were of uncertain date or had been disturbed by clearance.

Results

The sediment samples

The results of the investigations are presented in context number order with information provided by the excavator in brackets. All of the sediment samples were from Trench 2.

Context 2010 [15th century pit fill]
Sample 1 (3 kg washover)

Moist, mid to dark brown, crumbly (working soft and sticky), slightly sandy clay silt with some light ginger

brown silty clay. Very small stones (2 to 6 mm), mortar, brick/tile, coal and charcoal were present in the sample.

The washover for this sample was small and composed principally of coal fragments (to 2 mm), char, and very degraded unburnt wood. A limited assemblage of weed species indicative of open or rough ground was recovered. Many of the seeds encountered were poorly preserved and frequently broken. This may be a consequence of the coarse sediment matrix. All of the identifiable seeds were small with a long axis of no more than 1-1.5 mm, therefore it is probable that the macrofossil assemblage has suffered from significant differential preservation. There were only traces of invertebrate remains, some of them badly preserved.

Cinder fragments and ash dominated the moderately small residue. The sample also contained part burnt and unburnt coal fragments (to 8 mm), infrequent pieces of brick/tile and bone.

The recovered bone assemblage contained some fish bones: 23 vertebrae (ten herring (*Clupea harengus* L.), one eel (*Anguilla anguilla* (L.)), two haddock (*Melanogrammus aeglefinus* (L.)) and ten unidentified fragments), along with three skull fragments tentatively identified as haddock and 34 unidentifiable spine and skull fragments. Two of the vertebrae were also crushed, almost certainly through being eaten. Domestic mammals were represented by a single pig upper incisor, whilst the unidentifiable material was mainly composed of large- and medium-sized mammal shaft and rib fragments (a total of 46), some of which were burnt. A goose tarsometatarsus fragment was also noted.

Evidence from this fill deposit suggests that the pit was used as a dump for waste from hearths and food waste. All of the seed taxa represented in the sample could have been blown into the forming deposit from surrounding open ground, or have been introduced in dumped soil.

Context 2028 [12th century pit fill]
Sample 3 (1 kg paraffin flotation)

Moist, mid grey brown, crumbly (working soft), humic clay silt. Small stones (6 to 20 mm), flecks of mortar, pot, rotted charcoal and fragments of rotted marine mollusc were present in the sample

Charcoal (to 7 mm) dominated the small washover from this sample. The range and number of macrofossils was very limited. Broken seeds of *Sambucus* spp., *Carex* spp. and *Hyoscyamus niger* L. were the only taxa recovered. There were few insect remains (and some of those were very badly preserved); all were species most likely to occur together in decaying matter. Some cysts of soil dwelling nematodes (perhaps *Heterodera* sp.) suggested that there may have been post-depositional burrowing, although the cysts may have entered in dumped soil. Sand and brick/tile was frequent in the washover.

Pieces of faecal concretion (a 'squash' revealed eggs of *Trichuris* and *Ascaris*) were common in the moderately large residue, which also contained a single iron object, a shard of pottery, frequent brick/tile and occasional stones (to 40 mm).

The components of this sample suggest that the deposit was a cesspit fill.

Context 2031 [12th century dump deposit]
Sample 2 (1 kg washover)

Moist, dark brown, brittle and sticky (working soft), very humic clay silt. Rotted mortar, concretions (to 12 mm), wood, twigs, bone and very rotted marine mollusc shell were present in the sample.

This sample contained a range of disturbed or waste ground weed species including small nettle (*Urtica urens* L.), long prickly headed poppy (*Papaver argemone* L.), danewort (*Sambucus ebulus* L.) and henbane (*Hyoscyamus niger*). A number of these species prefer relatively light or sandy soils. The remaining constituents of the washover include, charcoal fragments (to 4 mm), degraded herbaceous rootlets, *Juncus* spp. seeds and rare leaves of the bog moss taxon, *Sphagnum* sect. *Acutifolia*. *Sphagnum* is unlikely to have grown in the locality of the pit, so this record suggests that moss was imported to the site from either heaths or mires. Insects were rare, fragmentary and very poorly preserved (showing yellow or brown colouration). Those which could be identified were typical of occupation site assemblages. Cysts of soil nematodes (cf. *Heterodera* sp.) were abundant, indicating dumped surface soil or penetration from above.

The small residue contained a significant amount of faecal concretion containing straw fragments and impressions of fly pupae. A microfossil 'squash'

revealed two *Trichuris* eggs and many phytoliths. Other components included gritstone fragments (to 30 mm), nacre shell, brick/tile, mineralised wood and a small amount of bone. This latter comprised eight identifiable and eleven (one fish, one bird and nine mammal) unidentifiable fragments. The identifiable fraction included two pig sesamoids and a metapodial fragment, all of which were acid-etched. Additionally, there were four herring and a single salmonid vertebrae, the latter showing characteristic damage consistent with having been eaten.

The constituents of the sample are consistent with the contents of a cesspit, which was surrounded by open disturbed ground.

Context 2044 [11th century pit fill]

Sample 4 (1 kg paraffin flotation)

Moist, dark brown, soft to crumbly (working soft), humic clay silt with clasts of pale olive brown ash. Very small stones (2 to 6 mm), lumps and flecks of mortar, rotted charcoal, bone and very rotted marine mollusc shell were present in the sample.

The small washover yielded a range of six open, disturbed ground weed taxa. Many of the seeds were poorly preserved. *Sambucus ebulus* L., *Hysocyamus niger* L. and *Urtica urens* L. were the most common species, although *Atriplex* spp. and the sclerotia of soil fungi (*Cenococcum* spp.) were also well represented. Charcoal (to 5 mm) and fragments of brick/tile were very frequent. Other constituents included poorly preserved herbaceous rootlets and occasional quartz sand grains. A small group of invertebrates was recorded, but they gave no clear ecological indications. A single respiratory process of an aquatic hoverfly larva can probably be regarded as evidence of the presence of rather foul liquid.

Coal and brick/tile fragments were frequent in the small residue, which also contained sandstone (to 25 mm) and quartz sand. One identifiable and 27 unidentifiable (one fish, 26 mammal) bone fragments were recovered from this sample. The identified fragment, a cattle metatarsal shaft, had been split longitudinally through the proximal articulation.

This deposit appears to represent general dumping of waste including some food debris.

Context 2048 [context partially examined in the field - ?late Roman]

Sample 5 (1 kg paraffin flotation)

Moist, mid to dark brown, soft and slightly sticky (working soft), humic clay silt. Very small stones (2 to 6 mm), rotted mortar, charcoal and very rotted marine mollusc shell were present in the sample.

This sample produced a very small washover, containing charcoal fragments (to 7 mm) and a limited range of seeds, including *Sambucus ebulus* L., elder (*Sambucus nigra* L.) and *Hysocyamus niger* L. The majority of the seeds examined were poorly preserved and probably represent a residual assemblage of resilient seed types. There were only traces of invertebrate remains.

The main components of the moderate residue were sand, brick/tile, washed pebbles (to 20 mm) highly degraded wood and unidentifiable herbaceous material.

The components of the sample suggest that it originated from a general dump for waste material.

Vertebrate remains

Bone from the sediment samples has been discussed previously, together with the other biological remains recovered.

The hand-collected vertebrate remains

Trench 2

Most of the bone (four of the five boxes) was recovered from this trench, mainly from dump and pit fill deposits, with a range of dates from the 10-11th centuries through to the 15th century.

Most of the assemblage was moderately well preserved, although some contexts (mainly those dated to 10-12th century) contained small numbers of fragments with rounded edges or with a battered appearance, possibly indicative of reworked material. Overall, colour was mostly recorded as brown or fawn, but it was apparent that material from some of the earlier deposits showed a range of colour within contexts. Dog gnawing was noted throughout the assemblage. Faecal concretions were identified on fragments from Context 2028, whilst a pig astragalus from Context 2007 showed extensive acid-etching

consistent with passage through the gut.

Evidence of butchery, particularly on cattle remains, was fairly extensive and included the longitudinal splitting of cattle tibiae, radii and metapodials. Deposits of 14th and 15th century date also contained cattle vertebrae which had been chopped sagittally, indicating the splitting of carcasses into sides.

The range of identified species recovered from the excavations is shown in Tables 1 to 4, together with total number of fragments, numbers of measurable bones and numbers of mandibles with teeth *in situ*.

The remains of cattle were the most common throughout all the periods represented, with caprovid (including a goat horncore) and pig remains also being present but in much lower frequencies. Interestingly, the proportions of juvenile cattle remains were significantly higher from 15th century deposits than from the earlier periods. Although the assemblages are rather limited by their small size, this increase in juvenile individuals has been noted at sites of post-medieval date (Albarella and Davis 1996; Dobney *et al.* 1996) and has been interpreted as evidence of dairying and the consequent surplus of calves for veal.

A range of skeletal elements was present for both cattle and caprovids, but cattle were represented mainly by isolated teeth, mandible fragments, metapodials and phalanges, with vertebrae and rib fragments included in the large mammal fraction. These elements tend to suggest the presence of primary butchery waste but the inclusion of meat bearing elements indicates that some domestic or food waste was also present. However, the variability of colour and 'angularity' (nature of the broken surfaces) noted between and within contexts suggests that it is quite possible for the bones to have originated from different sources and activities and material could have been redeposited after originally being disposed of elsewhere. Evidence of dog gnawing also suggests that some of the fragments must have been exposed for some time prior to their being incorporated into the deposit.

A single human femur was identified from Context 2047, another indicator of potentially mixed or redeposited material.

Horse, dog and cat remains were also present as were bones of chicken and goose. Most of the goose remains were identified as larger species of grey

geese (*Anser* spp.), and as such it was not possible to conclude whether they represented domestic or wild individuals. A single humerus was more consistent in size with a smaller goose and is almost certainly represents a wild species, either barnacle goose (*Branta leucopsis* Bechstein) or one of the smaller grey geese (*Anser albifrons* (Scopoli) or *A. brachyrhynchus* Baillon).

Remains of wild mammals included two fallow deer (*Dama dama* (L.)) post-cranial fragments (Contexts 2006 and 2014) and one hare (*Lepus* sp.) metapodial.

Fish remains were not numerous and were mostly unidentifiable but included two large flatfish vertebrae and a gadid dentary.

In total ninety-two measurable bones, sixteen mandibles with teeth and 26 isolated teeth were present in the hand collected assemblage from Trench 2.

Trench 3

Only a very small assemblage was produced from 12th-14th century deposits from this trench (Tables 5 and 6). Of the eleven contexts examined, only three yielded more than ten fragments. Material from Trench 3 was, on the whole, well preserved, with most of the fragments being fawn in colour, and only contexts 3017 and 3023 contained some fragments which appeared battered.

Only twenty fragments were identified to species and these included the remains of cattle, caprovid, pig, dog and chicken. Additionally, two fish fragments (a large vertebra and a maxilla) were recorded as haddock (*Melanogrammus aeglefinus* (L.)).

Discussion and statement of potential

Plant and insect remains were present in small numbers in all of the subsamples, and doubtless at least some of the deposits at this site would give assemblages of additional interpretative value providing sufficient sediment was processed. The information recovered would probably be of some value in building up a picture of zonation in

central York, given fairly tight dating.

The small assemblage of bone was, on the whole, reasonably well preserved and set within a tight dating framework. Variability of preservation, angularity and colour was observed within material from some deposits, possibly implying the inclusion of redeposited or residual bone. However, this assemblage shows some potential for producing useful zooarchaeological and archaeological information. The samples yielded small quantities of fish bone (Context 2010 in particular), demonstrating that vertebrate remains are well preserved in deposits from certain context types at this site and show some potential for further useful investigations of human activity.

It is extremely likely that should further excavations be undertaken a moderately large, well preserved bone assemblage would be recovered and that the implementation of an extensive and systematic programme of on-site sieving would produce a useful fish assemblage.

Few large bone assemblages of early to late medieval date have been recovered in this region and those that have remain largely unpublished. This period is poorly represented in the archaeological record of the city despite numerous evaluations producing small but sometimes useful assemblages, most of which have received no further funding.

Recommendations

Further work on the plant and invertebrate assemblages is probably unjustified given the low concentration of remains and their poor preservation. Any remaining sediment samples should be sieved to recover bone and artefacts.

As the dating framework produced for this site appears to be quite tight, it is recommended that a biometrical archive of the vertebrate remains be produced for the current assemblage (including any material recovered by sieving of additional sediment).

If deposits with organic preservation by anoxic waterlogging or higher concentrations of charred plant material are exposed by further excavation every effort should be made to sample and investigate them.

Retention and disposal

The sediment samples should be retained until such time as they may be processed for bone and artefact recovery.

The bone assemblage should be retained for the present.

Archive

All extracted fossils from the test subsamples, and the residues and flots are currently stored in the Environmental Archaeology Unit, University of York, along with paper and electronic records pertaining to the work described here.

Acknowledgements

The authors are grateful to York Archaeological Trust for making this material available.

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Table 1. Hand-collected vertebrate remains from 10th to 11th century deposits from Trench 2, Davygate, York. Key: meas = number of measurable fragments; mand = number of mandibles with teeth in situ; teeth = number of teeth of use for age-at-death data; total = total number of fragments.

species		meas	mand	teeth	total
<i>Canis</i> f. domestic	dog	1	-	-	1
<i>Equus</i> f. domestic	horse	-	-	-	1
<i>Sus</i> f. domestic	pig	1	-	-	6
<i>Bos</i> f. domestic	cow	5	-	2	34
Caprovid	sheep/goat	6	1	-	10
<i>Gallus</i> f. domestic	chicken	2	-	-	3
Fish		-	-	-	1
<i>Homo sapiens</i>	human	-	-	-	1
<i>Sub-total</i>					57
Large mammal		-	-	-	89
Medium mammal		-	-	-	8
Unidentified bird		-	-	-	1
<i>Sub-total</i>					98
Total		15	1	2	155

Table 2. Hand-collected vertebrate remains from 12th to 13th century deposits from Trench 2, Davygate, York. Key: meas = number of measurable fragments; mand = number of mandibles with teeth in situ; teeth = number of teeth of use for age-at-death data; total = total number of fragments.

species		meas	mand	teeth	total
<i>Lepus</i> sp.	hare	1	-	-	1
<i>Canis</i> f. domestic	dog	-	1	-	1
<i>Felis</i> f. domestic	cat	-	-	-	1
<i>Equus</i> f. domestic	horse	-	-	-	1
<i>Sus</i> f. domestic	pig	6	1	3	29
<i>Bos</i> f. domestic	cow	14	4	9	83
Caprovid	sheep/goat	10	1	-	27
<i>Anser</i> sp.	goose	3	-	-	4
<i>Gallus</i> f. domestic	chicken	5	-	-	5
Fish		-	-	-	1
<i>Sub-total</i>		39	7	12	153
Large mammal		-	-	-	163
Medium mammal		-	-	-	42
Unidentified		-	-	-	16
<i>Sub-total</i>					221
Total		39	7	12	374

Table 3. Hand-collected vertebrate remains from 14th century deposits from Trench 2, Davygate, York. Key: meas = number of measurable fragments; mand = number of mandibles with teeth in situ; teeth = number of teeth of use for age-at-death data; total = total number of fragments.

species		meas	mand	teeth	total
<i>Felis f. domestic</i>	cat	-	-	-	1
<i>Equus f. domestic</i>	horse	-	-	-	1
<i>Sus f. domestic</i>	pig	-	1	2	17
cf. <i>Dama dama</i> (L.)	?fallow deer	-	-	-	1
<i>Bos f. domestic</i>	cow	4	-	2	41
Caprovid	sheep/goat	1	-	1	5
<i>Anser sp.</i>	goose	-	-	-	2
<i>Gallus f. domestic</i>	chicken	2	-	-	5
Fish		-	-	-	6
<i>Sub-total</i>		7	1	5	79
Large mammal		-	-	-	77
Medium mammal		-	-	-	38
Unidentified bird		-	-	-	1
Unidentified		-	-	-	24
<i>Sub-total</i>					140
Total		7	1	5	219

Table 4. Hand-collected vertebrate remains from 15th century deposits from Trench 2, Davygate, York. Key: meas = number of measurable fragments; mand = number of mandibles with teeth in situ; teeth = number of teeth of use for age-at-death data; total = total number of fragments.

species		meas	mand	teeth	total
<i>Felis f. domestic</i>	cat	-	-	-	1
<i>Sus f. domestic</i>	pig	-	2	-	12
<i>Dama dama</i> (L.)	fallow deer	1	-	-	1
<i>Bos f. domestic</i>	cow	12	2	5	66
Caprovid	sheep/goat	9	3	2	29
<i>Anser</i> sp.	goose	3	-	-	3
cf. <i>Anser</i> sp.	?goose	-	-	-	1
<i>Gallus f. domestic</i>	chicken	7	-	-	13
Fish		-	-	-	4
<i>Sub-total</i>		32	7	7	130
Large mammal		-	-	-	122
Medium mammal		-	-	-	81
Unidentified bird		-	-	-	3
Unidentified		-	-	-	19
<i>Sub-total</i>					225
Total		32	7	7	355

Table 5. Hand-collected vertebrate remains from 12th century deposits from Trench 3, Davygate, York. Key: total = total number of fragments.

species		total
<i>Canis</i> f. domestic	dog	1
<i>Sus</i> f. domestic	pig	1
<i>Bos</i> f. domestic	cow	1
<i>Gallus</i> f. domestic	chicken	1
Fish		2
<i>Sub-total</i>		6
Large mammal		6
Medium mammal		2
Unidentified bird		1
Unidentified		2
<i>Sub-total</i>		11
Total		17

Table 6. Hand-collected vertebrate remains from 13th to 14th century deposits from Trench 3, Davygate, York. Key: meas = number of measurable fragments; teeth = number of teeth of use for age-at-death data; total = total number of fragments.

species		meas	teeth	total
<i>Sus</i> f. domestic	pig	1	-	2
<i>Bos</i> f. domestic	cow	1	2	8
Caprovid	sh/g	1	-	3
<i>Gallus</i> f. domestic	fowl	-	-	1
<i>Sub-total</i>		3	2	14
Large mammal		-	-	20
Medium mammal		-	-	6
Unidentified bird		-	-	1
Unidentified		-	-	4
<i>Sub-total</i>				31
Total		3	2	45