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Assessment of biological remains from excavations at Mount Grace Priory, N. Yorkshire (MG89-92)

by

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Summary

A series of samples of sediment, together with hand-collected bone, shell and charcoal, from excavations at Mount Grace Priory undertaken between 1989 and 1992, have been examined. The sediment samples have been investigated by means of two series of subsamples. Firstly a small number of 'test subsamples were taken, most of which were found to be barren of plant and invertebrate remains apart from occasional land snails (and in one case a modest assemblage). A much larger group of samples were 'bulk-sieved' to 1 mm and these have provided substantial assemblages of fish bone and some other bone and shell.

A small assemblage of hand-collected bones consisted mainly of common domesticated mammals and birds. There were also remains of seal, and some human bones. In view of its small size, and the bias inherent in the recovery method, this assemblage is of limited interpretative value.

The most important material for further work is the corpus of fish bone (mainly from marine species exploited for food) which was very abundant in some deposits. A small amount of further work on shell from sediment samples from ditch and drain fills and of shell from bulk-sieved residues, is also advocated.

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Introduction

Samples of sediment and hand-collected bone, shell and charcoal were submitted from excavations at the Carthusian priory at Mount Grace, N. Yorkshire, for an assessment of their potential for biological analysis. Material was available from the 1989-90 and 1992 seasons, with a large proportion of the samples from the latter phase representing a single large context that had been extensively sampled, primarily for examination of fish bone.

The material

Sediment samples

Methods

In all, samples from 46 contexts, representing all the archaeological phases of occupation, were available. They had been stored in polyethylene bags in a cool, dark place after excavation; there was evidence of colonisation of the storage containers by lacewings, but the sediment seemed not to have become contaminated by any modern organisms.

Samples bore context but not sample numbers, so for this exercise, individual bags of sediment from the same context were always been treated as separate samples, giving a total of approximately 116 samples. The breakdown of contexts by period and feature type is given in the Appendix, Table 1.

Two methods of processing were adopted for this material. The greater proportion (35 samples from 10 context) were 'bulk-sieved' (Kenward *et al.* 1980) to 1 mm, with a washover sieved to 500 μm, primarily for the recovery of smaller (mainly fish) bones, larger plant remains (especially charred cereals remains), and shell, and to examine the general composition of the coarser fractions of the sediments. A smaller group (ten samples from 11 contexts) were examined by means of 'test' subsamples (Kenward *et al.* 1986) in which, in each case, 2 kg of raw sediment was disaggregated and sieved to 300 μm. From the resultant residues, 'flots' or 'washovers' were taken and checked for insect and plant remains, the residues being dried before being examined. This strategy reflects the nature of the deposits sampled at Mount Grace—mostly devoid of organic matter other than bone and charcoal. 'Voucher' samples, usually of 3 kg, were retained for sediment description and as an archive in the event of further analysis being required.

Comparison of Table 1 with the results below shows that this assessment has not reviewed the material evenly with regard to date or feature type, a heavy bias having been established towards 'food waste' contexts from the Phase 2/3 kitchen deposits. However, this *does* reflect the sampling bias, in which there were, for example, 43 separate samples of context 1833, whilst features of Phase 0 were represented in no case by more than two bags, and these (mainly taken in the earlier years of excavation) were generally rather small samples of limited value for bulk sieving.

Results

The observations made on the samples processed for this assessment are given in the appendix.

Only two groups of material from the sediment samples require more detailed discussion here: fish bone and mollusc shell.

General comments on the fish bone

Large numbers of fish bones from the bulk-sieved samples have been rapidly scrutinised in order to characterise the assemblages. Provisional lists of species have been prepared for most samples but no detailed analyses have yet been undertaken. It is clear, however, that fish bone assemblages from this site were dominated by marine species, notably herring (*Clupea harengus*), and gadid (cod family) fish: cod (*Gadus morhua*), whiting (*Merlangius merlangus*), and haddock (*Melanogrammus aeglefinus*). In addition, substantial numbers of bones from flatfishes and rays were observed. Freshwater fishes were represented by small numbers of cyprinid (carp family), pike (*Esox lucius*) and perch (*Perca fluviatilis*) remains. Salmon (*Salmo salar*), eel (*Anguilla anguilla*) and sturgeon (*Acipenser sturio*), fishes that occur in both salt and freshwater, were only present in small numbers but serve to demonstrate the range of habitats and taxa exploited by the monks or their suppliers.

There are clear indications from the narrow range of species, and from the presence of species like sturgeon and turbot (*Scophthalmus maximus*) which would not have been common, that the priory was able to purchase top-quality fish. The paucity of freshwater species is consistent with finds from other sites (see Jones 1989).

Molluscs from bulk-sieved samples

Many of the samples subjected to bulk-sieving yielded fragments of mollusc shell. At first sight, these appear to be dominated by the remains of mussel (*Mytilus edulis*), a species which was poorly represented in the hand-collected mollusc shell. *It is suggested that further work on the residues from these samples should be undertaken to check whether this observation is accurate; this work could be undertaken as a student project (see also under* Recommendations*, below).*

Hand-collected remains

Bone, shell and charcoal collected by hand during excavation was also examined for this assessment.

Charcoal

'Spot' samples of hand-collected charcoal were provided from some 100 contexts, representing all the archaeological phases, though with a preponderance (between one quarter and one third) from phase 4. Some material (from 17 contexts) listed by the excavator was not present in assemblage, whilst a group of ten samples represented contexts not listed as yielding charcoal. Some of the samples taken in the field as 'charcoal' proved on inspection to be or to include coal (there was also a separate series of samples labelled 'coal'). These were separated from the charcoal proper, as were those samples from the 1900 trench or those otherwise indicated to be 'modern'.

A large proportion of the material (probably 80%, comprising large fragments in a good state of preservation)

should be identifiable, although perhaps up to 5% of the samples would require drying prior to examination. About 10% were estimated to be from twigs rather than trunk or branch wood.

Hand-collected shell

Shell from some 56 contexts, representing most phases of occupation, was available. About three-quarters of it was oyster (*Ostrea edulis*) with the remaining quarter being mostly cockle (*Cerastoderma edule*). A small number of minor species was also present. Land snails were found from a few contexts, the most common being *Cepaea* sp. and there were some *Oxychilus* sp. and a single *Arianta arbustorum*.

The material warrants no further action, though the data should be compared with the results from the analysis of molluscs from the sieved samples.

Hand-collected bone

The hand-collected bone comprised about 0.05 m^3 of material from a total of 165 contexts.

From the entire assemblage of 1163 fragments (weighing 12144.3 g), only 427 (8267.9g) were identified to species. Most of the bone (511 fragments from 65 contexts) was from Phase 4 deposits (see introduction to Appendix for a description of the archaeological phases). Bone from Phase 0 consisted of 131 fragments from 21 contexts, that from Phase 1, 175 fragments from 27 contexts, with Phase 2 producing 118 fragments from 24 contexts, Phase 3, 72 fragments from 20 contexts, and Phase 3-4, 156 fragments from eight contexts.

Recovery and preservation

All the mammal bone from this site was recovered by hand-collection (the amount of bone other than that of fish from the BS samples being negligible) and, as a result, the assemblage is subject to serious bias in favour of larger species and elements.

Bones from approximately 65% of the contexts were recorded as showing fair preservation, whilst the remainder were described as poor and very battered in appearance. Colour was variable, ranging from dark brown to fawn, and in a number of cases this variation occurred within single contexts, suggesting the possibility of mixed assemblages. Fresh breaks and dog-gnawing were observed in material from most deposits and there was also evidence for some butchery, although again not in any significant quantity.

Species representation (see Appendix Table 3)

The bulk of the identifiable fraction from all phases was from domestic mammals which included cattle (97 fragments), caprovid (107 fragments), pig (51 fragments) and horse (41 fragments). Bird remains totalled 36 fragments (22 from phase 4 alone) and were almost exclusively domestic chicken and goose. Additional species included small canid (probably fox cf. *Vulpes vulpes* L.), domestic cat and dog, hare (*Lepus* cf. *europaeus* Pallas), hedgehog (*Erinaceus europaeus* L.), the majority from phases 3 and 4. Bones of small mammals were also present in very small numbers and included a femur of the black rat (*Rattus rattus* (L.)) from context 1899 (Phase 3).

Cervid remains were identified from four contexts (1636 from Phase 3, 607 from Phase 3-4, and 528 and 1037 from Phase

4). Three were metapodial fragments, all identified as fallow deer (*Dama dama* (L.)), whilst the fourth was a roe deer (*Capreolus capreolus* L.) mandible fragment complete with teeth. All (bar one) came from contexts described as `occupation' deposits.

Of particular interest were six fragments identified as Phocidae (seal). These were a metapodial from context 1835 (Phase 2), a phalanx from 1449 (Phase 3), a metacarpal from 577 (Phase 3-4), two canines from 1513 and 1519 (Phase 4) and a fibula (tentatively identified as seal) from 1826 (Phase 4). Most of these fragments were recovered from different deposits located within the kitchen area and, although no butchery marks were present, must have been part of domestic kitchen waste and therefore consumed.

Five contexts (1097, 1094, 1115, 1158, 734) from Phase 4 produced amphibian bones, most of which were identified as toad (*Bufo bufo* L.) and, not surprisingly, were all from drain fills.

Scattered human remains (a total of only eight fragments) were recovered from contexts 1260 (Phase 1), 1915 (Phase 3), 574 and 587 (Phase 3-4) and 1498 (Phase 4), most being from deposits in and around the kitchen area.

From the entire assemblage there were only 37 measurable bones (10 cattle, 10 caprovid, 2 pig, 9 horse, 4 cat, 1 canid and a single bird). There were only seven mandibles with teeth (most of them caprovid) and 29 isolated teeth.

Statement of potential and recommendations for further work

(Note: Costings for the further work suggested here are given in Appendix Table 4.)

Sediment samples

Preservation of soft organic remains was almost non-existent and there can be no justification for further analysis of samples from this site for plant and invertebrate macrofossils preserved by ‘anoxic waterlogging’. Charred plant remains other than charcoal were similarly very sparse and no programme for recovery of these seems warranted.

One of the deposits identified archaeologically as a drain fill yielded a useful assemblage of land Mollusca. *It is thought that other drain and ditch fills (of which about 13 remain uninvestigated) should be examined to establish something of the local environment at this phase.*

Fish and other bone has been extracted from many of the samples processed so far and no further material is required. *It is suggested, however, that the remaining sediment samples are used for educational purposes via the Archaeological Resource Centre. A small amount of further work on molluscs shell from the BS residues has been argued for (above, p.3).*

Charcoal

A limited survey of the material available (perhaps 20%) to check on the range of taxa present seems appropriate, taking account of the range of phases and context types represented.

Fish bone

The fish bone from these deposits represents an unique archive of medieval diet and fish exploitation in a Carthusian monastery and, for the first time, we have an opportunity to look in some detail at this interesting aspect of medieval economy.

The fish bone already recovered from bulk-sieved samples is clearly characteristic of the site as a whole and needs to be subsampled prior to more detailed investigation. A targeted series of samples is therefore most appropriate for further analysis; the selection should be undertaken in consultation with the excavator. There are small numbers of hand-collected fish bones that need to be washed before they can be identified.

Hand-collected bone

Although few good bone assemblages from specialised monastic institutions have been recovered, the mammal bone assemblage from Mount Grace Priory as it stands is extremely limited in its potential research value by its small size and lack of systematic recovery. However it is interesting to note that domestic mammals obviously played a significant part in the diet at the priory, although the .Carthusian order were, according to their Rule, strict vegetarians. In addition the presence of seal remains suggests that carcases or joints were brought to the priory and eaten, since marine mammals were considered to be `fish' in terms of the priory's strict dietary regimes.

No further work is recommended.

Retention/disposal

As mentioned above, all remaining sediment samples could be used for educational purposes after selection of any further material for processing for extraction of snails. It is important that material from contexts not examined as part of this assessment is processed under controlled laboratory conditions and all residues examined before being passed on for use by the general public.

Archive

All remaining samples, together with paper and electronic archive material relating to the processing of sediment samples from this site are currently held at the EAU; residues from BS samples are at the EAU and at the ARC.

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Appendix

The archaeological phases defined for the site and used as the basis for the chronological arrangement of contexts below, are as follows:

Phase 0	Pre-monastic features cut into natural clay (C12-midC13)
Phase 1	Earliest monastic buildings (*c.*1400-10)
Phase 2	Erection or remodelling of buildings (*c.* 1420-30)
Phase 3	Possible third phase of building (*c.* 1470)
Phase 4	Latest phase of building (1520s) and initial robbing and demolition of 1539 (may include some animal bone in demolition deposits that is not, therefore, strictly monastic)

For each phase, contexts are discussed in groups according to their location on the site and the context type concerned (the latter two parameters are given in brackets). The percentage loss by weight during bulk-sieving is given after the weight of sample sieved as a rough guide to the proportion of the sediment in the <1 mm fraction. Descriptions of the residues for the 'test' subsamples are not given since the bulk-sieved residues provide parallel information. Some sediment descriptions were not made at the time of processing and have not been pursued latterly. The results of examination of the BS samples are also presented in Table 2.

Phase 1-2

[latrine drain: faecal]

Context 1115
Sample 1115

BS (7 kg, 46%): The residue was almost 100% sand and gravel with traces of oyster shell and charcoal.

Context 1119
Sample 1119 [just moist, reddish-brown, crumbly (?trowelled), stony, slightly silty sand (?somewhat burnt) with rounded pebbles to 30 mm]

Test (2 kg): There was a very small washover consisting of modern rootlets with a little charcoal and coal to 8 mm, traces of small bones and snail shell and *Heterodera* cysts.

BS (4.5 kg, 56%): The residue consisted of abundant rounded sandstone gravel, apparently devoid of any biological remains or artefacts. It contained a few fish bones.

Phase 2

[refectory: drain fill]

Context 864
Sample 8641 [moist, olive grey-brown, crumbly to plastic sandy clay, with moderate numbers of stones 2-20 mm, and traces of charcoal]

Test (2 kg): The very small washover was mostly of charcoal to 4 mm with snails (including *Cecilioides acicula*, a burrowing species which was probably intrusive), a fragment of apple (*Malus*) endocarp ('core'), presumably ancient, several very decayed fragments of ?hemlock (*Conium*) fruits, a trace of elderberry seed fragments, some coal and 'char' (fragments, often in bead form, of charred material clearly neither coal nor charcoal and probably substances exuding from burning wood, coal or other material), and modest numbers of *Heterodera* cysts.

BS (2.56 kg): Residue of rounded stones and gravel with a trace of fish bone

This subsample was sieved by hand rather than in a semi-automated machine and inadvertently treated like a 'test' subsample. The rather large washover contained traces of snails (including *Cecilioides acicula*, probably intrusive) and charcoal to 3 mm. There were a few fish bones.

Sample 8642 [moist, light-mid grey-brown, crumbly, stony, slightly silty sand with abundant stones 2-20 mm]

Test (2 kg): The tiny washover was mostly what appeared to be a kind of bacterial film (the result of a prolonged period during which the subsample was standing in a bucket of water prior to disaggregation). There were some *Heterodera* (or similar) cysts, a little charcoal to 10 mm (most of it much smaller), an elderberry seed fragment and two snails, one of them *Cecilioides acicula* (probably intrusive).

BS (3.48 kg): Residue consisted of rounded stones and gravel with a trace of fish bone.

This subsample was treated like the BS subsample from 8641. The rather large washover gave several land snails but otherwise only traces of charcoal to 15 mm. There were a few fish bones.

Phase 2bi

[kitchen: food waste]

Context 1941

Sample 19411

BS (28 kg; 75%): The residue was dominated by rounded sandstone but there were also abundant fish bone and moderate numbers of shellfish (oyster, mussel and cockle) and a trace of eggshell.

Sample 19412

BS (25 kg; 72%): The residue was of moderate amounts of rounded sandstone, but with an abundance of fish bone; there were also rather large numbers of fragments of cockle shell.

Sample 19413

BS (9 kg; 67%): There were abundant rounded and angular sandstone and limestone pebbles in the residue, together with large numbers of fish bones and moderate numbers of eggshell fragments, and traces of oyster, mussel and cockle shell.

Context 1833

Sample 183301

BS (4.4 kg; 92%): The very small residue consisted mainly of fish bone and cinder with a little coal, sandstone and shellfish fragments.

Sample 183302

BS (37 kg; 84%): The small residue was dominated by an abundance of cinder and coal, with moderate amounts of fish bone and rounded sandstone pebbles.

Sample 183303

BS (21 kg; 86%): The small residue was mostly cinders with coal and traces of fish bone and mussel and oyster shell fragments.

Sample 183305

BS (8.1 kg; 85%): The small residue was dominated by cinders and eggshell, with modest amounts of coal and traces of sandstone, mussel shell and fish bone.

Sample 183306

Test (2 kg): The small washover was quite rich in strongly decayed mussel (*Mytilus edulis*) shell fragments (reduced to asbestos-like 'fibres') with some charcoal and coal to 2 mm; there was a trace of root bark, a single tibia of a juvenile rodent, probably *Mus* or *Apodemus* sp.

BS (23 kg; 91 %): The very small residue was mostly fish bone with traces of sandstone, coal, cinder and pot, with some undisaggregated sediment.

Sample 183308

BS (20 kg; 80%): The small residue was mostly cinder, with some coal and traces of sandstone and limestone, mussel shell and fish bone.

Sample 183309

BS (15 kg; 87%): There were moderate amounts of rounded and angular sandstone fragments and cinders in the very small residue, along with traces of eggshell, coal, and fish bone.

Sample 183310

BS (5.1 kg; 87%): The very small residue was dominated by cinders, with small amounts of fish bone, and traces of coal, sandstone and oyster and mussel shell fragments.

Sample 183311

BS (19 kg; 89%): The very small residue was rich in eggshell and cinder with moderate amounts of oyster and mussel shell and traces of rounded sandstone and fish bone.

Sample 183312

BS (27 kg ; 93%): The very small residue was rich in fish bone with moderate amounts of cinder and traces of coal, rounded sandstone and oyster and mussel shell.

Sample 183313

BS (16 kg; 88%): The very small residue was dominated by fish bone with traces of sandstone, brick, pot, coal, cinder, mussel shell and charcoal and with a fragment of ?bird bone.

Sample 183314

Test (2 kg): The modest washover consisted mainly of modern rootlets with traces of root bark and charcoal and 'char' to 2 mm.

BS (7 kg; 67%): Residue mostly cinders with quite a large component of fish bone and eggshell, and a trace of mammal bone and mussel shell.

Sample 183315

Test (2 kg): [just moist, dark grey, brittle to crumbly, slightly sandy silt with occasional patches of grey silt or ash and abundant fish bone; some evidence of internal stratification within unbroken clasts and occasional small brown clay pellets evident on washing.

BS (11.5 kg; 91%): There was a very small residue, predominantly fish bone, with modest amounts of eggshell and cinders, and traces of mussel shell, rounded sandstone, and coal.

Sample 183316

BS (25 kg; 86%): The very small residue was mostly fish bone and eggshell, with moderate amounts of cinder and traces of coal, rounded sandstone and oyster and mussel shell.

Sample 183318

BS (22 kg; 86%): There was an abundance of fish bone in the very small residue, together with moderate amounts of oyster and mussel shell and cinder, and traces of rounded sandstone and eggshell.

Sample 183319

BS (5 kg; 91%): The very small residue consisted almost entirely of cinders, with a trace of fish bone, mussel shell and coal.

Sample 183320 [moist, dark grey to grey-brown, crisp/crumbly, ashy slightly clay silt with a little burnt shell]

Test (2 kg): The modest flot contained mostly root bark with some 'char' to 2 mm, a trace of fine coal and several eroded and very fragile charred ?cereal grains.

BS (10 kg; 85%): The were moderate quantities of fish bone, cinder and rounded sandstone in the very small residue, together with traces of coal, eggshell and mussel and oyster shell.

Sample 183321

BS (9.5 kg; 84%): The very small residue was mostly cinders, with moderate amounts of fish bone, and trace

Sample 183322

BS (12 kg; 83%): There was an abundance of cinders in the very small residue, with moderate amounts of rounded sandstone and traces of coal, eggshell, fish bone and mussel shell.

Sample 183323

Test (2 kg):

(The size of the sample was too small to permit bulk-sieving after the test and voucher subsamples had been removed.)

Context 1882

Sample 1882

BS (12 kg; 83%): The residue consisted mainly of charcoal, with moderate amounts of rounded and

angular sandstone pebbles, with traces of oyster shell, fish bone and (?intrusive) *Cecilioides acicula* shells.

Context 1909
Sample 19091

Test (2 kg): There was a large washover, rich in charcoal to 5 mm, with some mussel shell 'fibres' and modern root bark.

BS (13.5 kg): (Residue from BS sample not located; residue from test subsample consisted of sand and gravel with quite large amounts of rather abraded fish bone and a little mussel shell; reduction in volume was about 75%).

Context 1913
Sample 19131 [moist, mid grey to grey-brown, crumbly (locally plastic) ash and/or silt with paler buff patches; some stones 2-20 mm]

Test (2 kg): A washover of modest size was rich in modern rootlet bark fragments with traces of charcoal to 3 mm, a fragment of elderberry (*Sambucus nigra*) and a single *Cecilioides acicula* shell (probably intrusive).

BS (6.8 kg; 85%): The residue consisted of modest amounts of rounded and angular sandstone and fish bone, together with traces of mussel shell, charcoal and ?mortar

Sample 19132

BS (26 kg; 85%): The bulk of the residue comprised rounded sandstone pebbles, with large amounts of fish bone; there were also traces of oyster shell, mortar and charcoal, and some modern root fragments.

Sample 19133

BS (8 kg; 81%): Together with an abundance of eggshell, there were modest amounts of rounded sandstone pebbles and fish bone in the residue of this subsample; with these were traces of mussel and oyster shell, pottery and cinder.

Context 1925
Sample 19251

BS (16 kg; 69%): The residue was mostly rounded and angular sandstone and limestone with modest quantities of fish bone and some undisaggregated sediment.

Sample 19252

BS (31 kg; 79%): Rounded and angular sandstone made up the largest part of the residue but there were large numbers of fish bones, and traces of oyster shell and charcoal.

Phase 3

[kitchen: food waste]

Context 1508
Sample 15081

BS (21 kg; 81%): The residue was mainly of fish bone and cinders, with moderate amounts of rounded and angular sandstone (?some of it burnt), coal and eggshell, with traces of mussel and oyster shell.

Sample 15082 [just moist, mid-dark grey to grey-brown, crumbly ashy sandy silt with fish bone, burnt shell and lumps of orange-brown silt or clay]

Test (2 kg): The small washover consisted mostly of modern rootlets with some coal and charcoal to 10 mm, a trace of toad rush (*Juncus bufonius*) seeds and modern beetles.

BS (3.55 kg; 71%): The residue consisted of modest amounts of rounded sandstone pebbles, cinder and fish bones, with traces of mussel and oyster shell and eggshell.

Sample 15083

BS (10.5 kg; 81%): Modest amounts of cinders, eggshell and shellfish (oyster and mussel) were recorded from the residue, along with traces of sandstone, fish bone and charcoal.

Phase 4

[kitchen: occupation]

Context 1908
Sample 1908

BS (3.5 kg; 71%): Residue mostly sand, gravel and mortar, with much eggshell and quite a lot of mammal and fish bone and traces of mussel shell, charcoal and brick/tile.

[prior's cell: occupation]

Context 1037

Sample 10371 [dry, light-mid olive-brown, sandy silt to silty sand with abundant stones 2-20 mm; sediment somewhat more clay-rich in one of the three bags available]

Test (2 kg): There was a very small washover, mostly of charcoal to 2 mm with quite a few *Heterodera* cysts and ?modern rootlets.

BS (37 kg; 81%): The residue consisted mainly of rounded sandstone pebbles with traces of mortar, coal, slag, oyster shell, fish bone and charcoal and there was a single charred ?pea (*Pisum*) seed in the washover.

Sample 10372 [just moist, mid olive-brown, crumbly sandy silt to silty sand, with moderate numbers of stones 2-20 mm and some white flecks]

Test (2 kg): The small washover contained a trace of 'char' and charcoal to 2 mm with a little coal, many *Heterodera* cysts, three fragments of herbaceous (dicotyledonous) stem with bands of stomata in the epidermis and short prickles on one of the fragments (perhaps a bedstraw, *Galium* sp.)

BS (63 kg; 83%): Rounded sandstone made up the bulk of the residue, along with traces of fish bone, mortar, slag and shellfish, and there was a modest washover of charcoal.

Sample 10373

BS (6 kg; 77%): Residue mostly sand and gravel with quite a lot of cinder and some mortar.

Sample 10374

BS (8 kg; 75%): Residue mostly sand and gravel with much charcoal (contrast cinder in 10373) and traces of brick/tile and mammal bone.

[refectory: drain fill]

Context 835

Sample 835

BS (17 kg; 76%): The residue consisted of abundant rounded and angular sandstone with traces of coal, fish bone, cockle shell and charcoal and a modest numbers of snails. The last of these were identified as follows:

Carychium tridentatum
Carychium sp.
Cochlicopa lubrica
Lauria cylindrica
Discus rotundatus
Ena obscura
Vitrina pellucida
Vitrea crystallina
Vitrea sp.
Aegopinella pura
A. nitidula
Oxychilus cellarius
Oxychilus sp.

Cecilioides acicula

Eggs, probably of other spp.

The high numbers of shade-loving species, and the presence of so many *Oxychilus cellarius* in particular, are consistent with deposition in a covered drain, although the molluscan assemblage recovered is not, of course, one which would be contemporary with a functioning drain which was well flushed. It is indicative of shaded and damp, but not wet, conditions. The large numbers of *Cecilioides* are probably intrusive.

Table 1. Numbers of sampled contexts from Mount Grace Priory for which samples of sediment were available, together with archaeological phasing, area, and context type.

Phase	**Area of site**	**Context type**	**No. contexts**	**Group totals**
0	refectory	ditch fills	7	
		occupation	1	
		post-hole fill	1	
	prior's cell	pit fill	1	10
1	prior's cell	drain	1	
	kitchen	food waste	1	
	kitchen	occupation	1	
	refectory	occupation	2	5
1-2	prior's cell	drain fill	1	
	latrine drain	faecal	3	4
2	drain	drain fill	1	
	refectory	drain fill	1	
2bi	kitchen	food waste	1	
2bii	kitchen	food waste	5	8
3	kitchen	drain fill	1	
	kitchen	food waste	4	
	kitchen	occupation	1	
	prior's cell	food	1	7
3-4	refectory	garden soil	3	3
4	refectory	drain fill	1	
	water tower	drain fill	2	
	kitchen	occupation	3	
	prior's cell	occupation	2	8
mod	water tower	C19th fill	1	1
			Total 46	

Table 2. Some results from bulk-sieving samples from Mount Grace. Components are scored on a three-point scale from 1 (rare) to 3 (abundant) in the residues, making some allowance for the original size of the sample.

Context	Sample	Fish bone	Mammal bone	Snails	Marine molluscs	Eggshell	Charcoal	Cinders	Coal	Stone	Mortar	Pot	Slag	Notes
835	835	1		2	1		1		1	3				
864	8641	1								3				
	8642	1								3				
1037	10371	1			1		1		1	3	1		1	?1 charred legume in washover
	10372	2			1		2			3	1		1	
	10373							3		3	2			
	10374		1				3			3				trace brick/tile
1115	1115				1		1			3				
1119	1119	1								3				
1508	15081	3			1	2		3	2	2				
	15082	1			1	1		2		2				
	15083	1			2	2	1	2		1				
1882	1882	1		1	1		3			2				snails = Cecilioides only
1908	1908	2	2		1	2	1			3	3			trace brick/tile
1909	19091	2			1					3				
1913	19131	2			1		1			2	1			?mortar
	19132	3			1		1			3	1			modern root fragments
	19133	2			1	3		1		2		1		
1925	19251	2								3				

Context	Sample	Fish bone	Mammal bone	Snails	Marine molluscs	Eggshell	Charcoal	Cinders	Coal	Stone	Mortar	Pot	Slag	Notes
835	835	1		2	1		1		1	3				
	19252	3			1		1			3				
1941	19411	3			2	1				3				
	19412	3			2					2				
	19413	2			1	2				3				
1833	183301	1			1			2	1	1				
	183302	2						3	3	2				
	183303	2			1			3	2					
	183305	2			1	3		3	2	1		1		
	183306	3						1	1	1		1		
	183308	2			1			3	2	1				
	183309	2				1		2	1	2				
	183310	2			1			3	1	1				
	183311	2			2	3		3		1				
	183312	3			1			2	1	1				
	183313	3			1		1	1	1	1		1		trace brick/tile
	183314	2	1		1	2		3		1				
	183315	3			1	2		2	1	1				
	183316	3			1	3		2	1	1				
	183318	3			2	1		2		1				
	183319	1			1			3	1					
	183320	2			1	1		2		2				
	183321	2			1	1		3	1					
	183322	1			1	1		3	1	2				

Table 3. Number of fragments and weight of individual species recovered from the Mount Grace hand-collected mammal bone assemblage.

Species	Fragment count	Weight	Measurable	Mandibles with teeth	Isolated teeth
Cattle	97	3510.5	10	-	8
Sheep/goat	107	916.5	10	5	9
Pig	51	665.2	2	2	8
Horse	41	2952.2	9	-	1
Canid sp.	6	31.0	1	-	3
Cat	9	25.5	4	-	-
Cervid sp.	4	36.0	-	-	-
Phocid sp.	6	27.5	-	-	-
Rabbit	1	1.0	-	-	-
Hare sp.	2	5.0	-	-	-
Black rat	1	0.5	-	-	-
Hedgehog	5	2.0	-	-	-
Small mammal	10	2.5	-	-	-
Human	8	23	-	-	-
Bird	36	66.0	1	-	-
Amphibian	43	3.5	-	-	-
Identifiable	427	8267.9	37	7	29
Unidentifiable	736	3876.4	-	-	-
TOTAL	1163	12114.3			

*Table 4. Costings for further analytical work and report preparation for material from Mount Grace Priory. All costs include any overheads but not VAT. *— these costs (which include an overhead of 25%) may be covered by existing AML contracts. Costs are correct at 21.2.94 but may be subject to increase after 1.4.94.*

	Task	**Time (days)**	**Staff**	**Cost (£)**
(i)	Washing of hand-collected fish bone	1	Technician	80.72
(ii)	Analysis and report on fish bone	20	AJ	3,200
(iii)	Analysis of mollusc shell fragments from BS samples	(student project)	-	-
(iv)	Analysis of ditch and drain fills for land molluscs	2	Technician	161.44
		4	AM	401.05*
(v)	Analysis of charcoal	1.5	AH	193.58*