

2055

Ancient Monuments Laboratory
Report 39/95

**BOTANICAL REMAINS FROM
WORCESTER DEANSWAY**

L C Moffett

AML reports are interim reports which make available the results of specialist investigations in advance of full publication. They are not subject to external refereeing and their conclusions may sometimes have to be modified in the light of archaeological information that was not available at the time of the investigation. Readers are therefore asked to consult the author before citing the report in any publication and to consult the final excavation report when available.

Opinions expressed in AML reports are those of the author and are not necessarily those of the Historic Buildings and Monuments Commission for England.

Ancient Monuments Laboratory Report 39/95

BOTANICAL REMAINS FROM WORCESTER
DEANSWAY

L C Moffett

Summary

An intensive programme of sampling for plant remains was undertaken during major excavations in the city centre of Worcester. Roman, 'post-Roman' dark earth, late Saxon, Medieval and post-Medieval contexts were sampled. Although there were no waterlogged contexts a wide range of plant remains were recovered. These included remains of spelt processing in the Roman period, mineralised fruit remains and charred cereals from the late Saxon period, and remains of cereals, fruit, a few herbs and vegetables, and weeds and other plants from the Medieval and post-Medieval periods. Some material, primarily from later contexts, did not appear to be either charred or mineralised but was assumed to be archaeological because it included seeds of fig (*Ficus carica*), grape (*Vitis vinifera*) and strawberry (*Fragaria vesca* type) which are usually associated with cesspit material and there were many presumed cesspits on the site. Several potential research priorities arising from the study of the plant remains were defined. This report supercedes AML report 123/91.

Author's address :-

L C Moffett
UNIVERSITY OF BIRMINGHAM
Edgbaston
Birmingham
W MIDS
B15 2TT

BOTANICAL REMAINS FROM WORCESTER DEANSWAY

Lisa Moffett

Introduction

Botanical remains can give information about a number of aspects of a site depending on what kind of material has been preserved. Information about crop plants and possible collected plants for food or other resources can contribute information about economic aspects of the site. Crop weeds can sometimes give an indication of husbandry methods and environmental conditions in arable fields. Evidence for plants which may have been growing on or near the site itself can indicate local environmental conditions, helping to give a picture of the surroundings which people lived in. People also create environments for plants, and it is clear from archaeobotanical evidence to date that some plant communities such as arable weed communities and urban weed communities were considerably different from what they are today, although the development of these plant communities is still poorly understood. Possible regional variations in past plant communities due to differences in natural environmental conditions and/or human activities are little studied because the data needed to do so is still insufficient. Studies of urban plant remains are also essential for any consideration of the economic relationship between urban and rural sites, as much of the plant material consumed on urban sites originated in the countryside (Greig 1988).

Investigation of the botanical remains from Deansway was an integral part of the research design for the site. No large-scale sampling for botanical material had previously been done in Worcester, though some sampling had been done at Sidbury. The samples from Sidbury were from a few pits ranging in age from Roman to post-medieval which had mostly seeds of plants of wet or damp ground with some ruderals and segetals, and some fruit remains were found in a post-medieval stone-lined latrine pit (Colledge 1980). A rich post-medieval flora from organic material preserved in a barrel latrine was also found at Sidbury (Greig 1981). There were also a few samples taken for charred material from the site at Blackfriars (Mundy in prep.) a couple of which have produced abundant material (Moffett 1987).

A more comprehensive approach was needed, both to contribute to interpretation of the site at Deansway itself, and also to provide a body of information which would be of use in planning future research objectives. The research strategy for the botanical material, therefore, was designed to take advantage of the opportunities afforded by a major excavation to recover as large a body of plant material as reasonably possible for study.

Methods

Although the sampling programme was extensive, it was not possible to sample every context on the site. Decisions about which contexts to sample were taken by the supervisors in consultation with the environmental assistant under guidelines agreed with the author. To make the sorting as cost-effective as possible the flots were sometimes sub-sampled, and this is indicated in the tables (Tables A-AAA) by the percentage of material analysed. The number of items given in the tables refers to the number of items actually counted. In comparing abundance of material between samples, the number of items per litre of soil corrects for discrepancies caused by subsampling or variations in sample size.

There were far too many samples to analyse in detail and much of the information thus gained would have been very repetitive. In order to gain as comprehensive a view of the material as possible, the samples were analysed in different ways according to the material they produced. This judgement was done by eye and was only possible because the environmental assistant had previously sorted the samples so that the amount and general type of botanical material could be seen at a glance.

In general, for samples rich in charred material all the sorted material was identified as far as possible and counted. These are referred to below as 'scored' samples. Samples poorer in charred material were scanned. In this case the items were categorised as grains, chaff, weed seeds, or other material, and the number of items in each category recorded.

The identification of the plants present was also noted insofar as this could be determined in a relatively brief scan. This method obviously resulted in less precise identifications but was much quicker than scoring and could often be done without removing the material from the tube. An even quicker method was to scan the sample, note the species present, and record the abundance of each species without actually counting anything. Samples handled in both these ways are referred to as 'scanned'. In this case abundance was recorded on a four-point scale where '+' = species present and '++++' = species abundant. This method of quantifying abundance is similar to that used at York (Hall and Kenward 1990). Scanning was used on medieval and post-medieval samples which were either poor in material or were poor in charred material but had abundant or moderately abundant material preserved by other means (*see below*, Preservation). The justification in the latter case was that recording the exact number of seeds such as fig, elder etc. would have little value in interpreting the material. Time was taken to identify items as far as reasonably possible. More detailed discussion of which samples were handled in which way is given in the appropriate sections below. A full list of species found is given in Table B.

Discussion of the material is divided into broad periods - Roman (Periods 3-5), "Post-Roman" (Period 6) Late Saxon (Period 7), medieval (Periods 8-9) and post-medieval (Periods 10-11). Within these periods there was no significant difference in the plant remains from one phase to the next. Between these periods there are generally some differences known although they are not always clear-cut from the evidence found at Worcester.

General model for changes in agriculture

The change from Roman to Saxon agriculture is little understood, due to a lack of evidence from the post-Roman/early Saxon period. At some stage there was a change in crops from the glume wheats of the Roman period to the free-threshing cereals of the Saxon period, with possible implications for husbandry methods and culinary practices. Changing husbandry methods may also have affected the weed floras of crop fields.

The Norman conquest may have had little immediate effect on the subsistence base of the rural peasantry, or on husbandry methods, but it had a drastic effect on land ownership. This is a convenient historical division rather than an archaeobotanical one, but the agricultural economy and agricultural methods were changing all through the medieval period and may have included the introduction of two crops familiar in the post-Conquest medieval archaeobotanical record but not, at least yet, proven for the Saxon period - cultivated vetch and rivet wheat. Other crops, of course, may also have been introduced for which there is no archaeobotanical record as yet, and again, developments in arable husbandry may have affected weed floras.

An important significant difference between the medieval and the post-medieval periods is the introduction of exotic species as explorers and plant collectors began to bring back plants from all over the world.

Preservation

Botanical material is subject to biological processes of decay and therefore archaeological botanical material has to have been preserved by some process which inhibits decay. The majority of the botanical material deposited on most sites, especially well-drained sites, decays relatively quickly, leaving no trace. In interpreting the usually relatively small proportion of material that remains it is necessary to consider the means by which it has been preserved as this has a direct bearing on the type of material found (Green 1979a). At Deansway the botanical material was preserved by three different processes which were closely related to the type of material preserved and to the date.

Charring. In the earlier phases especially, charring was the most important means of preservation. Charring takes place when material is exposed to fire, particularly under reducing conditions. Most of the organic component burns away, leaving a partially carbonised subfossil, which under favourable conditions preserves much of the original morphology but is not subject to biological decay. Charred material tends, not surprisingly, to be the material at greatest risk of exposure to fire, chiefly cereals and associated weed seeds, since the processing of cereals often involves parching or drying, and the chaff by-products of cereal processing were

sometimes burned as tinder or fuel.

Mineralisation. Some material from the Saxon period onwards was preserved by mineralisation. The process of mineralisation is not entirely understood but it involves the replacement of organic material by calcium carbonate and calcium phosphate; at Deansway mainly the latter. For mineralisation to occur these mineral salts have to be present in abundance and there must be sufficient moisture to dissolve the mineral salts and percolate into the organic material. These conditions do not infrequently occur in cesspits and latrines, and therefore mineralised material often consists of fruitstones and other seeds of food plants which were eaten, or thrown in as rubbish. Sometimes the dense external part of the seed is replaced, but sometimes it is the softer tissues which are replaced, including the endosperm, in which case a cast of the inside of the seed may be the result (Green 1979b). This can be extremely difficult to identify.

Many of the fruitstones from Deansway were mineralised in this way and could only be identified to genus. Occasional mineralised cereal grains and grasses were found, with their gross morphological structure surprisingly well-preserved. In this case the organic material had been mineral replaced apparently very rapidly since otherwise the starch in the grains would have dissolved or decayed, and there would have been little or nothing left of the grains.

Uncharred. The third type of material consisted of seeds which had not been charred, mineralised, waterlogged or preserved in any other obvious way. For brevity's sake these seeds are described as uncharred. The starchy internal part had disappeared but the testa remained. Mostly, but not invariably, these were seeds with a woody or hard testa such as fig, elder, violet, strawberry and grape. They were very common in the post-medieval samples, less common in the medieval samples, and rare and possibly intrusive in most of the earlier samples.

The internal parts of seeds usually decay very quickly, and these uncharred seeds were otherwise indistinguishable from modern seeds. Since many of the seeds are the remains of edible fruits, and are what one would expect to find in latrines and cesspits, they are assumed to be archaeological. Other seeds include species of plants which were probably growing on or near the site. Little is known about how long seeds can survive in different soil types and how much particular chemical conditions in the soil may contribute to their survival. Uncharred seeds presumed to be archaeological are also known from Castle Bromwich (de Rouffignac pers comm) and the organic material from the barrel latrine at Sidbury appears to have been preserved by the local chemical conditions in the deposit (Greig 1981).

Roman (periods 3-5)

Cultivated plants

The cultivated plants found in the Roman period were emmer (*Triticum dicoccum*), spelt (*Triticum spelta*), free-threshing wheat (*Triticum* sp.) rye (*Secale cereale*), six-row barley (*Hordeum vulgare*) and pea or bean (*Pisum sativum/Vicia faba*). Although a few oat grains were found the only oat remains which could be identified to species were some lemma and spikelet remains of wild oat (*Avena fatua/sterilis* ssp. *ludoviciana*). Since wild oats are a common weed in cereals it was assumed that the oat grains represent weeds rather than a crop. A very few uncharred fig seeds (*Ficus carica*) were found. Fig seeds are not unusual on Roman urban sites, but there were large numbers of uncharred fig seeds in the later levels and it seems probable that these, and the few other uncharred seeds, represent contamination from the later levels.

Emmer is present in substantial quantities only in CG 2070, mostly as chaff fragments. Emmer was the main wheat of the prehistoric period but was largely replaced by spelt towards the end of the Iron Age or in the early Romano-British period. It seems, however, to have remained in cultivation on a smaller scale, at least in some areas. It was still in use in the Romano-British settlement at Tiddington (Warks) though spelt was overwhelmingly the main cereal represented (Moffett 1986). Possibly it was the more suitable cereal for certain culinary uses.

Spelt, like emmer, is a glume wheat; that is, the chaff parts enclosing the grain (the glumes) do not release the

grain on threshing but remain tightly enclosed around it. Threshing breaks the ears into individual segments (spikelets) which are then winnowed to remove the long straw, weed plants and light weed seeds. The spikelets are sieved with a coarse riddle which allows the spikelets to pass through but retains large contaminants such as shorter fragments of straw and large seed heads. The spikelets are then pounded with a mortar and pestle to release the grain. The pounding process is much more efficient if the spikelets are first parched to make the glumes brittle. After pounding, the grain is winnowed again to remove the lighter chaff fragments (glumes, lemmas and paleas) and many of the remaining lighter weed seeds (many of these latter will have been removed at the first stage of winnowing).

The denser chaff fragments (glume bases, spikelet forks, rachises and culm nodes) and dense weed seeds are removed by sieving with fine mesh just small enough to retain the grains while allowing most of the remaining contaminants to pass through. Grain-sized contaminants such as large weed seeds, grit, some of the straw nodes, and some spikelet forks (which can catch in the sieve) have to be removed by hand-sorting.

This sequence of processing is known from ethnographic studies of Turkish farmers still growing glume wheats (Hillman 1984b). A description of the full processing sequence (here described in much-simplified form) with tabular diagrams can be found in Hillman (1981, 1984a, 1984b). Note that this processing is intended to separate grain from chaff, weeds and any other contaminants but at no stage are chaff and weeds separated from each other, and therefore must be considered together when trying to interpret crop processing stages. Although the exact tools and methods used by modern Turkish farmers cannot be applied directly to Roman Britain, the basic sequence of processing (and therefore the products which result from each stage) is determined by the nature of the crop and cannot greatly vary (Hillman 1981). It is consequently sometimes possible to attempt to interpret archaeobotanical assemblages in terms of stages in the crop processing sequence. This approach to interpretation, using ethnographic data from Greece, has also been applied to free-threshing cereals (Jones 1984).

There are only a few free-threshing grains from the Roman period at Deansway, except for one sample (CG 4163) which was poorly dated and may not be Roman. A single rachis of a free-threshing wheat, bread or club wheat (*Triticum aestivum* s.l.; not intended to include the speltoid hexaploids), was found at the Roman Blackfriars site in Worcester (Mundy in prep.), and it is likely that the Deansway Roman free-threshing wheat is of this species.

Rye may have been either a crop or a weed. Rye is reported as being the major component in Roman grain stores from Isca (Helbæk 1964) and Verulamium (Helbæk 1952) and was also among the crop plants in a granary from York (Williams 1979). Two late Iron Age or early Roman period finds of rye from native settlement sites in the Netherlands suggest that rye was definitely cultivated there (van Zeist 1976). Rye is also a successful weed in cereals, particularly the free-threshing cereals (Hillman 1978), although, as Hillman points out, what distinguishes the crop from the weed is the attitude of the farmer. There were only a few rye grains from the Roman period at Worcester and its status here as a crop could be questioned, though free-threshing wheat is not much more common.

Six-row hulled barley, like spelt, is found on most Romano-British sites. Barley grains were present in many Deansway Roman contexts but always in small numbers. Barley is sometimes grown for animal fodder, and if this was the case then it may have had less chance of being exposed to fire and becoming charred. Possibly barley was a less important crop than spelt but its frequent presence in the samples even if in low numbers suggests that it was probably fairly common on the site.

Wild plants

The only remains of wild plants likely to have been used as food were some fragments of hazel (*Corylus avellana*) nut shell. Most of the other plants were probably cornfield weeds. These include plants from fairly well-drained soils such as corncockle (*Agrostemma githago*), black medick (*Medicago lupulina*), other leguminous plants (*Medicago/Mellilotus*/large *Trifolium*, small *Trifolium* type, *Vicia/Lathyrus*), parsley piert (*Aphanes arvensis*), black nightshade (*Solanum nigrum*), scentless mayweed (*Tripleurospermum inodorum*), corn

marigold (*Chrysanthemum* cf. *segetum*), cotton thistle (*Onopordum acanthium*), and nipplewort (*Lapsana communis*). The leguminous seeds were present moderately frequently but none of the other seeds were common. Stinking mayweed (*Anthemis cotula*) grows in heavier soils than scentless mayweed. It was present fairly frequently in the samples but usually as only one seed per sample.

Other plants such as buttercups (*Ranunculus acris/repens/bulbosus*), spearwort (*Ranunculus flammula/reptans*) blinks (*Montia fontana* ssp. *chondrosperma*), some of the sedges (*Carex* spp.) and spike-rush (*Eleocharis palustris/uniglumis*) may have come from poorly drained areas of the crop fields. Spikerush is a rhizomatous perennial not considered a cornfield weed today but its presence in charred cereal assemblages is so frequent that it seems it must have frequently invaded cornfields in the past (Jones 1988), perhaps from wet ditches and nearby floodplain areas.

Bur-reed (*Sparganium* cf. *erectum/emersum*) and bulrush/club-rush (*Scirpus maritimus/Schoenoplectus lacustris*) grow in silty shallow water such as ditches and pond margins. They normally grow in conditions too wet for crops but their seeds also are not uncommon in charred cereal assemblages, although not nearly as common as spike-rush. These plants, which also spread by rhizomes, may have succeeded in colonising crop fields in abnormally wet seasons. Alternatively they may not be associated with cereals but may have become incorporated with cereal remains in domestic fires if they were collected for bedding or building materials. Sedges could also have been collected for these purposes, but spike-rush is too small to have been deliberately collected. Although these damp/wet ground plants are represented by several species, in numbers of seeds, they represent only 0.8% of the weed seeds from the samples scored.

The great majority of weeds present in terms of numbers of seeds were the grasses. About 90% of the weed seeds from the scored samples were grasses. This probably reflects a real predominance as most grasses do not produce very large numbers of seeds in relation to many of the other weed species present. The majority of these grasses were large-seeded, but they were difficult to identify further. Rye-grass (*Lolium* cf. *perenne*), *Lolium/Festuca* type, brome (*Bromus hordeaceus/secalinus*) and wild oat were identified and probably most of the unidentified grasses were these species also. Among the other grasses identified was heath grass (cf. *Danthonia decumbens*), a tufted perennial today found mostly on heaths and acid grassland. It has been suggested that in the past it may have been a weed of arid-cultivated fields (Hillman 1982a). Heath grass, however, was only found in a couple of samples.

Scored samples

These were samples which were visibly the richest in charred material (Table A). All but one of the samples scored contained more than 100 items and most were also abundant in terms of items per litre. In some cases concentrations of charred material could be seen during excavation.

Although the division between scored and scanned samples was somewhat arbitrary, in that it done on the basis of a judgment made by eye, the difference in abundance of material in the samples is fairly clear-cut. The majority of context groups (29) had two or less items per litre of soil and their samples were all scanned (see below). There was a smaller group of fourteen context groups with samples which produced moderate amounts of material at 4-20 items per litre, about half of which were scored and half were scanned. There were eight rich samples: three from context groups which also had moderate samples; one from a context group with poorer sample. These richer samples had 40 or more items per litre, and all these samples were scored.

None of these samples represents material charred *in situ*. All of the material has been redeposited from elsewhere, with a consequently greater risk of mixing of material from different sources. Nevertheless a number of samples appeared to be relatively unmixed in terms of the material they contained. This could indicate either that the material was the result of a single incident of dumping, or that the same kind of material was consistently deposited in the same place.

The samples varied in the type of material they contained. Some samples consisted mainly of charred grain, primarily *Triticum* sp. and unidentified cereal which probably was also wheat. These samples probably represent

cleaned or semi-cleaned (perhaps needing hand-sorting) grain ready for consumption. Others consisted mainly of small dense chaff fragments (mainly of spelt) and weed seeds. These are roughly consistent with the expected composition of the chaff and weed by-product resulting from fine sieving described above. There were also samples which seemed more mixed.

Experimental evidence has shown that cereal grains survive charring considerably better than cereal chaff (Boardman and Jones 1990). Different seed types also preserve differentially under charring (Wilson 1984). It is highly probable that chaff and weed seeds are under-represented in these assemblages and that some or all of the assemblages here classified as mixed may have been dominated by chaff and weeds.

Another caveat to be mentioned is that weed seeds may have been introduced from sources other than cereal processing. Some of these samples contain few chaff fragments but many weed seeds. In most cases these are grass seeds. Since the assemblages do vary it is simpler to discuss them by context group.

Grain-dominated samples

Post holes CG 2022, 2025, and 2061

These samples are all very similar, consisting of fills of postholes from various timber structures. The charred assemblages from each are almost pure grain. A few grains each of emmer and spelt were identified from CG 2022 but it is not possible to say in what proportions they were present as the majority of the grain could only be identified as *Triticum* sp. This seems to be grain which has been fully processed (except possibly for hand-cleaning) and ready for consumption. Whether cleaned grain would have been likely to be associated with a granary or other type of bulk storage, or whether it would be more likely to be associated with domestic structures depends on how far the grain had been processed before it was put into storage. Glume wheats may often have been bulk stored in the spikelet, as the grain is better protected in this state from pests and damp. The stages of parching, pounding, etc, would then have been carried out in small batches as needed, probably in domestic areas.

In Turkey, storage in the spikelet was often associated with damp climate (Hillman 1984a), and because the weather at the end of the year was less favourable for large-scale processing out-of-doors. This seems an apt parallel for grain processing conditions Roman Britain. It is possible, however, that the grain was bulk processed and put into storage as cleaned grain. There is no indication of how the grain came to be burned but minor domestic accidents would be more likely than destruction of a major grain store, for which in any case there is no evidence.

Shallow hollow CG 3060

Unidentified wheat was also the chief component of this assemblage. Unlike the above samples, at least half of the wheat from this sample had germinated. Grain is germinated for malting, but it is likely, of course, to germinate on its own if left too long in damp storage. Such spoiled grain might well be burned to get rid of it. It also possible that the grain from the Site 2 post holes (above) had gone bad and been deliberately burned. Although the grain had not germinated other signs of spoilage would not necessarily be detectable in charred material.

Weed-dominated samples

Pit CG 2064

Relatively large numbers of charred items per litre were present in this sample from a truncated pit. Chaff and weed seeds in roughly equal quantities account for 82% of the items. As usual in these samples most of the weed seeds were grasses. It seems likely that the chaff and at least some of the weed seeds are the remains of

the waste from fine sieving (see above). This chaff-rich waste may have been used as tinder or fuel (Hillman 1981). Evidence for fine sieving waste being used for tinder has been suggested for Catsgore (Hillman 1982b), Tiddington (Moffett 1986).

It is possible that some of the grass seeds are derived not from crop waste but from other dry grassy material collected for tinder. The grasses identified are weedy types which could have grown in crop fields, along paths and roadsides or on waste ground. The consistent association between glume wheat chaff and grass seeds in other assemblages, however, is perhaps an indication that the grasses were weeds in the crop. Otherwise the mixing of chaff tinder and grass tinder would have to have been a common practice. It is possible that the high representation of large grass seeds is due to surviving charring better than chaff fragments, in which case they may be over-represented relative to chaff.

Postholes CG 2074

This sample consisted of posthole fills from timber structures > The density of material is fairly high: as in CG 2064 the material is consistent with the waste from fine sieving, although, again, some of the grass seeds may derived from grassy material collected separately.

Pit CG 3051

Glume bases were the dominant component of this assemblage from a pit fill. As usual, most of the weeds were grasses. More than half of the wheat grains appeared to have germinated and there were also some coleoptiles. It seems likely that in this, as in the other chaff and weed dominated assemblages, small amounts of grain have become mixed with the tinder. Possibly this grain could represent a product being processed by heat in some way (drying, parching, malt roasting). There is no evidence for the structures where the material was being charred (hearths, kilns etc.) and this severely limits attempts to interpret this material further.

Scanned samples

The rest of the Roman samples were scanned for further species and to gain an idea of the general 'background noise' of material on the site. The samples were scanned by context group rather than individual contexts and no attempt was made to record the exact number of items of each species, although the general numbers of cereal grains, chaff, weed seeds and other items were recorded. A few of the samples came from the same context group as a scored sample. In this case the scanned sample was the poorer of the two in terms of numbers of items and was dealt with separately from the scored sample. Most of the other scanned samples had very little material in them, usually only one or two items per litre, as can be seen in Table A.

No attempt was made to interpret these relatively sparse assemblages in terms of crop processing stages. It is evident that some context groups contained more grain while others had more weeds and chaff. Very few other items were encountered. It is not surprising that the material in these samples should appear to reflect the material in the richer samples as it is likely that most of the charred material on the site is derived from the deposition and reworking of material from the same range of activities.

Post-Roman 'dark earth' (Period 6)

The dark earth on Site 2 was sampled by grid squares across several layers, and extensive sampling was done in attempt to learn more about the formation of the dark earth. A few charred plant remains were present in most of the samples but they were very sparsely distributed for the most part.

Cultivated and wild plants

The cultivated plants were essentially the same as those from the Roman period. Possible emmer, spelt, bread/club wheat, rye, hulled barley, oats and bean (*Vicia faba*) were all found in dark earth contexts. Other possible food plants included hazel, sloe (*Prunus cf. spinosa*) and apple, pear, or whitebeam (*Malus/Pyrus/Sorbus*). Hawthorn berries (*Crataegus cf. monogyna*) could conceivably also have been used for food. Uncharred seeds of fig, strawberry and bramble/raspberry, as well as a few wild plants, are thought to be intrusive from later levels where these seeds are very abundant.

It is generally thought that emmer and spelt generally went out of cultivation at the end of the Roman period, being replaced by the free-threshing bread wheat in the Saxon period. Very little is known about this changeover as there is very little archaeobotanical evidence from the Saxon period generally and the early Saxon period in particular. There seems to be no evidence at present for non-residual post-Roman emmer. Spelt remains have been recovered from 9th century waterlogged contexts in Gloucester (Green 1979c) and charred remains from mid 5th century contexts at West Stow (Murphy 1985). The evidence suggests that some spelt cultivation continued in the Saxon period for a time, at least in some areas. The presence of some spelt remains in the dark earth could be from post-Roman cultivation of spelt, but given the small amount present (except in one sample, discussed below) is perhaps more likely to be residual from the Roman layers.

There were fewer wild or weedy species than in the Roman period but this is hardly surprising given the much smaller amount of charred material recovered. The species found were very similar to the Roman period and included probable crop weeds and the bur-reed/spike-rush/sedge element of damp/wet ground. Large-seeded grasses were still the most abundant weed type.

Scored samples

Only two samples produced sufficient material to be worth analysing in detail (CG 2143 and 2161). Compared to the Roman material neither sample produced very much but these were visibly the richest samples from this period (Table AA). The chaff in both these samples is glume wheat chaff, though one had substantially more than the other. Of the weed seeds, 85% or more are grasses. A very few of the wheat grains from CG 2143 were identified as free-threshing but the rest are not identified beyond *Triticum* sp. Both of these samples come from the area of Site 2 where Roman activity was the greatest and where the Roman charred remains were concentrated. Given this, and the similarity between these two samples and the Roman material, it seems highly likely that a substantial amount (or all) of the material from these samples is residual from the Roman period.

Scanned samples

The rest of the samples from the dark earth were scanned, and the numbers of grains, chaff, weeds and other items noted. This amounted to 53 samples scanned but since the results were so sparse they are here presented summarised by context group. Although all the chaff items identified were of glume wheat chaff, there was clearly very little chaff present, in contrast to some of the Roman samples. Most of the material consisted of wheat grains, including free-threshing wheat grains, and weed seeds. Since individual species were not counted separately it cannot be said how many of the weed seeds were grasses, but grasses were present in all context groups, and in most of the individual samples. Stinking mayweed was also relatively frequently present, but most other species were found only very sporadically.

Free-threshing wheat grains were present in nearly every sample. This relative abundance of free-threshing wheat, and the relative scarceness of glume wheat remains, is the strongest indication that the charred material in the dark earth is not all reworked from the Roman period. Such evidence is hardly conclusive but it is at least suggestive that some of the charred remains in the dark earth could be post-Roman. The low abundance of material, however, would seem to suggest that activities which would produce charred material were not taking place in the immediate vicinity.

Late Saxon (Period 7)

The late Saxon features sampled were three cesspits and one post hole fill. Since there were only a few samples they were all scored (Table AAA). Charred, mineralised and uncharred material was found. Two of the samples were from cesspits which had fills which were radiocarbon dated. One of the samples was a primary fill (CG 2265) which produced a date of cal AD 691-879. The other sample (CG 2264) was sealed by a fill (CG 2267) which had a date of cal AD 778-980. The third cesspit was not radiocarbon dated but on stratigraphic grounds was probably 9th century.

Cultivated and food plants

There was no residual glume wheat remains in the cesspits. Bread wheat and hulled barley were found in small amounts, while rye and oats, now definitely crops, were the most abundant cereals in the samples. The number of samples is quite small, however, and it does not follow that rye and oats were the main crops. Charred bean and both charred and mineralised peas (*Pisum sativum*) were found as well as mineralised sloe (*Prunus cf. spinosa*), sloe/bullace/damson/cherry stones (*Prunus sp.*), apple pips (*Malus sylvestris*), apple/pear (*Malus/Pyrus*) and uncharred seeds of raspberry/bramble (*Rubus sp.*). The mineralised fruitstones were mainly a calcium phosphate cast of the inside of the fruitstone and therefore had no surface features, nor was the shape entirely clear. They did, however, appear to consist of at least two types: a round type resembling sloe, bullace or cherry, and an elongate type like a more elongate bullace or damson. It was not possible to say whether the fruitstones and apple pips were from wild or cultivated trees, but it is tempting to suggest that the Saxon settlement at Worcester was by this time sufficiently well-established for orchard cultivation to be quite likely.

Wild plants

Most of the other wild plants were weeds of arable and disturbed ground, such as stinking mayweed, corncockle, scentless mayweed, knotgrass (*Polygonum aviculare* agg.), dock (*Rumex sp.*), fat hen (*Chenopodium album* type), clover type, wild vetches (*Vicia hirsuta*, *V. sativa*), plantain (*Plantago lanceolata* type), nipplewort and hawkbit (*Leontodon cf. autumnalis*). There were a few charred and uncharred sedge nutlets and a single seed of marsh bedstraw (*Galium palustre* agg.), but otherwise little indication of damp/wet ground.

Cesspits CG 2265, 2264 and 2217

The apparently earliest cesspit (CG 2265) contained mostly charred remains. These were mainly cereal grains with a few weed seeds and almost no chaff. A single sloe stone was the only mineralised item. Assuming the pit really was originally a cesspit, it would appear that either the original contents had been cleaned out and the pit backfilled, or that conditions in the pit were not appropriate for mineralisation to take place. This might well happen if the pit were well-drained and the mineral salts leached away into the ground instead of into the organic material. The charred material consisted primarily of oat grains, nearly a third of them germinated. Free-threshing wheat, hulled barley and rye were also present. There were a few weeds, a pea and a charred apple pip but the only chaff was a single cereal culm node. This assemblage could be rubbish, possibly household rubbish, including perhaps the remains of an oat crop which had deteriorated in storage and been burnt as waste.

Two samples were taken from the second cesspit (CG 2264). The larger sample (25 litres) produced little apart from a few bread wheat grains and an apple/pear seed. A concentration of fruitstones visible in the same fill during excavation was taken as a separate sample. This sample produced large quantities of *Prunus* stones and apple/pear seeds, as well as a large number of mineralised amorphous fragments which could not be identified. Both elongate and round *Prunus* stones were present suggesting at least two species. Several mineralised legume seeds were found, including three peas, and a couple of mineralised wheat/rye grains. The mineralised legumes and cereal grains suggest that the replacement of organic material by calcium phosphates must have taken place

quite rapidly, as these starchy items tend to decompose very quickly in a moist environment.

The third cesspit (CG 2217) produced only a few mineralised *Prunus* stones and few charred items. It did, however, contain a substantial number of uncharred *Rubus* seeds. *Rubus* seeds are very woody and robust, but a millennium was considered to be a long time for them to survive in a well-drained soil. It is unlikely that they ever had been waterlogged as the site is well above the water table and would probably have been well-drained even if the water table had been rather higher in the past. The possibility of modern contamination had to be considered, although it also seemed unlikely, as the context was well-sealed and there were no other signs of contamination. The seeds were submitted to the Oxford radiocarbon accelerator laboratory for dating. Two other samples of uncharred seeds from early medieval contexts were also submitted and produced early medieval dates. A full discussion of the uncharred seed dating samples will be presented elsewhere (Moffett in prep). The sample from CG 2217 produced a date of cal AD 245-590 (OxA 3066), which showed not only that the seeds were indeed early but suggested that they could also be earlier than the ninth century date for the cesspit indicated by the stratigraphic evidence.

Post hole CG 2246

This post hole fill contained mainly charred cereal grains in a mix of wheat, rye, barley and oats. About a third of cereal grains had germinated. Apart from a single elder seed, the other seeds are all arable type weeds. As with the earlier deposits which had substantial numbers of germinated grains it is difficult to distinguish between possible malting remains and grain which has spoiled in storage. Any cereal can be used for malting and medieval brewers sometimes added peas and beans as well for extra starch (Corran 1975). It was the usual medieval practice to use barley or dredge (a mixture of barley and oats) for malting. It seems more probable that this assemblage represents the remains of an old crop gone bad in storage and possibly burned to keep moulds and any pests it might have been harbouring from contaminating fresh grain.

Medieval (Periods 8-9)

Cultivated and food plants

The cereals in the medieval period mostly differ little from the late Saxon period. Free-threshing wheat, including probably bread/club wheat, rye, hulled barley and oats were found and there was a very small amount of residual glume wheat. Free-threshing wheat remains consisted only of grain. Some of it appeared to be a bread/club wheat type but no rachises were recovered so identification to species is not certain.

Legume crops included cultivated vetch (*Vicia sativa* ssp. *sativa*), bean and pea. Most of the bean and pea sized legumes were rather poorly preserved and could only be identified as bean/pea. One mineralised bean, however, was well-preserved and was of the large-seeded variety (*Vicia faba* var. *major*). Cultivated vetch is a fodder crop, which, like many leguminous species, can be nitrogen-fixing therefore can be used in a system of crop-rotation to improve soil fertility by ploughing the roots back into the ground. The earliest documentary records of cultivated vetch are from the early 13th century (Currie 1988). Documentary sources suggest that it was cultivated sporadically and on a small scale as far north as the west midlands, though most of the records for vetch are from the southeast and East Anglia (Campbell 1988). There are some early 15th century documentary records from Worcestershire (C Dyer pers comm).

Flax (*Linum usitatissimum*) was grown both for its fibres, which are used to make linen, and for linseed. Possible celery (*Apium* cf. *graveolens*) was also found but it is not possible to say if it was wild or cultivated. Wild celery grows in damp places, though mainly near the sea. Strawberry (*Fragaria vesca* type), sloe, bullace and damson (both are varieties of *Prunus domestica* ssp. *insititia*), apple, hazel, blackberry (*Rubus* cf. *fruticosus*) and raspberry (*Rubus* cf. *idaeus*) could have been collected wild but, except for hazel, blackberry and perhaps sloe, were probably also cultivated.

Uncharred seeds of opium poppy (*Papaver somniferum*) were found. Opium poppy is well-known from medieval

sites (Greig 1988) but the seeds are very small and there is some doubt about how long they could survive in the soil. Opium poppy was also found in later contexts and might, therefore, be intrusive, but little is known about how long seeds actually do survive, particularly in soils where the chemical conditions have been strongly affected by activities such as disposal of rubbish and latrine waste. Sweet violet (*Viola odorata* type) in the wild is mainly a plant of hedgebanks and scrub. Its presence in the town suggests that it was probably grown in gardens, though it may also have escaped from gardens and grown where there were suitable habitats. Sweet violet was one of the most common medieval garden flowers (Stuart and Sutherland 1989) and also one of the oldest - it was one of the cultivated garden plants mentioned by Theophrastus (Hort 1916). The first historical record in Britain is in Ælfric's vocabulary of 995 A.D., which believed to be mostly of British plants (Harvey 1981). Violet flowers were used both for culinary and medicinal purposes as well as being enjoyed simply for their attractiveness.

Wild plants

A substantially larger range of species was recovered from the medieval period than from the late Saxon. Most of these were also weeds of arable and waste ground. Many of these plants could have grown in gardens, on waysides or in waste areas, as well as in crop fields.

Although elder has not generally been discussed among the food plant remains, the berries can of course be eaten. They are high in tannins however, which make them somewhat undesirable as a food in large quantities. Elder can be used for tanning and is still sometimes used for wine. Elder commonly grows in waste ground, particularly in the nitrogen-rich habitats created by human occupation. It is difficult to know whether the abundance of elder seeds represents human usage or whether this plant was simply very common, as it might well have been on the waste ground behind the burgrave plots. Similarly, bramble is a coloniser of waste ground which might well have grown in the same areas. Although the berries are more attractive as food than elder, it might also have been collected for wine-making or other purposes.

Scored samples

As with the earlier periods only in the richest samples were the numbers of items actually counted, and this was mostly for the samples relatively rich in charred material (Table AAA). Some samples with relatively abundant uncharred seeds such as fig and elder were not scored because, as argued above, the numbers of these items seemed less significant. The amount of material generally seemed rather small given the number of samples taken, and a somewhat more exhaustive analysis was undertaken than was perhaps really necessary, in order to try and recover more data. The 'other' category includes all charred items not cereal grains, chaff, or arable weeds (mostly hazel nutshell fragments), and also all uncharred and mineralised items, the latter included a few mineralised cereal grains and arable weeds. In some contexts most of the items were 'other'.

All of the charred material from these contexts is redeposited. One sample (CG 2305) was the debris from an oven fill, but there were no other obvious sources such as hearths or ovens for the rest of the charred material, which had clearly been burned somewhere other than where it was found. Mineralised material may be in situ in cesspits but mineralised material was also found in other contexts. Since it is most likely for the mineralisation to have occurred in the cesspits, there has probably been considerable reworking of the mineralised material also. At least some of the uncharred material, such as strawberry seeds and fig seeds, must have also originated from cesspits and been reworked. The general impression is that most of the botanical material is a mix of charred cereal remains, cesspit material, general rubbish and seeds from weeds growing on the site. Building, pit digging, and other activities have reworked this material causing considerable problems with interpretation. Some of the contexts which seemed either seemed less mixed, or produced larger amounts of material, will be discussed in more detail.

Grain-dominated samples

Cesspit CG 3175

Although identified archaeologically as a possible cesspit, there was no botanical evidence that the pit had been used in this way. All the remains were charred and consisted of the usual four cereals. No germinated grains were identified, although poor preservation might make them impossible to recognise. Since 90% of the charred remains were grain, this could possibly be the mixed remains of fully processed cereals, but the assemblage is rather sparse.

Soil dump CG 2538

The assemblage in this context consisted mainly of oat grains, with a few wheat grains and weed seeds. It would appear that this was at least primarily the remains of a processed oat crop.

Pit CG 3165

Wheat grain dominates this assemblage of mainly charred material. A smaller amount of rye is also present with a few grains of barley and oats. There are also some flax seeds. The rest of plants are weeds, probably associated with the cereals, except for a few uncharred elder seeds.

Clay-lined feature CG 4000 (context 20458)

This feature of unknown function contained a large amount of charred remains and is by far the richest charred medieval sample. Most of the remains were oat grains, some of which had germinated. Small amounts of wheat, rye, barley, pea and hazel were also present. Flax seeds and capsule fragments were relatively abundant. The usual range of arable-type weed seeds was present, though as a relatively small percentage of the total material. As suggested for a number of the above samples, this may represent the waste remains of stored crops, perhaps somewhat mixed with other rubbish.

Weed-dominated samples

Layer CG 2313

With only 28 items per litre, this was the richest scored sample from the earlier part of the medieval period (Period 8), though, as noted above, other samples with relatively abundant uncharred seeds were not scored. Half the items are weed seeds, with cereal grains, a few culm nodes and some fragments of hazel comprising the rest. The assemblage is too mixed to interpret beyond general rubbish.

Post pipe CG 2498

This sample produced mainly uncharred seeds from a small deposit. The species most abundantly represented by far was deadly nightshade (*Atropa bella-donna*). Despite its dangers, deadly nightshade was sometimes used for medicinal purposes. It was, however, also a common urban weed at York (Hall and Kenward 1990) and it may well be that its presence at Worcester indicates only that it was also an urban weed here. It is relatively common in the post-medieval samples in small amounts, but is far more abundant in this sample than any of the others. Possibly this concentration could represent deliberate collection of the berries, but it could also indicate simply that the plant was growing nearby.

Mineralised, charred and uncharred material was found in this cesspit. Oats and a few other cereals and weed seeds comprised the charred material. Sedge, apple and bean were among the small amount of mineralised remains and the uncharred material was bramble and elder, the latter being the most numerous component in the sample. The bean was whole, and clearly had not been eaten. The sedge nutlets likewise do not represent faecal remains. The mineralised material, therefore, appears to derive at least partly from rubbish. Although elder seeds are fairly abundant it is questionable whether they represent food remains (*see above*). Since the majority of the material even in this primary fill appeared to derive from rubbish disposal rather than latrine use it seems probable that the elder also was not eaten. The fact that there is a concentration of elder seeds in this pit, as there are in a number of other pits does suggest some kind of use rather than natural dispersal.

Scanned samples

Samples from 18 other context groups (22 contexts) were scanned (Table AAA). The total numbers of items in most samples were counted but not the numbers of each species. None of the samples counted produced more than eight items per litre and most produced less than four. The samples were from a range of different types of context groups, and in most cases there seemed little or no relationship between the type of botanical material and the context in which it was found. No attempt was made to interpret the assemblages.

In addition to these samples, all remaining medieval samples, most of them with only a few items, were rapidly scanned through to check for any other species present. Numbers of items were not recorded and the presence of particular species in a sample was noted only if the species was rare or not otherwise recorded from the site. These samples do not appear in the tables (Tables A-AAA) but new species recorded in this way are noted in the total list of species (Table B). This process revealed the presence of opium poppy in CG 1403 and CG 1204, which had not been recorded from any of the other samples. Opium poppy and possible celery were the new economic species for the period recorded in this way.

It is probable that these samples give an indication at least of the background 'noise' of residual material likely to be found in any given context, although the fact that a sample had a low abundance of material does not necessarily prove that the material is all background 'noise'. Most of the material seemed fairly consistent, consisting of some cereal grains with a few weed seeds, and occasionally other items such as *Prunus* fragments, flax, or bean/pea.

One sample from pit CG 2271 produced a few mineralised seeds and some uncharred seeds of elder and bramble. Pit CG 2467 had fairly large (uncounted) numbers of elder and bramble seeds, possibly with a few of raspberry. It is not possible to say if these represent faecal remains from the use of the cesspit or the remains of some other activity. A few other samples had uncharred elder seeds, and two samples had other uncharred seeds: greater celandine (*Chelidonium majus*), sun spurge (*Euphorbia helioscopia*) and violet (*Viola odorata* type). It is possible that some of the uncharred seeds are contamination from post-medieval levels where uncharred seeds, including these species, are far more common.

Late medieval/post-medieval (Periods 10-11)

Cultivated and food plants

One Period 10 sample included rachis remains of both bread/club wheat (*Triticum aestivum* s.l.) and rivet/durum wheat (*Triticum turgidum/durum*). Rivet/durum wheat used to be thought rare but it is now known from a number of medieval and post-medieval sites in southern Britain (Moffett 1991) but this 17th century sample is the only evidence for it from Deansway. Some of the grains of free-threshing wheat may rivet/durum wheat but the grains are not identifiable to species. Rye, hulled barley and oats continued to be cultivated as did beans, peas and vetch. There was no evidence of flax but this could be an artefact of preservation rather than an indication of disuse.

Fruit remains included sloe and bullace/damson, but no sign of the larger cultivated plums despite that fact that these were widely available by the 17th century and many varieties were known (Parkinson 1656). This is in keeping with the evidence from Dudley Castle (Moffett 1992) and the Tudor merchant's house at Tenby (Nye 1989) where despite ample evidence for sloes and the primitive plums, the larger, sweeter plums are conspicuous by their absence. Possibly people still preferred the strong, tart flavours of the more primitive plums, or perhaps we only find the small plumstones which were sometimes swallowed and therefore became preserved in cesspits, whereas the stones of large domesticated plums are far too large to swallow.

Sloes, bullaces and damsons were not just collected wild, people cultivated them in orchards and there were favoured varieties (Parkinson 1656). Hazel also was sometimes grown in orchards. Blackberry was seldom cultivated since it was common and does not improve with cultivation. Raspberry, however, being rarer was often cultivated out of convenience, and white as well as red varieties were known. Apple, though not pear, was identified in the samples from Deansway, but a great many varieties of domesticated apple and pear were known. Crab apple was sometimes grown in orchards also, and since the seeds are indistinguishable from domesticated apple it is not possible to say which was represented. Grapes were grown sometimes for wine but often also for that mainstay of medieval recipes, verjuice, the medieval version of vinegar. It was pressed from unripe grapes and was thus a much easier product to produce than wine. Vineyards for wine production were, of course, owned by some high-status establishments but were very expensive to maintain. It is probable that some more modest households may have grown a few of their own vines trained up a wall to provide verjuice for their own consumption (McLean 1981). Fig trees can be grown in Britain under sheltered conditions but both raisins and figs were imported in large quantities (Parkinson 1656).

Most of the strawberry seeds appeared to be similar to the wood strawberry (*Fragaria vesca* type) but there were just a few which seemed larger. The progenitor of the modern garden strawberry (*F. x ananassa* Duch.) was apparently introduced to Britain in the late 18th century, but New World species of strawberry had begun to be introduced at least since the beginning of the 17th century (Wilhelm and Sagan 1974). Whether these larger seeds were from strawberries resulting from crosses with American strawberry species is difficult to tell for certain but is certainly possible.

Other plants included more uncharred seeds of opium poppy, and seeds of the herbs fennel (*Foeniculum vulgare*) and possible caraway (cf. *Carum carvi*), though the two latter were very rare. Vervain (*Verbena officinalis*) is a plant of waste ground and could have been growing in suitable disturbed habitats in the town. It was, however, also a medieval garden plant, possibly with an early history since it too is mentioned in Ælfric's vocabulary (Harvey 1981).

A single seed of pumpkin/marrow/squash (*Cucurbita* cf. *pepo*) represents at least minor use of this American exotic. There are few finds of New World exotics in Britain, chiefly due to fact that post-medieval archaeobotanical studies are still rare. *Cucurbita pepo* includes a great many varieties of pumpkin, marrow and squash which cannot at present be identified from the seeds. It was found in the 17th century latrine at Dudley Castle (Moffett 1992) and there is archaeobotanical evidence that it may have been widespread on the Continent at this time, seeds having been found in Amsterdam, Netherlands (Paap 1984), Ruine, Germany (Lappe 1978) and Bratislava in southern Czechoslovakia (Hajnalova 1985).

Pumpkins are portrayed in 16th and 17th century Dutch paintings (Zeven and Brandenburg 1986), suggesting that this might be the most commonly known form of *C. pepo*. Parkinson (1656) describes pumpkin mainly as food for poor people, though he says it was also eaten by others. His reasons may have had more to do with pumpkin's productiveness and good storage qualities than any disapproval of its culinary attributes.

Wild species

Although there was a wider range of species in the post-medieval period than earlier most of them were still plants of disturbed and arable habitats. There were more ruderal species such as greater celandine, dyer's rocket (*Reseda luteola*), purple spurge (*Euphorbia peplis*), stinging nettle (*Urtica dioica*), deadly nightshade, henbane (*Hyoscyamus niger*), woody nightshade (*Solanum dulcamara*) and possibly vervain which are not arable weeds

and are more likely to have grown as weeds of gardens, waysides and waste ground. Many of the seeds are uncharred and it seems probable that the plants were growing on or near the site itself.

Some of these plants may not have been just weeds. Dyer's rocket is named for the yellow dye obtained from the leaves. The use of deadly nightshade and henbane for medicinal drugs is very ancient. It is not possible to say merely from seed remains whether the plants were used, and even if they were used they need not have been cultivated. Most of these plants, as well as most of the other wild plants from Deansway have also been found in urban contexts in York (Hall and Kenward 1990) and probably were common occupants of urban habitats.

Yew (*Taxus baccata*) and holly (*Ilex aquifolium*) may have been brought on to the site for decorative purposes, though if any of the burgage plots had hedges they could both have been used for this purpose. Holly in particular can form a very effective barrier against animals and people.

Scored samples

In general charred material was a less significant proportion of the botanical remains than in the previous periods. Uncharred seeds were frequent and mineralised seeds were also more frequent than in the preceding periods. Since time was limited and it was deemed more important to look at as many samples as possible than to count every item in every sample examined, only those samples which had relatively large amounts of charred material were counted (Table AAA).

Pit CG 1546

This was the only post-Roman context to produce any significant amount of chaff remains. As noted above, the chaff remains included rachis nodes of bread/club wheat and rivet/durum wheat. Other chaff material included rye rachises, a few lemma bases and a spikelet fork of cultivated oat, and a substantial number of cereal culm nodes with a few culm bases. This seems to be the remains of wheat, rye, and perhaps oat, straw where at least some of the cereal stalks have been uprooted. In light soils cereals were sometimes harvested by uprooting, but in light soils even cutting with a sickle will tend to uproot some of the stalks, especially if the sickle is slightly blunt. Cereal grains were mostly wheat and oat with a few rye and barley grains.

There was also a large amount of uncharred material of which elder seeds were the most abundant. Sedge was also fairly abundant, both charred and uncharred. Other plants included buttercups and celery-leaved crowfoot (*Ranunculus acris/repens/bulbosus* and *Ranunculus scleratus* respectively), blackberry, yew, vervain and a few common ruderals such as goosefoot (*Chenopodium* spp.) and stinging nettle. These plants are likely to have arrived in the pit from several sources as they do not all share the same habitat and are unlikely to all represent household waste.

Pit CG 2625

This sample consisted almost entirely of grains of free-threshing wheat, with a small amount of oat, rye and cultivated vetch. The grain was clean of weeds and chaff and appears to represent a fully processed crop.

Pit CG 2692

This deposit of charred grain had relatively few weed seeds and no chaff, although the grains were more mixed. Wheat was the most abundant cereal but there were also substantial amounts of barley and oat with some rye.

Pit CG 2721

Wheat and rye were the most abundant cereals in this pit, but oat and barley were also present. There were some charred weed seeds but no chaff fragments and also a few charred items such as elder and hazel which suggest that not all the charred material was cereal waste. A substantial number of uncharred items were also present, chiefly elder and dyer's rocket. Other uncharred material included *Rubus* sp., strawberry, fig, and spikerush. This material could be mainly a mix of rubbish and cess.

Scanned samples

The most promising-looking of the remaining samples were scanned. These samples are identified by context number since many of the contexts were not assigned to a context group. No numbers of botanical items were recorded, but all species found in each sample were recorded together with a rough indication of abundance on a scale of + (= present) to ++++ (= abundant) (Table AAA).

In addition, all other remaining post-medieval samples were rapidly scanned for species not found in the other samples. New species for this period found in this way were prickly-headed poppy (*Papaver* cf. *argenome*), dyer's greenweed/gorse (*Genista/Ulex*), corn gromwell (*Lithospermum arvense*), yellow rattle (*Rhinanthus* cf. *minor*), opium poppy, celery, and pumpkin/marrow/squash.

Pits CG 1310, 1325, 2456, 2457, 2717, 3121, and 3133

Pits identified as cesspits or possible cesspits tended to be the most productive of botanical remains. The charred remains and some of the other plant material are clearly not derived from any use of the pits as latrines and suggest that the pits also contained rubbish or in some cases perhaps merely general residual botanical material.

The two pits CG 2717 and 3121 produced only charred remains, mostly a small number of cereal grains. The sample from CG 2457 had large amounts of elder seeds but no other plant remains. The other pits all produced a few charred cereal grains and varying amounts of fig, strawberry, elder and blackberry. Sedge was also common. Mineralised *Prunus* stones and uncharred raspberry were found in CG 1310.

The most material came from CG 1325 which produced a substantial number of mineralised and uncharred seeds, and an insignificant number of charred cereals. Uncharred fig and *Rubus*, and mineralised apple and *Prunus* were all fairly abundant. There were also some mineralised cereal grains of oat and barley, and mineralised grass seeds. Grape and pea remains were also mineralised. Other mineralised material included corncockle seeds (*Agrostemma githago*), possible hawthorn (cf. *Crataegus monogyna*), possible hemlock (cf. *Conium maculatum*), a flower head possibly of stinking mayweed, and a thistle-type seed (*Carduus/Cirsium*). Other uncharred seeds included violet, the inevitable elder, sedge, and strawberry - possibly a cultivated type. The fruit remains in this pit may well derive from its use as a latrine, but the mineralised cereal grains could not have been eaten since they were undigested and probably some of the other mineralised material also derives from rubbish.

Pit CG 2678 and robbed construction trench CG 3131

These samples produced only a few charred items and some uncharred sedge nutlets.

Pits, barrel-lined latrine and drain (Period 11)

Samples were scanned from Period 11 contexts identified as cesspits, pits, barrel-lined latrines and drains, mostly from Site 2. There seemed to be no difference between pits identified as cesspits and pits of undefined

function in terms of the botanical material they contained. There was also no apparent difference in the material from the drain. Generally the material was very similar to the material from the Period 10 cesspits. Amounts of seeds of different species varied but most contexts contained a general mix of fruit remains, a few charred cereal grains, sedges and weeds. Uncharred seeds were more common than charred or mineralised remains. Latrine waste, household rubbish and other waste appear to have been reworked and mixed together into an almost homogenous assemblage of material which varies little except in terms of abundance of some kinds of seeds (e.g. high numbers of fig seeds) or abundance over-all. The only clearly apparent pattern was that this material seemed to be concentrated in these pits - there was generally less material in the rapidly scanned samples mentioned above.

Conclusion

Roman (Periods 3-5)

The material from the Roman periods consists of chiefly of charred spelt remains which may have been derived from a combination of activities including the burning of fine sieving waste for tinder and fuel, and either accidental or deliberate burning of cereal grain. If the burning of the grain was accidental then it would seem to be the result of minor spillages and accidents handling grain near fire, perhaps during preparation of food, rather than destruction of any grain stores. Possibly the grain was burned deliberately to prevent causes of spoilage accumulated in the residuals of old stored crops from contaminating fresh crops.

There is no evidence from the plant remains which can be linked specifically either to a rural or an urban economy. As discussed above, spelt may have been stored in the spikelet, in which case the waste from removing the spikelet chaff parts could be found wherever the spelt was consumed, whether by urban dwellers buying spelt or by farmers consuming part of their own crop.

It is perhaps unlikely that a clear dichotomy between urban and rural would often have existed. Many of the inhabitants of Roman towns must have farmed the surrounding land and the settlement therefore would be both producing and consuming cereal products. It is rare to find material that might be classified as strictly 'consumer', and this is usually only in the obvious case of imported exotic species (which of course could be present on high-status rural sites) such as the Roman buildings from Colchester burned in the Boudiccan revolt (Murphy 1977, 1984, 1985/6) and various waterlogged contexts from London (Wilcox 1977). 'Urban' material can really only be recognised where waterlogging preserves sufficient of the local weed flora for it to be recognised as 'urban', as, for example, at York (Hall and Kenward 1990).

The plant remains from Deansway indicated only that there was domestic consumption of crops which could have been, and almost certainly were, locally produced. Even the burning of spikelet chaff waste seems modest compared with the very large amount of spikelet chaff material from one of the pits at Blackfriars (Worcester) where the rich deposit of spelt chaff may have been the remains of fuel (as opposed to tinder for merely starting the fire) and may be associated with malting (Moffett 1987). Similar rich deposits of chaff were common at the Roman town at Tiddington, on the Warwickshire Avon (Moffett 1986), and at Catsgore in Somerset (Hillman 1982), both associated with the presence of T-shaped 'corn driers', and possibly connected with malting.

The abundance of grasses, particularly large-seeded grasses, was striking, and was also notable in the pit at Blackfriars (Moffett 1987). Since cereal fields are essentially a type of annual grassland it is not surprising that many annual grasses are successful weeds of cornfields. Some of these, such as *Bromus* spp. and *Avena* spp. have large seeds, but small-seeded grasses may also have been present and are under-represented because their seeds are less likely to survive charring. Some perennial species also, especially those which can spread by rhizomes and underground stems, can invade from field margins and may be only moderately checked by arid cultivation. Couch grass (*Elymus repens*), which is also large-seeded, is notorious in this regard, since it can propagate itself from a single underground stem node and it more likely to be spread than eliminated by cultivation (Salisbury 1961).

Grasses were also abundant at Tiddington and are common on most Romano-British sites, though the degree

of abundance at Worcester is extreme. If the grasses were cereal weeds then the crop processing seems to have been effective in removing their seeds since they are mainly associated with the chaff waste rather than the grain. Alternatively grasses may seem to be associated with chaff waste because they were gathered for the same purpose, i.e. tinder and fuel. If the grasses do represent cereal crop weeds than this is in contrast to the later periods, when dicotyledonous species predominate.

"Post-Roman" dark earth (Period 6)

In the post-Roman dark earth the most notable feature of the plant remains was their sparsity. Some of the plant material may be reworked from the Roman occupation levels and it is thus difficult to say that any particular remains are post-Roman. The suggestion that some of the material may be reworked is based on the presence of glume wheat chaff fragments.

It is possible that spelt cultivation continued in the post-Roman period, in which case this material could be contemporary with the formation of the dark earth. It seems highly probable that some of the charred material in the dark earth was deposited during its formation, possibly in ash from fires or other domestic rubbish. The extreme sparsity suggests either that activities likely to produce charred remains were not taking place near this area of the settlement or that material had been burned under conditions which reduced it to ash. Microscopic charred material has been shown to be present by the soil micromorphological analysis (McPhail pers comm), and it is reasonable to suppose that the macroscopic charred remains may be derived from the same source.

Late Saxon (Period 7)

The evidence from the late Saxon period is somewhat limited since it comes from only four features. It is clear that by this time the glume wheats of the Roman period had been replaced by free-threshing wheat, rye and oats, while barley continued to be cultivated. There is little evidence of chaff remains but free-threshing cereal rachises may be substantially under-represented in charred material because they remain joined together and are more likely to be caught in the upper, aerobic, part of a fire and thus destroyed (Hillman 1978).

The few charred weed seeds present are not directly comparable to the weed flora present in the chaff by-products of the Roman period because they seem to be contaminants in a nearly clean primary grain product rather than the waste by-products of crop processing. This caveat applies also to the medieval period. Since the representation of weed seeds is also poor, it is difficult to argue for much significance in the dramatic change in the representation of grasses from extremely abundant to very moderate. An abundant arable weed flora was recovered from the late Saxon period at Stafford which included many species familiar from medieval assemblages (Moffett 1988). Most of these species, such as corncockle, cornflower and stinking mayweed, are found in Britain from the Roman period or earlier but seem to become much more abundant (at least in archaeobotanical assemblages) from the late Saxon period onwards. Weedy grasses continued to flourish in cornfields but do not seem to predominate in charred assemblages to the same degree.

Mineralised fruitstones are a common find in cesspits, where conditions seem well-suited to their preservation (Green 1979a). The abundance of *Prunus* stones and apple/pear pips in one of the late Saxon cesspits suggests that these fruits may have been common items in the diet of the cesspit's users. Although these fruits could have been collected wild, the Saxons had orchards when conditions were stable enough to maintain them, or tended individual trees, and grafted their favourite types since Rosaceous fruits do not come true from seed. Welsh law set a high value on grafted trees in the tenth century (Harvey 1981, 35) and orchard cultivation seems to have been something of a monastic specialty (McLean 1981), so although late Saxon *Prunus* stones generally appear to be botanically undeveloped types (the difference in the seeds of wild and developed types is less clear with apple and pear), the attention paid to fruit cultivation was considerable.

Medieval (Periods 8-9)

The medieval period on the whole was rather poor in charred remains considering the relative intensity of occupation compared with earlier periods. Only one sample from Site 4 produced a significantly large amount of charred material. Many samples had fairly high percentages of weed seeds but the amount of uncharred material indicated that the degree of mixing in some deposits was rather high and it is not clear the weed seeds are all derived from the same source as the charred grain. Even the samples that are nearly pure grain contain relatively small amounts of grain when one considers that 1000 grains is about a handful. In the absence of chaff fragments it is difficult to suggest that the weed seeds (and perhaps the grains as well) could have derived from using chaff waste for lighting fires. Chaff products would almost certainly have been available as they were brought into towns, probably in quite large quantities, for building material and animal fodder. Fires need to be started with something, moreover, and it is unlikely that expensive paper was used for this purpose, but the evidence is conspicuously lacking.

Cereal grains could perhaps have become charred in domestic fires during food preparation. One of the staples of the medieval diet was cereal pottage, made from cereal meal, to which herbs, vegetables, meat or other ingredients were added (Wilson 1984). The grain was usually roasted before being ground or pounded to meal as this made it easier to process and improved the flavour. Minor accidents during the roasting process could account for moderate amounts of charred cereal grains, which would then no doubt be disposed of along with other household waste. Cereal pottages were generally regarded as food for the poorer classes, but even in well-to-do households it would have been eaten by servants (Dyer 1989).

Bread seems a less likely source of charred whole grains, and most town people in any case would have bought their bread from a baker. Bread making can be a source of charred grain, however. A reconstruction of a late Saxon clay oven excavated at Stafford was used for baking bread, and it was found necessary to place the loaves on a layer of grain when baking to prevent them from sticking to the shelf (Cane and Cane pers. comm.). This grain would be very vulnerable to charring, and there would be no need to use fully cleaned grain, so many weed seeds might be present also. The need for such a layer might depend on the methods of baking and the construction of the oven including whether it was built from clay or stone.

Among the uncharred remains, the presence of opium poppy and sweet violet give some indication of possible gardens. Strawberries, mint and possibly celery may also have come from gardens. Other uncharred material consists of fruit remains from latrine waste, ruderal species and rushes and sedges. Some rushes and sedges may have grown in poorly drained crop fields, but the uncharred seeds are more likely to derive from plants collected for bedding, building materials and strewing on floors.

Late medieval and post-medieval (Periods 10-11)

The general picture did not appear to change greatly in the post-medieval period. The sample with charred chaff remains is exceptional, but because it is exceptional it is difficult to make deductions from it about the possible use to which the material was put or how it became charred. Species represented by uncharred seeds were in greater abundance than in the medieval period but this could well be due to factors of preservation. Fennel, possibly caraway and vervain joined the list of likely garden plants. There is a small amount of evidence for a few exotic food plants which could have been either grown in gardens or bought.

Archaeobotanical evidence of garden plants is usually poor due to biases in preservation, but it should not be assumed that the paucity of evidence indicates that gardens were unimportant. In the late post-medieval period when the area was extensively built up (Currie pp 00-00) there would obviously have been little room. In the medieval and earlier post-medieval people may have grown herbs, vegetables, and in some cases may even have had their own vines and fruit trees.

On a well-drained site such as Deansway, the surprise is not that there should be so little surviving evidence for garden plants, but that there should be any evidence for them at all. The somewhat unusual circumstance of having seeds preserved in well-drained soil without charring or mineralisation considerably increased the evidence that was recovered.

The potential for future research in Worcester

A number of points have arisen from this study which have implications for future research in Worcester. Those outlined below are those which arise most directly from the present study.

1. It was noted that none of the charred material from any of the periods was found *in situ*. Although some interpretation of charred assemblages was possible, interpretation would be considerably strengthened by analysis of charred material from contexts which could be more directly linked to domestic or other activities, including material from primary contexts such as hearths, ovens etc. Such contexts were few at Deansway and therefore data from such contexts is still very much needed.
2. Waterlogging frequently preserves organic material which may not be exposed to fire or be robust enough to survive charring, become mineralised, or endure in well-drained soils. So far there has been no occasion to excavate waterlogged contexts in Worcester, but excavation of waterfront sites at Bristol (Jones and Watson 1987), Reading (Carruthers forthcoming), York (Hall and Kenward 1990), Lincoln (Greig in prep.) and other sites, has shown that a wealth of botanical material from many periods can be recovered. Although the unexpected preservation of uncharred seeds at Deansway added substantially to the information from the charred and mineralised remains, particularly in the post-medieval period, it seems likely that this was a highly selective mode of preservation and that much more organic material, and more delicate organic material would be found under waterlogged conditions.
3. The preservation of uncharred seeds leads to questions about factors which preserve seeds. Chemical conditions in the soil, perhaps caused by anthropogenic activities, or sealing in anaerobic conditions under rapidly built-up or dumped deposits, are two possible factors to consider. It is important to understand how botanical material has been preserved since this determines the type of material preserved, and interpretation hinges on understanding the biases inherent in the mode of preservation.
4. Archaeobotanical studies of post-medieval material are still too few and far between. The post-medieval period saw a flood of foreign plant introductions as well as the rise of horticulture as a commercial enterprise. Much of this is at least partly documented in contemporary herbals, gardening treatises and catalogues, but these rarely give site-specific records or, particularly among the earlier post-medieval documents, tell us much about how widely dispersed these plants were, either geographically or among different social classes. Archaeobotanical and historical studies together can produce a far more detailed and interesting picture than either type of evidence alone.

Acknowledgements

I would like to thank Clare de Rouffignac for her efficient efforts in supervising (and undertaking much of) the retrieval of the plant remains on site and sorting the material in the lab. I am also grateful to all the Deansway team for their help and information. English Heritage provided the funding for the botanical work.

References

- Boardman, S. and Jones, G. 1990. Experiments on the Effects of Charring on Cereal Plant Components. *Journal of Archaeological Science* 17 (1), 1-11.
- Campbell, B. M. S. 1988. The Diffusion of Vetches in Medieval England. *Economic History Review* (2nd series) 41 (2), 193-208.
- Colledge, S. M. 1980. Plant remains from pits. In M O H Carver, The excavation of three medieval craftsmen's tenements in Sidbury Worcester, 1976, *Transactions of the Worcestershire Archaeological Society* 3rd series, 7, 209-211
- Corran, H. S., 1975, *A History of Brewing*, Newton Abbot: David & Charles.
- Currie, C. R. S. 1988. Early Vetches in Medieval England: A Note. *Economic History Review*, 2nd series 26,(1) (1988), 114-116.
- Dyer, C. 1989. *Standards of Living in the Later Middle Ages*. Cambridge: Cambridge University Press.
- Green, F. J. 1979a. Collection and Interpretation of Botanical Information from Medieval Urban Excavations in Southern England. In Körber-Grohne, U. (ed.) Festschrift for Maria Hopf, special edition of *Archaeo-Physica* 8, 39-55.
- Green, F. J. 1979b. Phosphatic Mineralization of Seeds from Archaeological Sites. *Journal of Archaeological Science* 6 (3), 279-284.
- Green, F. J. 1979c. Plant Remains. In Heighway, C. M., Garrod, A. P. and Vince, A. G., Excavations at 1 Westgate Street, Gloucester, 1975. *Medieval Archaeology* 23 (1979), 159-213.
- Greig, J. R. A. 1981. The Investigation of a Medieval Barrel-latrine from Worcester. *Journal of Archaeological Science* 8 (3), 265-282.
- Greig, J. R. A. 1988. Plant Resources. In Astille, G. and Grant, A., *The Countryside of Medieval England*, pp. 108-127. Oxford: Basil Blackwell.
- Hajnalova, E. 1985. New Palaeobotanical Finds from Medieval Towns in Slovakia. *Slovenska Archeologia* 33 (2), 399-438
- Hall, A. R. and Kenward, H. K. 1990. *Environmental Evidence from the Colonia*. The Archaeology of York series, P. V. Addyman (general ed.), The Environment 14/6. London: Council for British Archaeology.
- Harvey, J. 1981. *Medieval Gardens*. London: Batsford.
- Helbæk, H. 1952. Early Crops in Southern England. *Proceedings of the Prehistoric Society* 18 (1952), 194-227.
- Helbæk, H. 1964. The Isca Grain, A Roman Plant Introduction in Britain. *New Phytologist* 63 (1964), 158-164.
- Hillman, G. C. 1978. On the Origins of Domestic Rye - *Secale cereale*: The Finds from Aceramic Çan Hasan III in Turkey. *Anatolian Studies* 28 (1978), 157-174.
- Hillman, G. C. 1981. Reconstructing Crop Processing from Charred Remains of Crops. In Mercer, R., (ed.), *Farming Practice in British Prehistory*, pp. 123-162. Edinburgh: Edinburgh University Press.
- Hillman, G. C. 1982a. Crop Husbandry at the Medieval Farmstead, Cefn Graenog. In Kelly, R. S., The

Excavation of a Medieval Farmstead at Cefn Graenog Clynnog, Gwynedd. *The Bulletin of the Board of Celtic Studies* Part 4 (May, 1982), 859-908 (901-906).

Hillman, G. C. 1982b. Evidence for Malting Spelt. In Leech, R., *Excavations at Catsgore 1970-1973, A Romano-British Village*, pp. 137-141. Gloucester: Western Archaeological Trust, Excavation Monograph 2.

Hillman, G. C. 1984a. Interpretation of Archaeological Plant Remains: The Application of Ethnographic Models from Turkey. In van Zeist, W. and Casparie, W. A. (eds.), *Plants and Ancient Man*, pp. 1-41. Rotterdam: A. A. Balkema.

Hillman, G. C. 1984b. Traditional Husbandry and Processing of Archaic Cereals in Recent Times: The Operations, Products and Equipment Which Might Feature in Sumerian Texts, Part I: The Glume Wheats. *Bulletin on Sumerian Agriculture* 1, 114-152.

Hort, Sir Arthur (trans.), 1916. Theophrastus, *Enquiry into Plants*. London: Heinemann.

Jones, G. 1984. Interpretation of Archaeological Plant Remains: Ethnographic Models from Greece. In van Zeist, W. and Casparie, W. A. (eds.), *Plants and Ancient Man*, pp. 43-61. Rotterdam: A. A. Balkema.

Jones, J. and Watson, N. 1987. The Early Medieval Waterfront at Redcliffe, Bristol: a Study of Environment and Economy. In *Studies in Palaeoeconomy and Environment in South West England*, pp. 135-162. Oxford: British Archaeological Reports, British Series 181.

Jones, M. 1988. The Arable Field: a Botanical Battleground. In M. Jones (ed.) *Archaeology and the Flora of the British Isles*, pp 86-92. Oxford: Oxford University Committee for Archaeology.

Lappe, U. 1978. Ruine Neideck in Arnstadt. *Alt-Thüringen* 15, 114-158.

McLean, T. 1981. *Medieval English Gardens*. London: Collins.

Moffett, L. 1986. Crops and Crop Processing in a Romano-British Village at Tiddington: The Evidence from the Charred Plant Remains. London: English Heritage, Ancient Monuments Laboratory Report 15/86.

Moffett, L. 1987. Two Roman Pits from Worcester, Blackfriars. London: English Heritage, Ancient Monuments Laboratory Report 203/87.

Moffett, L. 1988. *The Archaeobotanical Evidence for Saxon and Medieval Agriculture in Central England Circa 500 A.D. to 1500 A.D.* Unpublished M. Phil. thesis, University of Birmingham.

Moffett, L. 1991. The Archaeobotanical Evidence for Free-threshing Tetraploid Wheat in Britain. In *Palaeoethnobotany and Archaeology*, International Workgroup for Palaeoethnobotany, 8th Symposium at Nitra-Nové Vozokany 1989, Acta Interdisciplinaria Archaeologica 7. Nitra: Slovak Academy of Sciences.

Moffett, L. 1992. Fruits, Vegetables, Herbs and Other Plants from the Latrine at Dudley Castle in Central England, Used by the Royalist Garrison During the Civil War. *Review of Palaeobotany and Palynology* 73, (festschrift for W. van Zeist), 271-286.

Mundy, C. F. forthcoming. Excavations at Blackfriars, Worcester.

Murphy, P. 1977. *Early Agriculture and Environment on Hampshire Chalklands Circa 800 BC-400 AD.* Unpublished M. Phil. thesis, Southampton University.

Murphy, P. 1985. The Cereals and Crops Weeds, In West, S., *West Stow, The Anglo-Saxon Village vol. 1: Text*, pp. 100-108. East Anglian Archaeology Report 24, Suffolk County Planning Department.

- Murphy, P. 1985/6. Culver Street Under the Microscope. *Catalogue* 18, 2-5.
- Nye, S. 1989. Botanical Remains. In Murphy *et al.*, Analyses of a Cesspit Fill from the Tudor Merchant's House, Tenby, Dyfed. *The Bulletin of the Board of Celtic Studies* 36, 249-252.
- Paap, N. A. 1984. Palaeobotanical Investigations in Amsterdam. In van Zeist, W. and Casparie, W. A. (eds.), *Plants and Ancient Man*, pp. 339-344. Rotterdam: A. A. Balkema.
- Parkinson, J. 1656. *Paradisi in Sole Paradisus Terrestris*. London.
- Salisbury, E. 1961. *Weeds and Aliens*. London: Collins.
- Stuart, D. and Sutherland, J. 1989. *Plants from the Past*. Harmondsworth: Penguin.
- Wilhelm, S. and Sagan, J. E. 1974. *A History of the Strawberry from Ancient Gardens to Modern Markets*. Oakland: University of California Division of Agricultural Sciences.
- Willcox, G. H. 1977. Exotic Plants from Roman Waterlogged Sites in London. *Journal of Archaeological Science* 4, 269-282.
- Williams, D. 1979. The Plant Remains. In H. K. Kenward and D. Williams, *Biological Evidence from the Roman Warehouses in Coney Street*. The Archaeology of York series, P. V. Addyman, (general ed.), The Past Environment of York 14/2. London: Council for British Archaeology.
- Wilson, C. A. 1984. *Food and Drink in Britain*. Harmondsworth: Penguin.
- Wilson, D. G. 1984. The Carbonisation of Weed Seeds and Their Representation in Macrofossil Assemblages. In van Zeist, W. and Casparie, W. A. (eds.), *Plants and Ancient Man*, pp. 201-206. Rotterdam: A. A. Balkema.
- van Zeist, W. 1976. Two Early Rye Finds from the Netherlands. *Acta Botanica Neerlandica* 25(1), 71-79.
- Zeven, A. C. and Brandenburg, W. A. 1986. Use of Paintings from the 16th to 19th Centuries to Study the History of Domesticated Plants: *Economic Botany*, 40 (4), 397-408.

WORCESTER DEANSWAY BOTANICAL REMAINS

TABLE B: TAXONOMIC LIST OF ALL SPECIES BY PERIOD

c = charred, m = mineralised, u = uncharred, * = items found by rapid scanning

All items are 'seeds' in the broad sense unless noted otherwise Identifications by L Moffett

SPECIES	ROMAN	DARK EARTH	LATE SAXON	MEDIEVAL	LATE/POST-MEDIEVAL	COMMON NAME
CULTIVATED AND FOOD PLANTS						
<i>Triticum dicoccum</i> Schübl rachises	c	-	-	-	-	emmer
<i>Triticum dicoccum</i> Schübl spikelet forks	c	-	-	-	-	
<i>Triticum dicoccum</i> Schübl glume bases	c	c	-	-	-	
<i>Triticum dicoccum</i> Schübl	c	-	-	c	-	
<i>Triticum dicoccum/spelta</i> rachises	c	-	-	-	-	emmer/spelt
<i>Triticum dicoccum/spelta</i> spikelet forks	c	-	-	-	-	
<i>Triticum dicoccum/spelta</i> glume bases	c	c	-	-	-	
<i>Triticum dicoccum/spelta</i>	c	-	-	-	-	
<i>Triticum dicoccum/spelta</i> germinated	c	-	-	-	-	
<i>Triticum turgidum/durum</i> rachises	-	-	-	-	c	rivet/macaroni wheat
<i>Triticum spelta</i> L rachises	c	c	-	-	-	spelt
<i>Triticum spelta</i> L spikelet forks	c	-	-	-	-	
<i>Triticum spelta</i> L glume bases	c	c	-	c*	-	
<i>Triticum cf spelta</i>	c	c	-	-	-	
<i>Triticum spelta/aestivum</i>	c	-	-	-	-	spelt/bread wheat
<i>Triticum aestivum</i> sl rachises	-	-	-	-	c	bread/club wheat
<i>Triticum cf aestivum</i> sl	-	-	c	c	-	
<i>Triticum cf aestivum</i> sl germinated	-	-	c	-	-	
<i>Triticum sp</i> free-threshing rachises	-	-	-	-	c	wheat
<i>Triticum sp</i> free-threshing	c	c	c	c	c	
<i>Triticum sp</i> free-threshing germinated	-	-	c	c	c	
<i>Triticum sp</i>	c	c	c	c	c	
<i>Triticum sp</i> germinated	c	c	c	c	m	
<i>Triticum/Secale</i> rachises	-	-	-	c	-	wheat/rye
<i>Triticum/Secale</i>	c	-	cm	c	c	
<i>Triticum/Secale</i> germinated	-	-	c	-	-	
<i>Secale cereale</i> L rachises	-	-	-	c	c	rye
<i>Secale cereale</i> L	c	c	c	c	c	
<i>Secale cereale</i> L germinated	-	-	c	c	-	
<i>Hordeum vulgare</i> L 6-row rachises	c	-	-	-	-	6-row barley
<i>Hordeum vulgare</i> L rachises	c	-	-	-	-	
<i>Hordeum vulgare</i> L hulled	c	c	c	c	cm	hulled barley
<i>Hordeum vulgare</i> L hulled germinated	c	-	c	c	-	
<i>Hordeum vulgare</i> L	c	c	c	c	c	
<i>Hordeum vulgare</i> L germinated	-	-	c	c	c	
<i>Avena sativa</i> L spikelet forks	-	-	-	-	c	common oat
<i>Avena sativa</i> L lemma bases	-	-	c	-	c	
<i>Avena sativa</i> L	-	-	-	c	c	
<i>Avena cf sativa</i> lemma bases	-	-	-	-	c	
<i>Avena sp</i>	c	c	c	c	cm	oat
<i>Avena sp</i> germinated	-	-	c	c	-	
<i>Avena</i> /large Gramineae	c	-	c	c	c	oat/large grass
<i>Avena</i> /large Gramineae germinated	-	-	c	c	-	
Cereal indet rachises	-	-	-	-	c	unidentified cereal
Cereal indet culm nodes	c	-	c	c	c	
Cereal indet culm bases	-	-	-	-	c	

Cereal indet	c	c	c	c	cm	
Cereal indet germinated	-	-	-	-	m	
Cereal indet coleoptiles	c	c	-	-	-	cereal sprouts
<i>Papaver somniferum</i> L	-	-	-	u*	u*	opium poppy
cf <i>Papaver somniferum</i>	-	-	-	c	u*	
<i>Linum usitatissimum</i> L	-	-	-	c	-	flax
<i>Linum usitatissimum/bienne</i> capsule frags	-	-	-	c	-	
<i>Linum usitatissimum/bienne</i>	-	-	-	c	-	
<i>Vitis vinifera</i> L	-	-	-	-	mu	grape
<i>Vicia sativa</i> ssp <i>sativa</i> (L) Boiss	-	-	-	c	c	cultivated vetch
cf <i>Vicia sativa</i> ssp <i>sativa</i>	-	-	-	c	cm	
? <i>Vicia sativa</i> ssp <i>sativa</i>	-	c	-	-	-	
<i>Vicia sativa/Lens culinaris</i>	-	-	-	c	c	vetch/lentil
<i>Vicia faba</i> var <i>major</i>	-	-	-	m	-	field bean
<i>Vicia faba</i> L	-	c	c	c	-	field bean
cf <i>Vicia faba</i>	-	c	c	-	-	
<i>Vicia faba/Pisum sativum</i>	c	c	cm	c	-	bean/pea
<i>Pisum sativum</i> L hilums	-	-	-	-	m	pea
<i>Pisum sativum</i> L	-	-	cm	c	-	
cf <i>Pisum sativum</i>	-	-	c	-	c	
<i>Rubus</i> cf <i>fruticosus</i> agg	-	-	-	u	u	blackberry
<i>Rubus</i> cf <i>idaeus</i>	-	-	-	u	u	raspberry
<i>Rubus</i> sp	u	u	u	cu	u	
<i>Fragaria vesca</i> type	-	u	-	u	u	wood strawberry
<i>Fragaria</i> sp (possibly a cultivated type)	-	-	-	-	u	strawberry
<i>Prunus spinosa</i> L	-	-	-	c	u	sloe
<i>Prunus</i> cf <i>spinosa</i>	-	c	m	-	-	
<i>Prunus spinosa/domestica</i> ssp <i>insititia</i>	-	-	-	-	mu	sloe/bullace
<i>Prunus domestica</i> ssp <i>insititia</i> (L) CK Scheider	-	-	-	c	u*	bullace/damson
<i>Prunus domestica</i> ssp <i>insititia</i> (L) CK Scheider (damson type)	-	-	-	-	m	
<i>Prunus</i> sp (round)	-	-	m	-	-	sloe/bullace/damson/cherry
<i>Prunus</i> sp (elongate)	-	-	m	-	-	
<i>Prunus</i> sp	-	-	m	c	mu	
<i>Prunus</i> sp mesocarp fragments	-	-	m	-	-	
Fruitstones indet	-	-	m	-	-	
? Fruitstones indet	-	c	c	-	-	
<i>Malus sylvestris</i> Miller	-	-	cm	m	cmu	apple
cf <i>Malus sylvestris</i>	-	-	-	c	-	
? <i>Malus</i> endocarps	-	-	m	-	-	
<i>Malus/Pyrus</i>	-	-	m	c	c	apple/pear
<i>Malus/Pyrus/Sorbus</i>	-	c	m	-	-	apple/pear/whitebeam
<i>Foeniculum vulgare</i> Miller	-	-	-	-	u	fennel
cf <i>Foeniculum vulgare</i>	-	-	-	-	m*	
<i>Apium</i> cf <i>graveolens</i> L	-	-	-	m*	-	(possibly wild) celery
cf <i>Carum carvi</i>	-	-	-	-	c	caraway
<i>Cucurbita</i> cf <i>pepo</i>	-	-	-	-	u*	pumpkin/marrow/squash
<i>Corylus avellana</i> L nutshell fragments	c	c	-	c	c	hazel
<i>Corylus avellana</i> L cotyledons	-	-	-	c*	-	
<i>Corylus avellana</i> L whole nut	-	-	-	c*	-	
<i>Ficus carica</i> L	u	u	-	u	u	fig
<i>Ficus carica</i> L stems	-	-	-	-	u	

WILD PLANTS

<i>Taxus baccata</i> L	-	-	-	-	u	yew
<i>Ranunculus acris/repens/bulbosus</i>	c	-	-	c	u	buttercups
<i>Ranunculus lingua</i> L	-	-	-	-	c	great spearwort
cf <i>Ranunculus lingua</i>	-	-	-	c	-	
<i>Ranunculus flammula/reptans</i>	c	-	-	c	-	lesser/creeping spearwort
cf <i>Ranunculus flammula/reptans</i>	-	-	-	-	u	
<i>Ranunculus scleratus</i> L	-	-	-	-	u	celery-leaved crowfoot
<i>Ranunculus</i> subsect <i>Ranunculus</i>	-	-	-	c	-	
<i>Papaver</i> cf <i>argemone</i>	-	-	-	-	u*	long prickly-headed poppy
<i>Chelidonium majus</i> L	-	u	u	u	u	greater celandine
<i>Fumaria</i> sp	cu	cu	-	u	u	fumatory
<i>Brassica</i> cf <i>nigra</i>	-	-	-	-	u	black mustard
<i>Brassica rapa/nigra</i>	-	-	-	c	-	wild turnip/black mustard
<i>Brassica/Sinapis</i>	-	-	-	-	m*u	
cf <i>Brassica/Sinapis</i>	c	-	-	c	u	
cf <i>Sinapis arvensis</i>	-	-	-	c	u	
<i>Raphanus raphanistrum</i> L pod segs	-	-	-	c	-	wild radish
<i>Thlaspi arvense</i> L	-	-	c	c	-	field pennycress
Cruciferae indet	-	-	-	c	cu	
<i>Reseda luteola</i> L	-	-	-	-	u	dyer's rocket
<i>Viola odorata</i> type	-	-	-	u	u	sweet violet type
<i>Viola</i> sp	-	u	-	u	u	
<i>Silene</i> sp	-	-	-	c	u	campion
<i>Agrostemma githago</i> L	c	c	cm	c	cm	corn cockle
cf <i>Agrostemma githago</i>	-	-	c	c	-	
<i>Stellaria media</i> type	c	-	-	c	c	chickweed
<i>Spergula arvensis</i> L	-	-	-	c	c	corn spurrey
<i>Scleranthus annuus</i> L	-	-	-	c	-	annual knawel
Caryophyllaceae indet	c	c	-	m	-	
<i>Montia fontana</i> ssp <i>chondrosperma</i> (Fenzl) SM Walters	c	-	-	-	-	blinks
<i>Chenopodium album</i> type	-	-	-	c	u	fat hen type
<i>Chenopodium murale</i> L	-	-	-	c	u	nettle-leaved goosefoot
<i>Chenopodium urbicum</i> L	-	-	-	-	u	upright goosefoot
<i>Chenopodium</i> sp	c	c	c	cm	cu	
Chenopodiaceae indet	c	c	-	c	-	
<i>Malva sylvestris</i> L	-	-	-	c	-	common mallow
<i>Malva</i> sp	-	-	c*	c	-	
<i>Ilex aquifolium</i> L	-	-	c*	c*	cm	holly
<i>Genista/Ulex</i>	-	-	-	c*	-	greenweed/gorse
<i>Vicia hirsuta</i> (L) SF Gray	-	c	c	c	c	hairy tare
<i>Vicia tetrasperma</i> (L) Schreber	c	c	-	c	c	smooth tare
<i>Vicia/Lathyrus</i>	c	c	cm	c	cm	tare/vetch/vetchling
<i>Vicia/Lathyrus/Pisum</i>	-	c	-	c	c	tare/vetch/vetchling/pea
<i>Medicago lupulina</i> L	c	-	-	-	-	black medick
<i>Medicago/Melilotus/Trifolium</i>	c	c	-	c	c	medick/melilot/clover
Small <i>Trifolium</i> type	c	c	c	c	c	clover type
<i>Potentilla</i> sp	-	-	-	-	u	cinquefoil
<i>Aphanes arvensis</i> L	c	-	-	-	-	parsley piert
<i>Crataegus</i> cf <i>monogyna</i>	-	c	-	-	-	hawthorn
cf <i>Crataegus</i> sp	-	-	c*	c*	m	
<i>Scandix pecten-veneris</i> L	-	-	-	c	-	shepherd's needle
<i>Aethusa cynapium</i> L	-	-	-	-	u	fool's parsley

<i>Conium maculatum</i> L	c	-	-	c	-	hemlock
cf <i>Conium maculatum</i>	-	-	-	-	m	
<i>Apium</i> cf <i>nodiflorum</i>	-	-	-	c	-	fool's watercress
<i>Torilis</i> sp	-	-	-	-	c	hedge-parsley
Umbelliferae indet	-	-	-	c	mu	
<i>Euphorbia peplis</i> L	-	-	-	-	u	purple spurge
<i>Euphorbia helioscopia</i> L	-	-	-	u	u	sun spurge
<i>Polygonum aviculare</i> agg	c	-	-	c	-	knotweed
cf <i>Polygonum</i> sp	-	-	-	m	-	
<i>Fallopia convolvulus</i> (L) Á Löve	c	-	c	c	-	black bindweed
<i>Rumex acetosella</i> agg	c	-	c	c	cu	sheep's sorrel
<i>Rumex</i> sp	c	cu	c	c	cu	dock
<i>Urtica urens</i> L	-	-	-	c	-	small nettle
<i>Urtica dioica</i> L	-	-	-	-	u	stinging nettle
<i>Lysimachia/Anagallis</i>	-	-	-	c*	-	pimpernel
<i>Anagallis arvensis/foemina</i>	-	-	-	-	u	scarlet/blue pimpernel
<i>Lithospermum arvense</i> L	-	-	c*	-	-	corn gromwell
<i>Atropa bella-donna</i> L	-	-	-	u	u	deadly nightshade
<i>Hyoscyamus niger</i> L	-	-	-	cu	u	henbane
<i>Solanum dulcamara</i> L	-	-	-	-	u	woody nightshade
<i>Solanum nigrum</i> L	c	-	-	c	-	black nightshade
cf Solonaceae indet	-	-	-	c	-	
<i>Rhinanthus</i> cf <i>minor</i>	-	-	-	-	u	yellow rattle
cf <i>Rhinanthus</i> sp	-	-	-	c*	-	
<i>Euphrasia/Odontites</i>	c	-	-	c	-	eyebright/red bartsia
<i>Verbena officinalis</i> L	-	-	-	-	u	vervain
<i>Mentha ? arvensis</i>	-	-	-	c	-	mint
<i>Mentha</i> sp	-	-	-	-	c	mint
<i>Stachys</i> sp	-	-	c	-	u	woundwort
cf <i>Stachys</i> sp	-	-	-	c	-	
<i>Ballota/Lamium</i>	-	-	-	-	u	black horehound/deadnettle
<i>Lamium</i> cf <i>album/maculatum</i>	-	-	-	-	u	white/spotted deadnettle
<i>Lamium</i> sp	-	-	-	-	u	deadnettle
cf <i>Lamium</i> sp	-	-	-	-	u	
<i>Galeopsis tetrahit</i> agg/ <i>speciosa</i>	-	-	-	c	-	hempnettle
Labiatae indet	-	-	-	u	-	
cf Labiatae indet	-	c	c	-	-	
<i>Plantago major</i> L	-	-	-	c	-	plantain
<i>Plantago lanceolata</i> type	-	-	-	c*	c	ribwort plantain type
<i>Galium</i> cf <i>mollugo</i> agg	-	-	-	c*	-	hedge bedstraw
<i>Galium aparine</i> L	c	-	-	-	c	goosegrass
<i>Galium</i> cf <i>aparine</i>	-	-	-	-	c	
<i>Galium</i> sp	c	c	-	c	c	
<i>Sambucus</i> cf <i>ebulus</i>	-	-	-	u	u	danewort
<i>Sambucus nigra</i> L	-	c	cmu	cu	cmu	elder
<i>Valerianella dentata</i> (L) Pollich	-	-	-	c	c	narrow-fruited cornsalad
<i>Senecio jacobea/erucifolius</i>	-	-	-	c*	-	ragwort
<i>Anthemis cotula</i> L	c	c	c	cm	c	stinking mayweed
cf <i>Anthemis cotula</i> flower head	-	-	-	-	c*m	
<i>Tripleurospermum inodorum</i> (L) Schultz Bip	c	c	-	c	-	scentless mayweed
<i>Chrysanthemum segetum</i> L	c	-	-	c	-	corn marigold
<i>Carduus/Cirsium</i>	-	-	-	-	m	thistle
<i>Onopordum acanthium</i> L	c	-	-	-	-	cotton thistle

cf <i>Onopordum acanthium</i>	-	-	-	c	-	
<i>Centaurea cyanus</i> L	-	-	-	c	c	cornflower
<i>Centaurea jacea/nigra</i> type	-	-	-	c*	-	brown/lesser knapweed
cf <i>Centaurea</i> sp	-	-	-	c	-	
<i>Lapsana communis</i> L	c	c	-	c	c	nipplewort
Compositae indet	c	-	-	c	-	
<i>Lemna</i> sp	-	-	-	-	u	duckweed
<i>Sparganium erectum/emersum</i>	-	-	c*	c	c*	bur-reed
<i>Sparganium</i> cf <i>erectum/emersum</i>	-	c	-	c	-	
<i>Eleocharis palustris/uniglumis</i>	c	c	c	cu	cu	spike-rush
<i>Scirpus maritimus/</i> <i>Schoenoplectus lacustris</i>	c	-	-	-	-	sea club-rush/bulrush
<i>Carex</i> spp	c	cu	cmu	cmu	cu	sedges
<i>Festuca/Lolium</i> type	c	c	-	-	-	fescue/rye-grass type
<i>Lolium perenne</i> L floret	c	-	-	-	-	rye-grass
<i>Lolium</i> sp rachises	-	-	-	-	-	rye-grass
<i>Lolium</i> sp glume bases	c	-	-	-	-	
<i>Lolium</i> sp	c	-	-	-	-	
<i>Poa annua</i> L	-	-	-	c	-	annual meadow-grass
<i>Poa</i> sp	c	-	-	c*	-	meadow-grass
<i>Cynosurus cristatus</i> L	c	-	c	c	c	crested dog's-tail
<i>Bromus hordeaceus/secalinus</i>	c	c	c	c	-	lop-grass/rye-brome
<i>Bromus hordeaceus/secalinus</i> germinated	c	-	-	-	-	
<i>Bromus</i> sp	-	-	-	-	-	
<i>Avena fatua/sterilis</i> ssp <i>ludoviciana</i> spikelet forks	c	-	-	-	-	wild oat
<i>Avena fatua/sterilis</i> ssp <i>ludoviciana</i> lemma bases	c	-	-	-	-	
<i>Avena fatua/sterilis</i> ssp <i>ludoviciana</i>	c	-	-	-	-	
<i>Arrhenatherum elatius</i> ssp <i>bulbosum</i> (Willd) Schübler & Martens tubers	c	c	-	-	-	false oat-grass
<i>Agrostis</i> sp	-	-	-	-	-	bent
<i>Phleum pratense</i> L	c	c	c*	c	-	cat's-tail
<i>Phleum</i> cf <i>phleoides</i>	-	-	-	-	-	purple-stem cat's-tail
cf <i>Danthonia decumbens</i>	c	c	-	-	-	heath grass
Gramineae indet rachises	c	-	-	-	-	grasses
Gramineae indet glume bases	c	-	-	-	-	
Gramineae indet	c	c	c	c	cm	
Gramineae indet germinated	c	-	-	-	-	
Tree/shrub buds	-	-	-	-	c	
Unidentified flower heads	-	-	-	-	c	
Unidentified	cu	-	c	cmu	cmu	
Unidentified tubers	-	-	c	-	-	
? <i>Claviceps purpurea</i>	c	-	-	-	-	ergot

DEANSWAY TABLES OF BOTANICAL REMAINS

TABLE A: ROMAN

ch = charred min = mineralised unch = uncharred + = present - = absent

The results are combined for all samples within each context group except for scored samples.

All items are 'seeds' in the broadest sense unless noted otherwise.

Identifications by Lisa Moffett

Period:	03	03	03	03	03	03	03	03	03	03	04	04	04	04	04	04	
Site:	2	2	2	2	2	2	3	3	3	3	2	2	2	2	2	2	
Context group:	022	025	033	064	064	117	013	021	070	070	030	036	046	050	054	061	070
Context:	17939	17925				17882					18298	18299					17913
Sample:	6710	6709				6699					7557	7558					6702
Sample size (litres):	25	15	25	25	25	28	25	25	25	25	25	75	15	25	25	25	75
% analysed:	13%	25%	100%	50%	13%	100%	100%	100%	100%	13%	6%	100%	100%	100%	100%	100%	33%
Items per litre:	43	62	<1	8	79	1	<1	<1	319	575	2	<1	2	<1	<1	5	7

CULTIVATED AND FOOD PLANTS

Triticum dicoccum (rachises) ch	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
Triticum dicoccum (spikelet forks) ch	1	-	-	-	-	-	-	-	-	36	34	-	-	-	-	-	-
Triticum dicoccum (glume bases) ch	-	-	-	+	-	+	-	-	-	67	42	-	-	-	-	-	-
Triticum dicoccum ch	5	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Triticum dicoccum/spelta (rachises) ch	-	-	-	-	-	-	-	-	-	4	2	-	-	-	-	-	-
Triticum dicoccum/spelta (spikelet forks) ch	-	2	-	-	-	-	-	-	-	21	24	-	-	-	-	-	-
Triticum dicoccum/spelta (glume bases) ch	1	-	-	+	24	+	+	-	-	301	183	-	-	-	-	-	1
Triticum dicoccum/spelta ch	2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triticum dicoccum/spelta (germinated) ch	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Triticum spelta (rachises) ch	-	-	-	+	2	-	-	-	-	17	2	-	-	-	-	-	-
Triticum spelta (spikelet forks) ch	-	2	-	+	3	-	-	-	-	2	2	-	-	-	-	-	-
Triticum spelta (glume bases) ch	-	-	-	+	40	+	-	-	-	237	204	-	-	+	-	-	+
Triticum cf. spelta ch	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Triticum spelta/aestivum ch	2	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triticum sp. free-threshing ch	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-
Triticum sp. ch	99	147	+	+	28	+	+	+	+	101	144	+	+	+	+	+	76
Triticum sp. (germinated) ch	-	-	-	+	-	+	-	-	-	53	44	-	-	-	-	-	-
Secale cereale ch	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-
Hordeum vulgare 6-row (rachises) ch	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Hordeum vulgare (rachises) ch	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Hordeum vulgare hulled ch	2	1	+	-	-	-	+	-	-	-	3	+	-	-	-	+	+
Hordeum vulgare hulled (germinated) ch	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Hordeum vulgare ch	-	-	-	+	1	+	-	-	-	1	-	+	-	-	-	-	3
Avena sp. ch	-	-	-	+	1	-	+	+	+	4	9	-	-	-	-	+	+
Avena/large Gramineae ch	-	7	-	-	-	-	-	-	-	-	9	-	-	-	-	-	-
Cereal indet. (culm nodes) ch	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Cereal indet. ch	16	38	+	+	14	-	-	+	+	62	146	+	+	+	+	+	47
Cereal indet. (coleoptiles) ch	-	-	-	+	2	-	-	-	-	3	3	-	-	+	-	-	-
Ficus carica unch	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-

OTHER PLANTS

Ranunculus flammula/reptans ch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Brassica/Sinapis ch	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Montia fontana ssp. chondrosperma ch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Chenopodium sp. ch	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	2
Vicia tetrasperma ch	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Vicia/Lathyrus ch	-	-	-	+	-	-	+	-	-	-	+	+	+	-	-	-	1
Medicago/Melilotus/Trifolium ch	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Trifolium type ch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1

WORCESTER DEANSWAY TABLE OF ROMAN BOTANICAL REMAINS

Context group:	<u>022</u>	<u>025</u>	<u>033</u>	<u>064</u>	<u>064</u>	<u>117</u>	<u>013</u>	<u>021</u>	<u>070</u>	<u>070</u>	<u>030</u>	<u>036</u>	<u>046</u>	<u>050</u>	<u>054</u>	<u>061</u>	<u>070</u>
Sample:	<u>6710</u>	<u>6703</u>			<u>6699</u>				<u>7557</u>	<u>7558</u>							<u>6702</u>
<i>Conium maculatum</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
<i>Polygonum aviculare</i> agg. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	1	-
<i>Rumex acetosella</i> agg. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-
<i>Rumex</i> sp. <u>ch</u>	-	-	-	+	1	-	-	-	-	-	-	+	+	-	-	-	-
<i>Solanum nigrum</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
<i>Galium</i> sp. <u>ch</u>	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
<i>Anthemis cotula</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	+	+	-	-	+	-	-
<i>Tripleurospermum inodorum</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-
<i>Onopordum acanthium</i> <u>ch</u>	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
Compositae indet. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>Eleocharis palustris/uniglumis</i> <u>ch</u>	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-
<i>Carex</i> sp. <u>ch</u>	-	-	-	+	1	-	-	-	-	-	-	-	-	-	-	-	-
<i>Festuca/Lolium</i> type <u>ch</u>	-	-	-	+	2	-	-	-	14	-	-	-	-	-	-	-	+
<i>Lolium</i> sp. (glume bases) <u>ch</u>	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
<i>Lolium</i> sp. <u>ch</u>	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-
<i>Bromus hordeaceus/secalinus</i> <u>ch</u>	-	-	-	+	24	+	-	-	12	1	+	-	+	-	+	-	+
<i>Arrhenatherum elatius</i> ssp. <i>bulbosum</i> (tuber) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
<i>Phleum pratense</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	1
Gramineae indet. (rachises) <u>ch</u>	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-
Gramineae indet. <u>ch</u>	-	2	-	+	103	+	-	-	49	38	+	+	+	-	+	-	+
Unidentified <u>ch</u>	-	-	-	+	2	-	-	-	-	-	-	-	+	-	+	-	-

WORCESTER DEANSWAY TABLE OF ROMAN BOTANICAL REMAINS

Period:	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04
Site:	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3
Context group:	072	074	074	078	084	086	086	086	094	110	113	148	025	026	027	044
Context:		17778	17796				17692	17727								
Sample:		6686	6692				6684	6681								
Sample size (litres):	25	25	25	25	25	25	25	25	50	25	26	25	50	75	18	25
% analysed:	100%	25%	25%	25%	50%	50%	100%	50%	50%	100%	100%	100%	57%	58%	100%	100%
Items per litre:	2	43	117	7	5	6	5	12	5	<1	8	<1	<1	2	<1	<1

CULTIVATED AND FOOD PLANTS

<i>Triticum dicoccum</i> (spikelet forks) <u>ch</u>	-	-	-	-	-	+	-	1	-	-	+	-	-	-	-	-
<i>Triticum dicoccum</i> (glume bases) <u>ch</u>	-	-	1	-	-	+	1	-	+	-	-	-	-	-	-	-
<i>Triticum dicoccum/spelta</i> (rachises) <u>ch</u>	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Triticum dicoccum/spelta</i> (spikelet forks) <u>ch</u>	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Triticum dicoccum/spelta</i> (glume bases) <u>ch</u>	-	44	115	-	-	+	13	23	+	-	+	-	-	+	-	-
<i>Triticum spelta</i> (rachises) <u>ch</u>	-	4	15	-	+	-	-	-	-	-	-	-	-	-	-	-
<i>Triticum spelta</i> (spikelet forks) <u>ch</u>	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Triticum spelta</i> (glume bases) <u>ch</u>	+	78	89	+	+	+	15	16	+	-	+	-	-	-	-	-
<i>Triticum cf. spelta</i> <u>ch</u>	-	-	7	-	-	-	-	-	+	-	-	-	-	-	+	-
<i>Triticum spelta/aestivum</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>Triticum</i> sp. free-threshing <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
<i>Triticum</i> sp. <u>ch</u>	+	24	96	+	+	+	33	18	+	+	+	+	+	+	+	+
<i>Triticum</i> sp. (germinated) <u>ch</u>	-	1	-	-	-	-	-	-	+	-	-	-	-	-	-	-
<i>Secale cereale</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-
<i>Hordeum vulgare</i> hulled <u>ch</u>	-	-	-	-	-	-	-	-	+	+	-	-	-	+	-	-
<i>Hordeum vulgare</i> <u>ch</u>	-	-	-	-	-	+	-	1	-	-	-	-	-	-	-	+
<i>Avena</i> sp. <u>ch</u>	-	3	12	-	+	+	1	3	-	-	-	-	-	+	-	+
Cereal indet. (culm nodes) <u>ch</u>	-	-	-	-	-	+	-	1	-	-	-	-	-	-	-	-
Cereal indet. <u>ch</u>	+	8	26	+	+	+	29	18	+	+	-	+	+	+	-	+
Cereal indet. (coleoptiles) <u>ch</u>	-	-	2	-	-	+	1	3	-	-	-	-	-	-	-	-

OTHER PLANTS

<i>Ranunculus acris/repens/bulbosus</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-
<i>Fumaria</i> sp. <u>ch</u>	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Fumaria</i> sp. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
<i>Agrostemma githago</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
<i>Stellaria media</i> type <u>ch</u>	-	1	1	-	-	-	-	-	+	-	-	-	-	-	-	-
Caryophyllaceae indet. <u>ch</u>	-	-	-	-	-	+	1	-	-	-	-	-	-	-	-	-
<i>Chenopodium</i> sp. <u>ch</u>	-	3	8	-	-	+	1	-	+	-	-	+	-	-	-	-
Chenopodiaceae indet. <u>ch</u>	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Vicia/Lathyrus</i> <u>ch</u>	-	1	-	+	-	-	-	-	+	-	-	-	-	+	+	-
<i>Medicago lupulina</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
<i>Medicago/Melilotus/Trifolium</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
<i>Trifolium</i> type <u>ch</u>	-	1	-	-	-	+	1	1	-	-	-	-	-	-	-	-
<i>Aphanes arvensis</i> <u>ch</u>	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Polygonum aviculare</i> agg. <u>ch</u>	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Fallopia convolvulus</i> <u>ch</u>	-	-	1	-	-	-	-	-	-	+	-	-	-	+	-	-
<i>Rumex</i> sp. <u>ch</u>	-	1	2	-	-	+	1	-	-	-	+	-	-	+	-	-
<i>Euphrasia/Odontites</i> <u>ch</u>	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Galium aparine</i> <u>ch</u>	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Galium</i> sp. <u>ch</u>	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Anthemis cotula</i> <u>ch</u>	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
<i>Tripleurospermum inodorum</i> <u>ch</u>	-	3	4	-	-	+	-	3	-	-	-	-	-	-	-	-
<i>Chrysanthemum segetum</i> <u>ch</u>	-	-	-	-	-	+	1	-	-	-	-	-	-	-	-	-
<i>Lapsana communis</i> <u>ch</u>	-	-	-	-	-	+	-	2	-	-	-	-	-	-	-	-

WORCESTER DEANSWAY TABLE OF ROMAN BOTANICAL REMAINS

Context group:	072	074	074	078	084	086	086	086	094	110	113	148	025	026	027	024
Sample:		6686	6692				6684	6681								
Compositae indet. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Eleocharis palustris/uniglumis <u>ch</u>	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-
Carex sp. <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Festuca/Lolium type <u>ch</u>	-	34	114	-	-	+	2	5	-	-	+	-	-	+	-	-
Lolium perenne (florets) <u>ch</u>	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromus hordeaceus/secalinus <u>ch</u>	+	13	92	-	+	+	3	3	+	-	+	-	-	+	-	-
Avena fatua/sterilis																
ssp. ludoviciana (spikelet forks) <u>ch</u>	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Avena fatua/sterilis																
ssp. ludoviciana (lemma bases) <u>ch</u>	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Avena fatua/sterilis ssp. ludoviciana <u>ch</u>	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Phleum pratense <u>ch</u>	-	1	2	-	-	+	-	1	-	-	-	-	-	-	-	-
cf. Danthonia decumbens <u>ch</u>	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Gramineae indet. <u>ch</u>	+	41	132	+	+	+	24	42	+	-	+	-	-	+	-	+
Gramineae indet. (germinated) <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Gramineae indet. (coleoptiles) <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Unidentified <u>ch</u>	+	-	3	-	-	+	-	3	-	-	-	+	+	-	+	-
Unidentified <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
? Claviceps purpurea (ergot) <u>ch</u>	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-

WORCESTER DEANSWAY TABLE OF ROMAN BOTANICAL REMAINS

Period:	04	04	04	04	04	05	05	05	05	05	05	05	05	05	05	05	05
Site:	3	3	3	3	3	2	2	2	2	2	2	3	3	3	3	3	3
Context group:	051	051	053	056	060	091	091	119	120	121	139	046	071	096	098	100	109
Context:		18108			18320		17607										
Sample:		7533			7563		6637										
Sample size (litres):	50	25	25	25	25	25	25	75	25	25	25	25	5	25	25	25	25
% analysed:	38%	25%	50%	50%	25%	50%	100%	100%	100%	100%	50%	100%	100%	100%	100%	100%	100%
Items per litre:	46	90	<1	1	19	4	8	1	2	<1	<1	<1	1	1	<1	<1	<1

CULTIVATED AND FOOD PLANTS

Triticum dicoccum (glume bases) <u>ch</u>	+	1	-	-	-	+	3	+	-	-	-	-	-	-	-	-	-
Triticum dicoccum/spelta (spikelet forks) <u>ch</u>	+	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triticum dicoccum/spelta (glume bases) <u>ch</u>	+	128	-	-	-	+	58	+	-	-	-	-	-	-	-	-	-
Triticum spelta (rachises) <u>ch</u>	+	5	-	-	-	+	2	-	-	-	-	-	-	-	-	-	-
Triticum spelta (spikelet forks) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Triticum spelta (glume bases) <u>ch</u>	+	198	-	+	2	+	45	+	-	-	-	-	+	-	-	-	-
Triticum cf. spelta <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Triticum sp. free-threshing <u>ch</u>	+	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	+
Triticum sp. <u>ch</u>	+	18	+	-	46	+	26	+	+	+	+	+	+	+	-	+	+
Triticum sp. (germinated) <u>ch</u>	+	23	-	+	50	-	-	-	-	-	-	-	-	-	-	-	-
Triticum/Secale <u>ch</u>	-	-	-	-	-	+	1	-	-	-	-	-	-	-	-	-	-
Secale cereale <u>ch</u>	-	-	-	-	-	-	-	-	-	+	+	-	+	-	-	-	-
Hordeum vulgare hulled <u>ch</u>	+	-	-	-	1	+	-	-	-	-	-	-	-	-	-	-	-
Hordeum vulgare <u>ch</u>	-	-	-	-	-	+	3	-	+	+	-	-	-	-	-	-	+
Avena sp. <u>ch</u>	+	5	-	-	-	-	-	+	-	-	+	-	-	-	-	-	+
Cereal indet. <u>ch</u>	+	46	+	-	10	+	19	+	+	+	+	+	+	+	+	-	+
Cereal indet. (coleoptiles) <u>ch</u>	+	18	-	-	1	+	3	-	-	-	-	-	-	-	-	-	-
Vicia faba/Pisum sativum <u>ch</u>	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Rubus sp. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Corylus avellana (fragments) <u>ch</u>	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ficus carica <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+

OTHER PLANTS

Agrostema githago <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Stellaria media type <u>ch</u>	+	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chenopodium sp. <u>ch</u>	+	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Vicia/Lathyrus <u>ch</u>	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-
Medicago/Melilotus/Trifolium <u>ch</u>	+	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
Trifolium type <u>ch</u>	-	-	-	-	-	+	1	-	-	-	-	-	-	-	-	-	-
Fallopia convolvulus <u>ch</u>	+	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rumex acetosella agg. <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Rumex sp. <u>ch</u>	+	7	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Galium sp. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Tripleurospermum inodorum <u>ch</u>	+	3	-	-	-	+	1	-	+	-	-	-	-	-	-	-	-
Chrysanthemum segetum <u>ch</u>	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
cf. Sparganium erectum/emersum <u>ch</u>	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Eleocharis palustris/uniglumis <u>ch</u>	+	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-
Scirpus maritimus/Schoenoplectus lacustris <u>ch</u>	-	-	-	-	-	+	1	-	-	-	-	-	-	-	-	-	-
Carex sp. <u>ch</u>	+	2	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Festuca/Lolium type <u>ch</u>	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Poa sp. <u>ch</u>	+	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cynosurus cristatus <u>ch</u>	+	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromus hordeaceus/secalinus <u>ch</u>	+	12	-	-	2	+	14	-	+	-	-	-	-	-	-	-	-
Bromus hordeaceus/secalinus (germinated) <u>ch</u>	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gramineae indet. (glume bases) <u>ch</u>	+	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

WORCESTER DEANSWAY TABLE OF ROMAN BOTANICAL REMAINS

Context group:	<u>051</u>	<u>051</u>	<u>053</u>	<u>056</u>	<u>060</u>	<u>091</u>	<u>091</u>	<u>119</u>	<u>120</u>	<u>121</u>	<u>139</u>	<u>046</u>	<u>071</u>	<u>096</u>	<u>098</u>	<u>100</u>	<u>109</u>
Sample:		<u>7533</u>			<u>7563</u>		<u>6637</u>										
Gramineae indet. <u>ch</u>	+	50	+	-	7	+	34	+	+	-	-	-	-	+	+	-	-
Gramineae indet. (germinated) <u>ch</u>	+	19	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Unidentified <u>ch</u>	+	-	+	-	-	+	5	-	+	-	-	+	-	+	+	-	+

TABLE AA: 'POST-ROMAN' DARK EARTH

The results are combined for all samples within each context group except for scored samples.

Period:	6	6	6	6	6	6	6	6
Site:	2	2	2	2	2	2	2	2
Context group:	142	143	143	144	158	161	166	167
Context:			17280			17335		
Sample:			6271			6517		
Sample size (litres):	702	125	25	175	1108	25	125	25
% analysed:	74%	73%	100%	46%	71%	100%	50%	25%
Items per litre:	<1	2	7	<1	<1	5	<1	<1

CULTIVATED AND FOOD PLANTS

Triticum dicoccum (glume bases) <u>ch</u>	-	-	-	-	-	1	-	-
Triticum dicoccum/spelta (glume bases) <u>ch</u>	-	+	2	-	-	19	-	-
Triticum spelta (rachises) <u>ch</u>	-	-	-	-	-	1	-	-
Triticum spelta (glume bases) <u>ch</u>	-	+	1	-	-	26	-	-
Triticum cf. spelta <u>ch</u>	-	-	-	-	-	1	-	-
Triticum sp. free-threshing <u>ch</u>	+	+	4	+	+	-	-	-
Triticum sp. <u>ch</u>	+	+	49	+	+	20	+	+
Triticum sp. (germinated) <u>ch</u>	-	+	1	-	-	3	-	-
Secale cereale <u>ch</u>	+	-	-	+	+	-	-	-
Hordeum vulgare hulled <u>ch</u>	+	-	-	+	+	-	-	-
Hordeum vulgare <u>ch</u>	+	+	2	+	+	1	+	-
Avena sp. <u>ch</u>	+	+	2	+	+	1	-	+
Cereal indet. <u>ch</u>	+	+	33	+	+	5	+	+
Cereal indet. (coleoptiles) <u>ch</u>	-	+	1	-	-	1	-	-
? Vicia sativa ssp. sativa <u>ch</u>	-	-	-	-	+	-	-	-
Vicia faba <u>ch</u>	-	+	-	-	-	-	-	-
cf. Vicia faba <u>ch</u>	-	-	-	-	+	-	-	-
Vicia faba/Pisum sativum <u>ch</u>	+	-	-	-	+	-	-	-
Rubus sp. <u>unch</u>	+	-	-	-	-	-	-	-
Fragaria vesca type <u>unch</u>	+	-	-	-	-	-	-	-
Prunus cf. spinosa <u>ch</u>	-	-	-	-	+	-	-	-
? Fruitstones indet. <u>ch</u>	-	-	-	-	+	-	-	-
Malus/Pyrus/Sorbus <u>ch</u>	+	-	-	-	-	-	-	-
Corylus avellana (fragments) <u>ch</u>	-	-	-	-	+	-	-	-
Ficus carica <u>unch</u>	+	-	-	-	-	-	-	-

OTHER PLANTS

Chelidonium majus <u>unch</u>	-	-	-	-	+	-	-	-
Fumaria sp. <u>ch</u>	+	-	-	-	-	-	-	-
Fumaria sp. <u>unch</u>	+	-	-	-	-	-	-	-
Viola sp. <u>unch</u>	-	-	-	-	+	-	-	-
Agrostemma githago <u>ch</u>	-	-	-	-	+	-	-	-
Caryophyllaceae indet. <u>ch</u>	-	-	-	-	+	-	-	-
Chenopodium sp. <u>ch</u>	+	-	-	-	-	-	-	-
Chenopodiaceae indet. <u>ch</u>	-	-	-	-	+	-	-	-
Vicia hirsuta <u>ch</u>	-	-	-	-	-	1	-	-
Vicia tetrasperma <u>ch</u>	-	-	-	+	-	-	-	-
Vicia/Lathyrus <u>ch</u>	+	+	2	+	+	2	-	+
Vicia/Lathyrus/Pisum <u>ch</u>	-	+	-	-	-	-	-	-
Medicago/Melilotus/Trifolium <u>ch</u>	-	-	-	+	-	-	-	-
Trifolium type <u>ch</u>	-	+	1	-	-	1	-	-
Crataegus cf. monogyna <u>ch</u>	-	+	1	-	-	-	-	-

WORCESTER DEANSWAY BOTANICAL REMAINS FROM THE 'DARK EARTH'

Context group:	<u>142</u>	<u>143</u>	<u>143</u>	<u>144</u>	<u>158</u>	<u>161</u>	<u>166</u>	<u>167</u>
Sample:			<u>6271</u>			<u>6517</u>		
Rumex sp. <u>ch</u>	-	+	1	-	+	-	-	+
Rumex sp. <u>unch</u>	-	-	-	-	-	-	-	+
Galium sp. <u>ch</u>	-	-	-	+	-	-	-	-
Sambucus nigra <u>ch</u>	-	+	1	-	-	-	-	-
Anthemis cotula <u>ch</u>	+	+	1	+	+	-	-	-
Tripleurospermum inodorum <u>ch</u>	-	-	-	-	-	1	-	-
Lapsana communis <u>ch</u>	-	-	-	-	+	-	-	-
cf. Sparganium erectum/emersum <u>ch</u>	+	-	-	-	-	-	-	-
Eleocharis palustris/uniglumis <u>ch</u>	+	+	-	-	+	-	-	-
Carex sp. <u>ch</u>	-	-	-	-	-	-	-	+
Carex sp. <u>unch</u>	-	-	-	-	+	-	-	-
Carex spp. <u>ch</u>	-	-	-	-	-	2	-	-
Festuca/Lolium type <u>ch</u>	-	+	11	+	-	4	-	-
Bromus hordeaceus/secalinus <u>ch</u>	-	+	10	-	-	4	-	-
Arrhenatherum elatius ssp. bulbosum (tuber) <u>ch</u>	-	+	-	-	-	-	-	-
Phleum pratense <u>ch</u>	-	-	-	-	+	1	-	-
cf. Danthonia decumbens <u>ch</u>	+	-	-	-	-	-	-	-
Gramineae indet. <u>ch</u>	+	+	53	+	+	31	+	-
Unidentified <u>ch</u>	+	+	7	+	+	-	-	-

TABLE AAA: LATE SAXON, MEDIEVAL AND LATE MEDIEVAL/POST-MEDIEVAL

+ = present ++ = moderately common +++ = very common ++++ = extremely abundant - = absent

The number of items per litre of soil is given for all samples where the total number of items in the analysed portion of the sample was counted even though numbers of individual species may not have been counted.

Period:	07	07	07	07	07	07	08	08	08	08	08	08	08	08	08	08	08
Site:	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	4
Context group:	217	246	264	264	265	271	239	290	305	305	307	313	413	421	174	175	000
Context:	17282	16490	17120	17120	17121	16489	16353	16625	16132	16132	16129	16641	16050	16080	18007	18006	20227
Sample:	6278	6006	6050	6055	6052	6007	5445	5325	5098	5100	5096	5328	5170	5174	7503	7501	9015
Sample size (litres):	25	25	25	0.25	25	25	25	25	25	25	25	44	25	25	25	25	25
% analysed:	100%	100%	50%	100%	25%	100%	100%	100%	100%	100%	50%	25%	100%	100%	100%	50%	100%
Items per litre:	8	14	<1	4704	58	3	2	6	6			28	4	9	1	8	2
Date:	C9?	C8/C11	800±60	800±60	730±30	C8/C11	LC12/C13LC12	C11/C13	C11/C13	C11/C13	C11/C13	C11/C12	C12/C13	C10/C13	C12/C13	C13	C11/C13

CULTIVATED AND FOOD PLANTS

Triticum cf. aestivum s.l. <u>ch</u>	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Triticum cf. aestivum s.l. (germinated) <u>ch</u>	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triticum sp. free-threshing <u>ch</u>	-	17	-	-	11	4	+	+	++	+	+	11	++	++	-	++	-
Triticum sp. free-threshing (germinated) <u>ch</u>	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triticum sp. <u>ch</u>	3	16	1	-	8	3	-	-	-	-	-	6	-	-	+	+	13
Triticum sp. (germinated) <u>ch</u>	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triticum/Secale <u>ch</u>	-	23	-	-	-	-	-	-	-	+	+	2	-	+	-	+	1
Triticum/Secale <u>min</u>	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Triticum/Secale (germinated) <u>ch</u>	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Secale cereale (rachises) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Secale cereale <u>ch</u>	-	20	-	-	3	1	+	+	+	-	-	45	+	-	-	+	-
Secale cereale (germinated) <u>ch</u>	-	33	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Hordeum vulgare hulled <u>ch</u>	1	14	-	-	-	-	-	+	-	-	-	3	-	+	+	+	-
Hordeum vulgare hulled (germinated) <u>ch</u>	-	4	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Hordeum vulgare <u>ch</u>	-	11	-	-	1	-	-	-	-	-	+	3	+	-	+	-	-
Hordeum vulgare (germinated) <u>ch</u>	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Avena sativa (lemma bases) <u>ch</u>	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Avena sp. <u>ch</u>	-	16	-	-	67	3	+	+	++	++	-	6	+	++	+	+	2
Avena sp. (germinated) <u>ch</u>	-	11	-	-	54	-	-	-	-	-	-	-	-	-	-	-	-
Avena/large Gramineae <u>ch</u>	-	17	-	-	134	-	-	-	-	-	-	4	-	-	+	+	-
Avena/large Gramineae (germinated) <u>ch</u>	-	5	-	-	22	-	-	-	-	-	-	-	-	-	-	-	-
Cereal indet. (culm nodes) <u>ch</u>	-	-	-	-	1	-	-	-	-	-	-	3	-	+	-	-	-
Cereal indet. <u>ch</u>	3	65	-	-	11	4	+++	+	-	-	+	16	++	++	+	++	7
cf. Papaver somniferum <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Vicia faba <u>ch</u>	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
cf. Vicia faba <u>ch</u>	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-
Vicia faba/Pisum sativum <u>ch</u>	-	-	-	-	-	+	-	-	-	-	-	3	+	-	-	-	-
Vicia faba/Pisum sativum <u>min</u>	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Pisum sativum <u>ch</u>	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Pisum sativum <u>min</u>	-	-	-	3	-	-	-	-	-	-	-	-	-	1	-	-	-
cf. Pisum sativum <u>ch</u>	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-
Rubus sp. <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Rubus sp. <u>unch</u>	188	-	-	-	-	22	-	++	-	-	-	-	-	-	-	-	-
Fragaria vesca type <u>unch</u>	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Prunus spinosa <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Prunus cf. spinosa <u>min</u>	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Prunus domestica ssp. insititia <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Prunus sp. (elongate) <u>min</u>	-	-	-	331	-	-	-	-	-	-	-	-	-	-	-	-	-
Prunus sp. (round) <u>min</u>	-	-	-	165	-	-	-	-	-	-	-	-	-	-	-	-	-
Prunus sp. <u>min</u>	8	-	3	602	-	2	-	-	-	-	-	-	-	-	-	-	-

WORCESTER DEANSWAY SAXON, MEDIEVAL AND POST-MEDIEVAL BOTANICAL REMAINS

Sample:	6278	6006	6050	6055	6052	6007	5445	5325	5098	5100	5096	5328	5170	5174	7503	7501	9015
<i>Prunus</i> sp. (mesocarp) <u>min</u>	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Fruitstones indet. <u>min</u>	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
Fruitstones indet. ? <u>ch</u>	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
<i>Malus sylvestris</i> <u>ch</u>	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-
<i>Malus sylvestris</i> <u>min</u>	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
cf. <i>Malus sylvestris</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>Malus</i> ? (endocarps) <u>min</u>	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Malus</i> / <i>Pyrus</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
<i>Malus</i> / <i>Pyrus</i> <u>min</u>	-	-	1	60	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Malus</i> / <i>Pyrus</i> / <i>Sorbus</i> <u>min</u>	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Corylus avellana</i> (fragments) <u>ch</u>	-	-	-	-	-	-	-	+	-	-	-	38	+	+	-	-	-
<i>Ficus carica</i> <u>unch</u>	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-
OTHER PLANTS																	
<i>Ranunculus acris/repens/bulbosus</i> <u>ch</u>	-	-	-	-	-	-	-	+	-	-	-	1	-	-	-	-	-
<i>Ranunculus flammula/reptans</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
<i>Ranunculus</i> subsect. <i>Ranunculus</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>Chelidonium majus</i> <u>unch</u>	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Brassica rapa/nigra</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
cf. <i>Sinapis arvensis</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
<i>Thlaspi arvense</i> <u>ch</u>	-	1	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>Silene</i> sp. <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
<i>Agrostema githago</i> <u>ch</u>	-	8	-	-	2	-	-	-	+	-	-	10	-	-	-	-	1
<i>Agrostema githago</i> <u>min</u>	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
cf. <i>Agrostema githago</i> <u>ch</u>	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
<i>Stellaria media</i> type <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	1	+	-	-	-	1
<i>Spergula arvensis</i> <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	-	1
<i>Chenopodium album</i> type <u>ch</u>	-	-	-	-	-	-	-	++	-	-	-	-	-	-	-	-	-
<i>Chenopodium</i> sp. <u>ch</u>	-	-	-	-	2	-	-	-	+	+	-	-	-	+	-	-	5
<i>Chenopodium</i> sp. <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Chenopodiaceae indet. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	-	-
<i>Vicia hirsuta</i> <u>ch</u>	-	2	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
<i>Vicia/Lathyrus</i> <u>ch</u>	-	13	-	-	-	1	+	+	+	+	+	7	+	+	-	+	-
<i>Vicia/Lathyrus</i> <u>min</u>	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Vicia/Lathyrus/Pisum</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
<i>Medicago/Melilotus/Trifolium</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-	-	-
<i>Trifolium</i> type <u>ch</u>	-	-	-	-	1	-	-	-	+	-	-	17	-	+	-	-	-
<i>Scandix pecten-veneris</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
<i>Conium maculatum</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>Polygonum aviculare</i> agg. <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	3	-	-	-	-	1
<i>Fallopia convolvulus</i> <u>ch</u>	-	1	-	-	1	-	-	+	+	-	-	2	-	-	-	-	-
<i>Rumex acetosella</i> agg. <u>ch</u>	-	1	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-
<i>Rumex</i> sp. <u>ch</u>	-	2	-	-	1	-	-	+	-	-	-	3	-	+	-	-	2
<i>Urtica urens</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
<i>Hyoscyamus niger</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
cf. Solonaceae indet. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
<i>Stachys</i> sp. <u>ch</u>	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
cf. <i>Stachys</i> sp. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
<i>Galeopsis tetrahit</i> agg./ <i>speciosa</i> <u>ch</u>	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-
cf. Labiatae indet. <u>ch</u>	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
<i>Galium</i> sp. <u>ch</u>	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-	-	-
<i>Sambucus nigra</i> <u>ch</u>	-	1	-	-	1	1	-	-	+	-	-	2	++	-	-	-	5
<i>Sambucus nigra</i> <u>min</u>	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-

WORCESTER DEANSWAY SAXON, MEDIEVAL AND POST-MEDIEVAL BOTANICAL REMAINS

Sample:	6278	6006	6050	6055	6052	6007	5445	5325	5098	5100	5096	5328	5170	5174	7503	7501	9015
<i>Sambucus nigra</i> <u>unch</u>	-	-	-	-	-	17	-	+++	-	-	+	-	-	+++	-	-	-
<i>Anthemis cotula</i> <u>ch</u>	1	2	1	-	9	-	-	+	++	-	-	52	+	+	+	-	3
cf. <i>Anthemis cotula</i> <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>Tripleurospermum inodorum</i> <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
<i>Chrysanthemum segetum</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	2	-	+	+	-	-
cf. <i>Onopordum acanthium</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
<i>Centaurea cyanus</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
cf. <i>Centaurea</i> sp. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
<i>Lapsana communis</i> <u>ch</u>	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	1
<i>Sparganium erectum/emersum</i> <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
<i>Eleocharis palustris/uniglumis</i> <u>ch</u>	-	-	-	-	2	-	-	-	-	-	-	4	+	+	-	-	-
<i>Eleocharis palustris/uniglumis</i> <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>Carex</i> sp. <u>ch</u>	-	-	-	-	1	-	-	-	+	-	-	3	-	+	+	-	-
<i>Carex</i> sp. <u>min</u>	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
<i>Carex</i> sp. <u>unch</u>	1	-	1	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>Poa annua</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>Cynosurus cristatus</i> <u>ch</u>	-	-	-	-	1	-	-	-	-	-	-	1	-	+	-	-	-
<i>Bromus hordeaceus/secalinus</i> <u>ch</u>	-	18	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
<i>Phleum pratense</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
Gramineae indet. <u>ch</u>	-	11	-	-	5	1	-	+	+	+	-	6	+	+	+	-	2
Unidentified <u>ch</u>	-	1	-	-	6	1	+	+	-	-	-	11	+	+	+	-	3
Unidentified <u>min</u>	-	-	-	1	-	1	-	-	-	-	-	-	+	-	-	-	-
Unidentified (tubers) <u>ch</u>	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-

WORCESTER DEANSWAY SAXON, MEDIEVAL AND POST-MEDIEVAL BOTANICAL REMAINS

Period:	08/09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09
Site:	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Context group:	162	467	498	501	536	536	538	543	543	546	548	550	551	556	558	558	571
Context:	18066	15500	15455	16145	16434	16438	16440	16370	16372	16366	16362	16352	16331	16368	16364	16369	16334
Sample:	7525	5092	5080	5308	5825	5819	5822	5457	5490	5454	5450	5447	5448	5456	5452	5458	5430
Sample size (litres):	25	25	50	25	25	25	25	25	25	25	25	25	25	25	25	25	25
% analysed:	50%	50%	25%	100%	100%	100%	50%	100%	25%	100%	100%	100%	100%	25%	100%	100%	100%
Items per litre:	20		11	10	7	4	13	1	8	2	2	5	2	4	<1	<1	2
Date:	C12/C14	C13	C13/C15	C13/C15	C12/C13	C12/C14	C13/C14	C13/C14	C13/C14	C12/C13	C12/C14	C13/C14	C13/C14	C13/C14	C13/C14	C12/C14	C13/C14

CULTIVATED AND FOOD PLANTS

<i>Triticum</i> sp. free-threshing <u>ch</u>	68	-	-	++	-	++	10	-	-	+	+	+	+	-	-	-	+
<i>Triticum</i> sp. free-threshing (germinated) <u>ch</u>	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Triticum</i> sp. <u>ch</u>	18	+	2	-	+	-	11	+	++	-	-	-	-	+	+	+	-
<i>Triticum</i> sp. (germinated) <u>ch</u>	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Triticum</i> /Secale (rachises) <u>ch</u>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Triticum</i> /Secale <u>ch</u>	16	-	2	-	-	-	2	-	-	-	-	-	-	-	-	-	-
Secale cereale <u>ch</u>	18	-	-	++	+	+	4	+	-	+	-	-	-	+	-	-	-
Secale cereale (germinated) <u>ch</u>	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Hordeum</i> vulgare hulled <u>ch</u>	2	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-
<i>Hordeum</i> vulgare hulled (germinated) <u>ch</u>	1	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Hordeum</i> vulgare <u>ch</u>	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>Avena</i> sp. <u>ch</u>	2	+	-	++	+	+	137	+	+	+	+	++	++	-	-	+	+
<i>Avena</i> sp. (germinated) <u>ch</u>	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Avena</i> /large Gramineae <u>ch</u>	6	-	-	-	-	-	108	-	-	-	-	-	-	+	-	-	-
Cereal indet. (culm nodes) <u>ch</u>	1	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Cereal indet. <u>ch</u>	45	-	5	++	+	++	32	+	++	++	+	++	++	++	+	+	++
<i>Linum</i> usitatissimum <u>ch</u>	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Vicia</i> sativa ssp. sativa <u>ch</u>	1	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
cf. <i>Vicia</i> sativa ssp. sativa <u>ch</u>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Vicia</i> sativa/Lens culinaris <u>ch</u>	-	-	1	-	-	+	-	-	-	-	-	-	-	-	-	-	-
<i>Vicia</i> faba var. major <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>Vicia</i> faba/Pisum sativum <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
<i>Rubus</i> cf. fruticosus agg. <u>unch</u>	-	+++	1	-	-	-	-	-	-	-	-	+	-	-	-	-	-
<i>Rubus</i> cf. idaeus <u>unch</u>	-	+	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Rubus</i> sp. <u>unch</u>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Prunus</i> spinosa <u>ch</u>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Prunus</i> sp. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>Malus</i> sylvestris <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>Corylus</i> avellana (fragments) <u>ch</u>	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Ficus</i> carica <u>unch</u>	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-

OTHER PLANTS

<i>Ranunculus</i> acris/repens/bulbosus <u>ch</u>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
cf. <i>Ranunculus</i> lingua <u>ch</u>	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Viola</i> odorata type <u>unch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
<i>Viola</i> sp. <u>unch</u>	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Silene</i> sp. <u>ch</u>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Agrostemma</i> githago <u>ch</u>	6	-	-	+	++	-	-	-	-	-	-	-	-	-	-	-	-
Caryophyllaceae indet. <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
<i>Chenopodium</i> murale <u>ch</u>	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
<i>Chenopodium</i> sp. <u>ch</u>	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-
Chenopodiaceae indet. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
<i>Vicia</i> hirsuta <u>ch</u>	-	-	-	-	+	+	2	-	-	-	-	-	-	-	-	-	+
<i>Vicia</i> /Lathyrus <u>ch</u>	4	-	2	+	+	+	4	-	+	+	+	+	-	+	+	-	+

WORCESTER DEANSWAY SAXON, MEDIEVAL AND POST-MEDIEVAL BOTANICAL REMAINS

Sample:	7525	5092	5080	5308	5825	5819	5822	5457	5490	5454	5450	5447	5448	5456	5452	5458	5430
Vicia/Lathyrus/Pisum <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Medicago/Melilotus/Trifolium <u>ch</u>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Trifolium type <u>ch</u>	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-
Apium cf. nodiflorum <u>ch</u>	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Umbelliferae indet. <u>ch</u>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Euphorbia helioscopia <u>unch</u>	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Polygonum aviculare agg. <u>ch</u>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Fallopia convolvulus <u>ch</u>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Rumex acetosella agg. <u>ch</u>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Rumex sp. <u>ch</u>	1	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	+
Urtica urens <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Atropa belladonna <u>unch</u>	-	-	111	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hyoscyamus niger <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Euphrasia/Odontites <u>ch</u>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Plantago major <u>ch</u>	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Galium sp. <u>ch</u>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+
Sambucus cf. ebulus <u>unch</u>	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sambucus nigra <u>ch</u>	3	-	-	-	+	+	1	-	-	+	-	+	+	-	-	-	-
Sambucus nigra <u>unch</u>	-	+++	1	+++	-	-	-	-	-	-	-	+++	-	-	-	-	-
Anthemis cotula <u>ch</u>	1	-	-	+	+	+	2	-	+	-	-	+	+	-	-	-	+
Tripleurospermum inodorum <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-
Chrysanthemum segetum <u>ch</u>	-	-	-	+	+	+	1	-	-	-	-	-	+	-	-	-	-
cf. Centaurea sp. <u>ch</u>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Compositae indet. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Sparganium erectum/emersum <u>ch</u>	-	+	-	-	+	+	1	-	-	-	-	-	+	-	+	-	-
cf. Sparganium erectum/emersum <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Eleocharis palustris/uniglumis <u>ch</u>	-	-	-	+	+	+	1	-	-	-	-	-	-	-	-	-	-
Carex sp. <u>ch</u>	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carex sp. <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Carex spp. <u>ch</u>	-	-	-	-	++	-	-	-	-	-	-	-	-	-	-	-	-
Cynosurus cristatus <u>ch</u>	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-
Bromus hordeaceus/secalinus <u>ch</u>	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gramineae indet. <u>ch</u>	3	-	-	-	+	-	4	-	+	+	-	+	+	-	-	-	-
Unidentified <u>ch</u>	1	-	-	+	+	-	-	-	+	+	-	+	-	-	-	-	-
Unidentified <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-

WORCESTER DEANSWAY SAXON, MEDIEVAL AND POST-MEDIEVAL BOTANICAL REMAINS

Period:	09	09	09	09	09	09	09	09	09	09	09	09	09/10	10	10	10	10
Site:	2	2	2	2	2	2	2	3	3	3	3	4	2	1	1	1	2
Context group:	572	572	573	573	573	582	698	118	137	164	165	000	683	000	310	325	456
Context:	16355	16356	16349	16351	16354	16307	16045	18053	18027	18050	18057	20458	15457	10416	10551	10386	16106
Sample:	5449	5451	5442	5444	5446	5407	5169	7521	7510	7520	7523	9045	5079	4005	3511	3509	5093
Sample size (litres):	25	25	25	25	25	25	25	25	25	25	25	25	50	9	25	25	25
% analysed:	100%	100%	100%	25%	50%	25%	100%	50%	100%	100%	100%	6%	13%	100%	100%	100%	50%
Items per litre:	2	1	2	4	2	39	9	<1	1	2	8	1059		65			
Date:	C13/C14	C13/C14	C13	C13	C12/C14	C14	C13/C15	C13/C14	C14/C15	C14/C15	C12/C13	C13/C14	C15?	C16/EC17	LC16/C17	LC17/C18	C15/C

CULTIVATED AND FOOD PLANTS

Triticum dicoccum <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Triticum turgidum/durum (rachises) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35	-	-
Triticum aestivum s.l. (rachises) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	-	-
Triticum sp. free-threshing (rachises) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Triticum sp. free-threshing <u>ch</u>	+	+	+	+	-	++	++	-	-	++	70	7	-	20	-	-	-
Triticum sp. free-threshing (germinated) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	4	-	-	4	-	-	-
Triticum sp. <u>ch</u>	-	-	-	-	+	-	-	+	+	-	44	10	+	3	+	+	-
Triticum sp. (germinated) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	9	-	-	-	-	-	-
Triticum sp. (germinated) <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Triticum/Secale <u>ch</u>	-	-	-	-	-	-	-	-	+	-	5	5	-	3	+	-	-
Secale cereale (rachises) <u>ch</u>	-	-	-	-	-	-	+	-	-	-	-	-	-	40	-	-	-
Secale cereale <u>ch</u>	+	+	+	+	+	+	+	-	-	+	24	27	-	5	+	-	+
Secale cereale (germinated) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-
Hordeum vulgare hulled <u>ch</u>	-	-	-	-	-	+	-	-	-	-	3	69	-	2	-	+	-
Hordeum vulgare hulled <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	++	-
Hordeum vulgare hulled (germinated) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-	-	-
Hordeum vulgare <u>ch</u>	-	-	-	+	-	-	+	-	+	+	-	6	+	1	+	-	+
Hordeum vulgare (germinated) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-
Avena sativa (spikelet forks) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Avena sativa <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	13	-	1	-	-
Avena cf. sativa (lemma bases) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Avena sp. <u>ch</u>	-	-	-	+	+	+	+	+	+	+	1	626	+	12	+	+	-
Avena sp. <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	++	-
Avena sp. (germinated) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	3	80	-	-	-	-	-
Avena/large Gramineae <u>ch</u>	-	+	-	-	-	-	-	-	-	-	3	287	-	8	-	-	-
Avena/large Gramineae (germinated) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-	-
Cereal indet. (r) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-
Cereal indet. (culm nodes) <u>ch</u>	-	-	-	-	-	+	+	-	-	-	-	-	-	-	42	-	-
Cereal indet. (culm bases) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-
Cereal indet. <u>ch</u>	++	+	++	++	++	+++	++	-	+	++	-	286	+	5	++	+	+
Cereal indet. <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	++	-
Linum usitatissimum <u>ch</u>	-	-	-	-	-	-	-	-	-	-	+	7	-	-	-	-	-
Linum usitatissimum/bienne (capsule frags.) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	136	-	-	-	-
Linum usitatissimum/bienne <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	21	-	-	-	-
Vitis vinifera <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Vitis vinifera <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Vicia sativa/Lens culinaris <u>ch</u>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Vicia faba <u>ch</u>	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
Pisum sativum (hilum only) <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Pisum sativum <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Rubus cf. fruticosus agg. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	+	+++
Rubus cf. idaeus <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Rubus sp. <u>unch</u>	-	-	-	-	-	+	+	-	-	-	-	-	+	-	++	-	-
Rubus spp. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	++	-

NORCESTER DEANSWAY SAXON, MEDIEVAL AND POST-MEDIEVAL BOTANICAL REMAINS

Sample:	5449	5451	5442	5444	5446	5407	5169	7521	7510	7520	7523	9045	5079	4005	3511	3509	5093
Fragaria vesca type <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-
Fragaria sp. (cultivated?) <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Fragaria sp. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prunus spinosa/domesticasp. insititia <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	++
Prunus spinosa/domesticasp. insititia <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Prunus sp. <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+++	++	-
Malus sylvestris <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+++	-
Corylus avellana (fragments) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Ficus carica <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	12	+++	++++	+
OTHER PLANTS																	
Taxus baccata <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Ranunculus acris/repens/bulbosus <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Ranunculus acris/repens/bulbosus <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-
Ranunculus scleratus <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
Ranunculus subsect. Ranunculus <u>ch</u>	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chelidoniummajus <u>unch</u>	-	-	+	-	-	-	+	-	-	-	-	-	+	1	-	-	-
Fumaria sp. <u>unch</u>	-	-	-	-	-	-	+	-	-	-	-	-	-	2	-	+	-
Brassica rapa/nigra <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-
cf. Brassica/Sinapis <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Raphanus raphanistrum (siliqua) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Cruciferae indet. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Cruciferae indet. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Reseda luteola <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Viola odorata type <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	++	-	-	+	-
Viola sp. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	1	+	-	-
Agrostemma githago <u>ch</u>	-	-	-	-	-	-	+	-	-	-	5	-	-	-	-	-	-
Agrostemma githago <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
cf. Agrostemma githago <u>ch</u>	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Stellaria media type <u>ch</u>	-	-	-	-	-	-	+	-	-	-	-	1	-	-	-	-	-
Spergula arvensis <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-
Scleranthus annuus <u>ch</u>	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chenopodium murale <u>ch</u>	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
Chenopodium murale <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
Chenopodium urbicum <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-
Chenopodium sp. <u>ch</u>	-	+	+	-	-	+	+	-	-	-	-	1	-	-	-	-	-
Chenopodium sp. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Malva sylvestris <u>ch</u>	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
Malva sp. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Vicia hirsuta <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Vicia tetrasperma <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	1	-	3	-	-	-
Vicia/Lathyrus <u>ch</u>	-	-	-	+	-	-	+	-	-	-	5	4	+	4	-	+	-
Vicia/Lathyrus <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Vicia/Lathyrus/Pisum <u>ch</u>	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
Trifolium type <u>ch</u>	-	-	+	-	-	-	+	-	-	-	-	1	-	5	-	-	-
cf. Leguminosae indet. <u>ch</u>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cf. Crataegus sp. <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
cf. Conium maculatum <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	++
Torilis sp. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Polygonum aviculare agg. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
cf. Polygonum sp. <u>min</u>	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Rumex acetosella agg. <u>ch</u>	-	-	-	-	-	-	+	-	-	-	1	-	-	3	-	-	-
Rumex sp. <u>ch</u>	-	-	-	+	-	-	-	-	-	-	1	-	-	-	-	-	-

WORCESTER DEANSWAY SAXON, MEDIEVAL AND POST-MEDIEVAL BOTANICAL REMAINS

Sample:	5449	5451	5442	5444	5446	5407	5169	7521	7510	7520	7523	9045	5079	4005	3511	3509	5093
<i>Urtica dioica</i> <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
<i>Anagallis arvensis/foemina</i> <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
<i>Atropa belladonna</i> <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
<i>Hyoscyamus niger</i> <u>ch</u>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Hyoscyamus niger</i> <u>unch</u>	-	-	-	-	-	++	+	-	-	-	-	-	-	-	-	-	-
<i>Solanum nigrum</i> <u>ch</u>	-	-	+	-	-	-	-	-	-	-	-	6	-	-	-	-	-
Solanaceae indet.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
<i>Verbena officinalis</i> <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
<i>Ballota/Lanium</i> <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Labiatae indet. <u>unch</u>	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
<i>Galium</i> sp. <u>ch</u>	-	-	-	-	-	-	-	+	-	-	-	-	-	1	-	-	-
<i>Sambucus nigra</i> <u>ch</u>	+	-	+	-	-	-	-	-	-	-	-	1	-	-	-	-	-
<i>Sambucus nigra</i> <u>unch</u>	-	-	-	-	-	-	+++	-	+	6	-	-	183	+	++	+++	-
<i>Valerianaella dentata</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
<i>Anthemis cotula</i> <u>ch</u>	-	+	+	-	-	+	+	-	+	2	-	-	21	-	-	-	+
cf. <i>Anthemis cotula</i> (flower heads) <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
<i>Chrysanthemum segetum</i> <u>ch</u>	-	-	+	-	-	-	-	-	-	-	-	2	+	-	-	-	-
<i>Carduus/Cirsium</i> <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
<i>Centaurea cyanus</i> <u>ch</u>	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
cf. <i>Centaurea</i> sp. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
<i>Lapsana communis</i> <u>ch</u>	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
<i>Sparganium erectum/emersum</i> <u>ch</u>	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Eleocharis palustris/uniglumis</i> <u>ch</u>	-	-	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-
<i>Eleocharis palustris/uniglumis</i> <u>unch</u>	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-
<i>Carex</i> sp. <u>ch</u>	-	-	+	-	-	+	+	-	+	-	-	-	-	-	-	-	-
<i>Carex</i> sp. <u>unch</u>	-	-	-	-	+	++	-	-	-	-	-	-	-	-	-	+	-
<i>Carex</i> spp. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	3	-	21	-	-	-
<i>Carex</i> spp. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	56	++	-	-
<i>Poa annua</i> <u>ch</u>	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gramineae indet. <u>ch</u>	+	-	-	-	-	+	+	-	-	9	5	-	6	-	-	-	+
Gramineae indet. <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	++	-
Tree/shrub (bud) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-
Unidentified (flower heads) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-
Unidentified <u>ch</u>	-	-	-	-	-	-	+	+	+	2	14	+	19	-	-	-	-
Unidentified <u>min</u>	-	-	-	-	-	+	-	-	-	-	-	-	-	-	++	++	-
Unidentified <u>unch</u>	-	-	-	-	-	+	-	-	-	-	-	-	-	6	-	-	-

WORCESTER DEANSWAY SAXON, MEDIEVAL AND POST-MEDIEVAL BOTANICAL REMAINS

Period:	10	10	10	10	10	10	10	10	11	11	11	11	11	11	11	11	11
Site:	2	2	2	2	2	3	3	3	1	2	2	2	2	2	2	2	2
Context group:	457	625	673	678	692	121	131	133	000	000	000	000	000	000	000	000	000
Context:	16108	15771	15494	15474	15682	18036	18048	18014	10084	15231	15234	15236	15238	15241	15242	15246	15275
Sample:	5095	5259	5089	5084	5163	7514	7524	7507	2006	5047	5039	5040	5041	5044	5046	5102	5107
Sample size (litres):	25	50	25	25	25	25	25	25	10	25	25	25	25	10	25	25	25
% analysed:	100%	100%	25%	50%	50%	100%	100%	100%	25%	100%	100%	100%	12%	100%	100%	100%	100%
Items per litre:		6			67	1	<1	6	32								
Date:	C15/C17	C16/C17	C16/C17	C16/C17	C16/C17	C15/C16	C15/C16	C15/C17	C17	C17+	C17+	C17+	C17+	C17+	C17+	C17+	C17+

CULTIVATED AND FOOD PLANTS

Triticum sp. free-threshing <u>ch</u>	-	++++	-	-	++++	-	-	+	-	-	+	-	-	-	-	-	-
Triticum sp. <u>ch</u>	-	-	+	-	-	+	+	+	-	-	-	-	-	-	-	-	-
Secale cereale <u>ch</u>	-	+	-	-	++	+	-	+	-	+	-	-	-	-	-	-	-
Hordeum vulgare hulled <u>ch</u>	-	-	-	-	++	-	-	-	-	-	-	-	-	-	-	-	-
Hordeum vulgare hulled <u>min</u>	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Hordeum vulgare <u>ch</u>	-	-	+	-	+++	+	-	-	-	-	+	+	-	-	-	-	-
Avena sativa (lemma bases) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Avena sativa <u>ch</u>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Avena sp. <u>ch</u>	-	+	-	-	+++	+	+	+	-	-	-	-	-	-	+	-	+
Avena/large Gramineae <u>ch</u>	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Cereal indet. (culm nodes) <u>ch</u>	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cereal indet. <u>ch</u>	-	+	+	-	+++	++	+	+	-	-	+	-	-	-	-	-	-
Cereal indet. <u>min</u>	-	-	-	-	-	-	-	-	4	+	+	-	-	-	-	-	-
Vitis vinifera <u>min</u>	-	-	-	-	-	-	-	-	187	+	++	-	-	-	-	-	+
Vitis vinifera <u>unch</u>	-	-	-	-	-	-	-	-	-	+	-	-	+	+	-	-	+
Vicia sativa ssp. sativa <u>ch</u>	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cf. Vicia sativa ssp. sativa <u>ch</u>	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vicia sativa/Lens culinaris <u>ch</u>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Rubus cf. fruticosus agg. <u>unch</u>	-	-	-	-	-	-	-	-	6	+++	++	-	-	-	-	-	-
Rubus cf. idaeus <u>unch</u>	-	-	-	-	-	-	-	-	59	+++	++	-	-	-	-	-	-
Rubus sp. <u>unch</u>	-	-	-	-	-	-	-	+	-	-	++	-	+	+	-	+	+
Fragaria vesca type <u>unch</u>	-	-	-	-	-	-	-	-	-	++	++	++	-	-	-	++	+++
Fragaria sp. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Prunus domestica																	
ssp. insititia (danson type) <u>min</u>	-	-	-	-	-	-	-	-	1	-	+	-	-	-	-	-	-
Prunus sp. <u>min</u>	-	-	-	-	-	-	-	-	30	-	+	-	-	-	-	-	-
Prunus sp. <u>unch</u>	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Malus sylvestris <u>min</u>	-	-	-	-	-	-	-	-	2	-	+	-	-	-	-	-	-
Malus/Pyrus <u>ch</u>	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
cf. Carum carvi <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Corylus avellana (fragments) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-	+	-
Ficus carica <u>unch</u>	-	-	-	-	-	-	-	++	8	+++	+++	+	+	+	-	+	+

OTHER PLANTS

Ranunculus acris/repens/bulbosus <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	++
cf. Ranunculus flammula/reptans <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Ranunculus scleratus <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+
Fumaria sp. <u>unch</u>	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-
cf. Sinapis arvensis <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Cruciferae indet. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Viola odorata type <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	+
Silene sp. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Chenopodium sp. <u>ch</u>	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-
Chenopodium sp. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+

WORCESTER DEANSWAY SAXON, MEDIEVAL AND POST-MEDIEVAL BOTANICAL REMAINS

Sample:	5095	5259	5089	5084	5163	7514	7524	7507	2006	5047	5039	5040	5041	5044	5046	5102	5107
Ilex aquifolium <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Ilex aquifolium <u>min</u>	-	-	-	-	-	-	-	-	-	-	++	-	-	-	-	-	-
Vicia hirsuta <u>ch</u>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Vicia/Lathyrus <u>ch</u>	-	+	-	-	++	+	-	-	-	-	-	+	-	-	-	-	-
Vicia/Lathyrus/Pisum <u>ch</u>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trifolium type <u>ch</u>	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Potentilla sp. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Aethusa cynapium <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	+
Umbelliferae indet. <u>min</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Umbelliferae indet. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+
Euphorbia helioscopia <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	+
Urtica dioica <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+++
Atropa belladonna <u>unch</u>	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	+
Solanum dulcamara <u>unch</u>	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Mentha sp. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Lamium cf. album/maculatum <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+
Galium sp. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Sambucus nigra <u>ch</u>	++++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sambucus nigra <u>min</u>	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Sambucus nigra <u>unch</u>	-	-	-	-	-	-	-	++	10	+	++	+++	+	+	+	++	+++
Anthemis cotula <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Centaurea cyanus <u>ch</u>	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Lemna sp. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Eleocharis palustris/uniglumis <u>ch</u>	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-
Carex sp. <u>ch</u>	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-
Carex sp. <u>unch</u>	-	-	-	+	-	-	-	+	-	-	+	+	-	++	+	++	-
Carex spp. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	++
Cynosurus cristatus <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Gramineae indet. <u>ch</u>	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-
Tree/shrub (bud) <u>ch</u>	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-
Unidentified <u>ch</u>	-	-	-	-	+	-	+	+	-	+	-	+	-	-	-	-	-
Unidentified <u>min</u>	-	-	-	-	-	-	-	-	10	+	+	-	-	-	-	+	-
Unidentified <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-

WORCESTER DEANSWAY SAXON, MEDIEVAL AND POST-MEDIEVAL BOTANICAL REMAINS

Period:	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Site:	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3
Context group:	000	000	590	000	000	000	000	000	000	000	000	000	000	000	123	124
Context:	15278	15287	15307	15415	15419	15435	15439	15469	15472	15477	15480	15486	15531	15559	18031	18038
Sample:	5108	5110	5051	5072	5071	5073	5074	5091	5090	5076	5086	5087	5127	5083	7511	7515
Sample size (litres):	25	25	8	25	25	50	50	0	25	50	50	19	25	25	25	25
% analysed:	100%	100%	100%	25%	100%	13%	13%	13%	100%	25%	50%	100%	25%	50%	100%	100%
Items per litre:									15				11		1	1
Date:	C17+	C17+	C17+	C17+	C17+	C17+	C17+	C17+	C17/C18	C17/C18	C17/C18	C17/C18	C17	C17	C17/C18	C16/C17

CULTIVATED AND FOOD PLANTS

Triticum sp. free-threshing <u>ch</u>	+	-	-	-	-	-	-	-	+++	-	-	-	-	-	-	-
Triticum sp. <u>ch</u>	-	-	-	+	-	-	+	+	-	-	++	-	+	-	-	1
Secale cereale <u>ch</u>	+	-	-	+	-	+	-	+	+++	-	++	-	-	-	-	-
Hordeum vulgare hulled <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Hordeum vulgare <u>ch</u>	-	-	-	-	-	-	-	-	+	-	+	-	-	+	-	-
Hordeum vulgare (germinated) <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Avena sp. <u>ch</u>	-	-	-	-	-	-	-	+	++	-	-	-	+	-	-	-
Avena/large Gramineae <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Cereal indet. <u>ch</u>	+	-	-	+	-	-	+	-	+	-	-	+	+	-	2	1
Cereal indet. <u>min</u>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Vitis vinifera <u>unch</u>	-	-	+	-	+	-	-	-	-	-	-	+	-	-	-	2
cf. Vicia sativa ssp. sativa <u>min</u>	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
cf. Pisum sativum <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Rubus cf. fruticosus agg. <u>unch</u>	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-
Rubus cf. idaeus <u>unch</u>	-	+	-	-	-	+	-	-	-	-	-	++	-	+	-	-
Rubus sp. <u>unch</u>	+	-	-	+	+	-	+	+	+	-	-	+	-	-	3	15
Fragaria vesca type <u>unch</u>	-	++	+	-	+	+	-	-	++	-	-	++	-	+	4	-
Fragaria sp. (cultivated?) <u>unch</u>	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prunus spinosa <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Prunus spinosa/domesticasp. insititia <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Prunus sp. <u>min</u>	-	-	-	+	-	+	-	-	-	-	-	+	-	-	-	-
Prunus sp. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Malus sylvestris <u>ch</u>	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Malus sylvestris <u>min</u>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Malus sylvestris <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Foeniculum vulgare <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Corylus avellana (fragments) <u>ch</u>	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-
Ficus carica <u>unch</u>	+	+	+	-	+	-	-	-	+	-	++	+++	+++	+	20	45
Ficus carica (stems) <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-

OTHER PLANTS

Ranunculus acris/repens/bulbosus <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	2	-
Ranunculus lingua <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Chelidonium majus <u>unch</u>	+	-	-	-	-	-	-	+	-	-	-	+	+	-	-	-
Funaria sp. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Brassica cf. nigra <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Brassica/Sinapis <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
cf. Brassica/Sinapis <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Reseda luteola <u>unch</u>	-	-	-	-	-	-	-	-	+++	-	-	++	-	-	-	-
Viola odorata type <u>unch</u>	-	+++	-	-	+	-	-	-	-	-	-	-	-	+	1	3
Agrostemma githago <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Stellaria media type <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-
Chenopodium album type <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Chenopodium sp. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	++	-	-	1

WORCESTER DEANSWAY SAXON, MEDIEVAL AND POST-MEDIEVAL BOTANICAL REMAINS

Sample:	<u>5108</u>	<u>5110</u>	<u>5051</u>	<u>5072</u>	<u>5071</u>	<u>5073</u>	<u>5074</u>	<u>5091</u>	<u>5090</u>	<u>5076</u>	<u>5086</u>	<u>5087</u>	<u>5127</u>	<u>5083</u>	<u>7511</u>	<u>7515</u>
Chenopodium sp. <u>unch</u>	+	+	+	-	-	-	-	-	-	-	-	+	-	-	-	-
Vicia/Lathyrus <u>ch</u>	-	-	-	+	-	-	-	+	+	-	-	-	-	-	-	-
Vicia/Lathyrus/Pisum <u>ch</u>	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Medicago/Melilotus/Trifolium <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Trifolium type <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Aethusa cynapium <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Euphorbia peplis <u>unch</u>	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Euphorbia helioscopia <u>unch</u>	+	+	-	-	+	-	-	-	-	-	+	+	+	+	1	-
Rumex acetosella agg. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Rumex sp. <u>ch</u>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Rumex sp. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Atropa belladonna <u>unch</u>	-	+	-	-	-	-	+	-	-	-	+	+	-	+	-	-
Hyoscyamus niger <u>unch</u>	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Mentha ? arvensis <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Stachys sp. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-
Lamium sp. <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
cf. Lamium sp. <u>unch</u>	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plantago lanceolata type <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Galium aparine <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Galium cf. aparine <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Sambucus cf. ebulus <u>unch</u>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Sambucus nigra <u>ch</u>	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Sambucus nigra <u>unch</u>	+++	+++	++	++++	+	++	++	-	+++	+	+++	++	+	++	-	1
Valerianella dentata <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Anthemis cotula <u>ch</u>	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-
Lapsana communis <u>ch</u>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Eleocharis palustris/uniglumis <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Eleocharis palustris/uniglumis <u>unch</u>	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-
Carex sp. <u>ch</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Carex sp. <u>unch</u>	-	++	-	-	-	+	+	-	-	-	+	+	+	-	-	-
Carex spp. <u>unch</u>	+++	-	-	-	-	-	-	-	-	-	-	-	-	+++	2	30
Gramineae indet. <u>ch</u>	-	-	-	-	-	-	-	+	+	-	-	+	-	-	-	1
Tree/shrub (bud) <u>ch</u>	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-
Unidentified <u>ch</u>	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	4
Unidentified <u>min</u>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Unidentified <u>unch</u>	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-