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TITLE Macroscopic Plant Remains from the Lorraine Survey Excavations. PART1

Macroscopic plant remains from the Norwich Survey Excavations

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This report is concerned with the plant remains recovered from 1971-77 by Andrew Jones and Nick Balaam and, in the final year of excavations, by the writer.

Recovery methods

Fruits and seeds were recovered by three methods:

Method A Machine flotation. Large samples of aerobic soils, normally 15 litres in volume, were processed in a simple flotation machine similar to that described by Williams (1973). The flot was retained in a 1 mm. mesh sieve.

Method B Paraffin flotation. Smaller samples of anaerobic soils were treated by the method described by Coope and Osborne (1968), collecting the flot in a 250 micron mesh sieve.

Method C Water flotation by hand. Small soil samples were disaggregated using hydrogen peroxide, and plant remains were extracted by water flotation, collecting the flot in a 250 micron mesh sieve.

In all three cases the non-floating residue was washed through a 1 mm. mesh sieve, and plant material which had failed to float (particularly mineralised seeds) was extracted from the washed residue.

Methods A + B were the standard techniques used by Andrew Jones for aerobic and anaerobic soils respectively up until the end of the 1976 excavation season. Machine flotation had considerable advantages in the earlier excavations, since it permitted rapid processing of large volumes of soil. However, a coarse (1mm.) collecting mesh had to be used when processing clayey and organic urban soils and consequently seeds smaller than 1 mm. were not recovered from these aerobic sediments. This creates problems in the interpretation of cereal samples collected by this method. In addition these fine-grained organic sediments do not break down easily in water alone, and an unknown proportion of the plant remains present therefore fails to float. For these reasons method C was introduced by the writer in 1977, whilst method B was retained for anaerobic sediments.

The volume of each soil sample, the processing method used, and the proportion of the flot sorted through are recorded in Tables 1 - 24.

Problems of Identification

1. Rapid carbonisation

Almost all of the smaller samples of carbonised cereals and legumes from Norwich show signs of having become carbonised rapidly. Such specimens typically have a very porous structure and testas and pericarps are missing; in this state they are very susceptible to erosion. Rapid carbonisation also causes gross distortion of the overall proportions. It is commonly impossible to determine whether barley grains are from median or lateral spikelets, or whether wheat grains are of bread or club wheat. The distinction between distorted grains of Secale and immature barley grains likewise proved difficult in some cases. The hila of legumes, features important for identification, are almost always absent.

Consequently the following approximate identifications are frequently used:

Hordeum sp; Six- or two-row barley

Triticum aestivum s.l. (senso lato); Bread or club wheat.
N.B. Only bread wheat rachis internodes have been recovered.

Pisum-type; Large near-sperical legumes, lacking testas or hila.

2. Mineralisation

Few fully anaerobic deposits were available for sampling. Most of the soils sampled were relatively well-drained, moist, nutrient-rich urban soils. An important form of preservation in such situations is the impregnation of the more durable seeds with mineral salts. Fruits and seeds of Ficus, Vitis, Prunus, Malus, Chenopodium, Sambucus, to name the more common taxa, were frequently found preserved in this way. More delicate seeds can also, less frequently, become mineralised, but in these cases identification has proved difficult, since the process of mineralisation can obscure and distort the detailed cell-patterning of testas and quite often cause disruption of the overall shape. Identifications of such seeds have usually been taken no further than the family level.

Problems of contamination

The possibility of contamination with modern seeds has been minimised so far as is practically possible. A more serious, and inevitable problem on urban sites, is the likelihood that seed assemblages will be to some extent contaminated with seeds from earlier archaeological features than the ones from which they are recovered. Obviously this is less of a problem when rapidly-formed autochthonous sediments are under consideration; the homogeneous character of seed assemblages from these deposits is normally clear. Slow-forming 'occupation' deposits will, however, contain seeds from a wide variety of sources. Unfortunately, there is little that can be done about this problem, though it should always be borne in mind.

36N Whitefriars

This small excavation within a standing undercroft associated with the monastery was necessarily shallow. The deep peat deposits known to be present in this area, and examined at site 318N, were not reached, but layers of medieval make-up (91) and finely laminated flood sediments (eg 74) were available for sampling. A 14th/15th century drain was also sampled.

Context details	Context No.	74	91	92
	Feature-type	Flood deposit	Make-up	Drain
	Date	Medieval	Medieval	14/15c.
Cereals	Cereal indet	-	9	-
	Hordeum vulgare L	-	6	-
	Hordeum sp.	1	-	-
	Triticum aestivum s.l.	-	2	-
	Secale cereale L.	-	3	-
Fruit	*Sambucus nigra* L.	1	1	1
Nut	*Corylus avellana* L.	-	+	-
	Papaver sp.	6	-	-
	Chenopodium album L.	-	1	-
Wild	*Chenopodiaceae* indet.	-	3	-
plants	*Rumex* sp.	-	1	-
	Anthemis cotula L.	-	1	-
	Compositae indet.	-	1	-
	Bromus mollis/secalinus	-	3	-
	Gramineae indet (culm node)	-	1	-
	Juncus sp.	100+	100+	-
	Cyperaceae indet.	-	1	-
	Sample volume (litres)	2	2	2
	Processing method	C	C	C

Table 1 : Plant remains from 36N (Whitefriars)
Taxa are represented by fruits and seeds unless otherwise indicated.

148N 132N Magdalen Street Norwich Blind Institute

This site was an area used for sand-quarrying in the late Saxon-early medieval period. Fruits and seeds were recovered from a 12th century pit, and from a 13th/14th century soil and refuse accumulation on the vacant site.

Both assemblages of plant remains are predominantly carbonised and are presumably no more than scatters of domestic refuse. Some of the barley and oat grains from 231 are germinated, and may possibly represent malting and roasting debris.

Context	Context No.	175	231
details	Feature type	Pit	Soil accumulation
	Date	12c.	13/14c.
Cereals	Cereal	9	24
	Hordeum c.f. *vulgare* L.	-	15*
	Hordeum sp.	5	-
	Avena sp.	-	31*
	Secale cereale L.	-	13
Legumes	c.f. *Vicia faba* var. *minor*	-	3
	Leguminosae indet.	-	6
Fruits	*Sambucus nigra* L.	-	8
	Rubus fruticosus agg.	-	1
	Prunus avium L.	-	1
Wild	*Plantago lanceolata* L.	-	1
species	*Gramineae* indet.	-	3
	Unidentified	-	9
	Sample volume (litres)	Apparently not recorded	
	Processing method		

Table 2 : Fruits and seeds from 148N (132 Magdalen Street Blind Institute)

* includes germinated grains

149N 31-55 Pottergate

Medieval and post-medieval occupation on the superficial sand and gravel deposits covering the chalk hillside was examined at this site. Samples from a 12/13th and 15th century 'garden soils', from 15th-17th century pits and from the burnt debris of the 1507 fire produced plant material.

The fruits and seeds from the 'garden soil' layers probably represent slow accumulations of domestic refuse, mainly in the form of carbonised cereals. Seeds of elder (S.nigra), which are very resistent to decay, are abundant, and reflect the presence of scrubby vegetation. The post-medieval pits contained a typical range of carbonised cereals, with 'seeds' of fruits in a mineralised or sub-fossil condition. Fig, grape, blackberry, probably raspberry, sloe, probably plum, hawthorn and apple are represented. In most cases seeds of wild plants are rare; the deposits consist almost entirely of food refuse. The sixteenth century pit 1058, however, produced fairly large numbers of seeds of weed species. Context 912, the 1507 fire layer, consisted principally of carbonised material, including barley grains, possibly of a naked variety (Fig. 8).

Context details	Context No.	297	308	912	263	791	1269	1042
	Feature-type	Garden soil	Garden soil	Fire debris	Pit	Pit	Pit	Cesspit
	Date	12th/13th C	15th C?	1507	15th/16thC	15th/16thC	15th/16thC	16th
	Cereal indet.	2	30	5	66	60	16	31
	Hordeum vulgare L.	-	-	-	-	36	-	-
	Hordeum c.f. *distichon* L.	-	-	-	-	-	-	-
	Hordeum sp. c.f. var *nudum*	-	-	34*	-	-	-	-
Cereals	*Hordeum* sp.	1	39*	-	36	-	12	4
	Triticum aestivum s.l.	-	4	-	4	4	2	2
	Avena sp.	1	6	-	2	-	-	1
	Secale cereale L.	-	2	-	1	2	-	-
	Pisum sativum var. *arvense*(L) Poir	-	-	-	1	-	-	-
Legumes	*Pisum*-type	-	4	6	-	1	1	2
	Vicia sp. (small)	1	-	1	-	1	-	-
	Ficus carica L.	-	-	-	4	-	-	25
	Vitis vinifera L.	-	-	-	-	1	-	4
	Sambucus nigra L.	87	1	14	57	42	100+	1
	Rubus fruticosus agg.	-	-	-	26	-	-	4
Fruits	*Rubus* c.f. *idaeus* L	-	-	-	-	-	-	8
	Prunus spinosa L.	-	-	-	-	-	-	1
	Prunus sp.	-	-	-	-	-	-	6
	Crataegus laevigata (Poir) D.C.	-	-	4	-	-	-	-
	Malus sylvestris (Miller)	-	-	-	-	-	-	1
	Brassica sp.	1	-	-	-	4	-	-
	Chenopodium album L.	-	-	-	-	-	-	-
	Chenopodiaceae indet.	-	-	-	-	-	-	-
Wild	*Polygonum aviculare* agg.	-	-	-	-	-	-	-
plants	*Polygonum persicaria* L.	-	-	-	-	-	-	-
	Polygonum convolvulus L.	-	1	-	-	-	-	-

1058	503	517	523
Pit	Pit	Pit	Pit
16thC	17thC	17thC	17thC +
23	32	27	16
-	-	-	14
-	-	21	-
-	-	-	-
25	16	-	-
28	6	2	4
-	2	1	-
3	4	1	4
-	-	-	-
1	1	2	-
-	-	-	-
-	3	-	4
2	-	-	-
26	30	2	22
1	12	-	48
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
1	-	-	-
1	1	-	-
385	-	-	-
14	-	-	-
35	-	-	-
-	-	1	-
6	1	-	-

Rumex sp.	-	-	-	-	-	-	-
Polygonaceae indet.	-	-	1	-	-	-	-
Menyanthes trifoliata L.	-	-	-	-	1	-	-
Lithospermum officinale L.	-	-	-	-	-	-	-
Convolvulus arvensis L.	-	-	-	-	-	-	1
Convolvulus sp.	-	-	-	-	-	-	-
Veronica hederifolia L.	-	-	-	-	-	-	-
Labiatae indet.	-	-	-	1	-	-	1
Plantago lanceolata L.	-	-	-	-	-	-	-
Galium aparine L.	-	-	-	-	-	-	-
Galium sp.	-	1	-	-	-	-	-
Lapsana communis L.	-	-	1	-	-	-	-
Carex sp.	-	1	-	-	-	-	-
Cyperaceae indet.	-	-	1	-	-	-	-
Anisantha sterilis (L) Nevski	-	-	-	-	-	-	-
Bromus mollis/secalinus	-	-	-	-	-	-	-
Gramineae indet.	-	6	-	-	3	-	7
Gramineae indet. (culm node)	-	-	96	-	-	-	-
Unidentified	-	9	1	4	3	-	4
Sample volume (litre)	120	120	15	15	15	15	15
Processing method	A	A	A	A	A	A	A

Table 3 : Plant remains from 149N (31-55 Pottergate)

Unless otherwise indicated taxa are represented by fruits or seeds

* - includes germinated grains

26	–	1	–
7	–	–	–
–	–	–	–
37	–	–	–
–	–	–	–
–	–	1	–
2	–	–	–
–	–	–	–
1	–	–	–
10	–	–	–
–	–	1	–
1	–	–	–
–	–	–	–
–	–	–	–
4	–	–	–
1	–	–	–
15	–	2	1
–	–	–	–
–	8	2	–
15	15	15	60
A	A	A	A

15ON Shirehall Car Park, Market Avenue

A partial section of the south bailey ditch of the Castle was exposed, cutting down into the chalk, through Saxon quarry pits themselves cut into superficial gravel deposits. A sample was taken from the earliest ditch fill encountered, a thick layer of clean 'silt'. This produced carbonised cereals with mineralised seeds of fig, elder, blackberry and apple.

Context	Context No.	178
details	Feature-type	Ditch-fill
	Date	11th/12th C
Cereals	Cereal indet.	9
	Hordeum sp.	16
	Triticum aestivum s.l.	2
	Secale cereale L.	3
	Ficus carica L.	2
Fruits	*Sambucus nigra* L.	28
	Rubus fruticosus agg.	8
	Malus sylvestris Miller	1
Wild species	*Brassica* sp.	1
	Unidentified	3
	Sample volume (litres)	15
	Processing method	A

Table 4 : Fruits and seeds from 15ON (Shirehall Car Park)

154N Bishopgate North

Medieval and post-medieval pits cut into the edge of the gravel terrace overlooking the flood plain of the river were sampled. Carbonised cereals and legumes, and mineralised 'seeds' of fruits were recovered.

Context	Context No.	17	85	105	72
details	Feature-type	Pit	Pit	Cess Pit	Cess Pit
	Date	13/14C	13/14C	13/14C	17C
Cereals	Cereal indet	-	4	-	-
	Hordeum vulgare L.	-	10	-	-
Legume	*Pisum*-type	-	6	-	-
	Ficus carica L.	1	-	-	1
Fruits	*Sambucus nigra* L.	3	-	1	-
	Rubus fruticosus agg.	8	-	2	19
	Malus sylvestris Miller	3	-	2	-
Wild species	*Chenopodium album* L	1	-	-	-
	Unidentified	2	4	-	-
	Sample volume (litres)	15	15	15	15
	Processing method	A	A	A	A

Table 5 : Fruits and seeds from 154N (Bishopgate North)

159N Westwick Street North

This site was on a former marsh area between the edge of the gravel terrace and the River Wensum, just to the north of St Laurence's Church. A stream-bed crossed the northern part of the site. Samples were taken from the fill of a flint and mortar lined pit, probably of the 13th/14th century, and from the filling of a disused 15th/16th century well. The sample from the pit contained a typical range of cereals and fruits, with a large number of crushed and fragmentary corn-cockle seeds and a few other wild species. The well produced less domestic food refuse and rather more remains of wild species including wetland plants such as pale persicaria, bogbean, sedges and reed. This suggests that the filling is probably derived from the nearby marsh.

Context details	Context No.	560	626	245	726
	Feature-type	Pit	Pit	Well-fill	Well-
	Date	13/14c?	13/14c?	15/16c	15/1
	Cereal indet	20	-	1	-
Cereal	*Hordeum* sp.	-	-	4	-
	Triticum aestivum s.l.	3	-	-	-
	Secale cereale L.	4	-	-	-
Legumes	*Pisum*-type	-	-	1	1
	Ficus carica L.	1	90	-	-
Fruits	*Vitis vinifera* L.	-	2	-	-
	Malus sylvestris Miller	2	20	-	-
	Brassica sp.	-	-	-	1
	Silene sp.	1	-	-	-
	Stellaria media (L) Vill	5	-	-	-
	Agrostemma githago L.	54	-	-	-
	Caryophyllaceae indet.	-	-	-	5
Wild	*Chenopodium album* L.	1	1	3	3
plants	*Atriplex patula/hastata*	-	-	1	2
	Polygonum aviculare agg.	-	-	-	2
	Polygonum lapathifolium L.	1	-	-	2
	Rumex sp.	-	-	-	1
	Menyanthes trifoliata L.	-	-	1	1
	Carex sp.	-	-	1	-
	Cyperaceae indet.	9	-	-	13
	Gramineae indet.	-	5	1	2
	Phragmites australis (Cav) Sterdel (culm node)	-	-	-	3
	Unidentified	2	7	-	3
	Sample volume (litres	15	15	15	15
	Processing method	A	A	A	A

Table 6 : Plant remains from 159N (Westwick Street North)

Unless otherwise indicated taxa are represented by fruits or seeds

162N 73 St Benedict's Street

A large 11th/12th century pit cut into the natural gravel was sampled. It produced carbonised cereals and legumes with 'seeds' of fruits and wild taxa heavily impregnated with insoluble mineral salts.

Context details	Context No	46
	Feature-type	Pit
	Date	11-12th c.
	Cereal indet.	35
	Hordeum sp.	24
Cereals	*Triticum aestivum* s.l.	4
	Avena sp.	13
	Secale cereale L.	3
Legume	*Pisum*-type	1
	Sambucus nigra L.	478
	Rubus fruticosus agg.	96
	Rubus sp.	12
Fruits	*Prunus* c.f. *domestica* L.	2
	Prunus c.f. *avium* L.	2
	Prunus sp.	9
	Malus sylvestris Mill.	5
	Conium maculatum L.	1
Wild plants	c.f. *Polygonum* sp.	1
	Lithospermum arvense L.	2
	Anchusa sp.	1
	c.f. *Picris* sp.	1
	Gramineae indet.	7
	Unidentified	24
	Sample volume (litres)	15
	Processing method	A

Table 7 : Plant remains from 162N (St Benedicts)

Unless otherwise indicated taxa are represented by fruits or seeds.

168N 79-87 Magdalen Street with 8-12 Cowgate

Abundant organic remains were recovered from the basal waterlogged layers of a ditch (40). The bulk of the material recovered consisted of frond fragments of bracken with some mosses. Well-preserved fruitstones of plum, sloe, bullace and cherry were also common, along with blackberry, strawberry, hawthorn and apple 'seeds' and hazel-nut shell fragments. The wild flora is very restricted, consisting only of the more common ruderals and crop weeds. The composition of this assemblage suggests that it is not an *in situ* accumulation but is largely litter, presumably floor-coverings, including domestic food refuse.

The fruitstones of plums (*Prunus domestica* L), as distinct from the wild or semi-cultivated bullace (ssp. *insititia*) are of two types: a flat elongate form (Type 1) and a shorter, more rounded type)Type 2). (See Figs. 2 and 4). The cherry stones (*Prunus avium*) are rounded or slightly elongate in general shape and the endocarps have relatively smooth surfaces. The fruitstones from this sample should be compared with those from 172N 541.

Pteridium aquilinum (L) Kuhn	Frond frags	Abundant
Ranunculus cf. repens L.	Achene	1
Brassica sp.	Seeds	4
Raphanus raphanistrum L.	Siliqua joints	4
Agrostemma githago L.	Seeds	4
Stellaria media (L) Vill	Seed	1
Chenopodium album L.	Seeds	104
Atriplex patula/hastata	Seeds	45
Rubus fruticosus agg.	Fruitstones	310
Potentilla sp.	Achenes	2
Fragaria vesca L.	Achenes	26
Prunus spinosa L.	Fruitstones	71
Prunus domestica ssp.insititia L.	Fruitstones	14
Prunus domestica Type 1.	Fruitstones	14
Type 2	Fruitstones	27
Prunus avium (L) L.	Fruitstones	49
Prunus sp.	Fruitstones	32
Crataegus monogyna (Jacq)	Fruitstones	2
Malus sylvestris Miller	Seeds	36
Umbelliferae indet.	Mericarp	1
Polygonum aviculare agg.	Nutlets	14
Polygonum cf. lapathifolium L.	Nutlets	2
Rumex sp.	Nutlets	4
Urtica urens L.	Fruits	3
Corylus avellana L.	Nutshell frags	+
Cyperaceae indet.	Nutlets	6
Mosses*		+
Indet.		10
Soil volume		15 litres
Processing method		A

Table 8 : Fruits, seeds etc. from 168N 40.

* Moss includes Hypnum cupressiforme (Dr P. Lambley)

169N 1-11 St Andrews Street, The Dukes Palace

The 16th century palace was built on a thick layer of 13th century and later make-up spread over the marsh surface to raise its level. Samples from the peaty clay of the marsh and from an organic loam filling a 16th century pit were examined. The marsh sediments naturally produced wetland taxa, including creeping buttercup, meadow rue, pennywort, wild? celery, bogbean, marsh woundwort? and sedges. In addition carbonised cereals, fig and grape 'seeds' and seeds of common weeds are present, reflecting the dumping of refuse on the marsh surface. The 16th century pit produced a mixture of seeds from wetland and ruderal habitats, but no cultivated plants. Its filling is thought to be associated with the raising of the site level.

Context details	Context No.	160	179
	Feature-type	Marsh deposit	Pit
	Date	Medieval	Early 16thc.
Cereals	Cereal indet	2	-
	Hordeum sp.	2	-
	Triticum aestivum s.l.	6	-
	Avena sp.	2	-
Fruits	Ficus carica L.	11	-
	Vitis vinifera L.	1	-
Nut	Corylus avellana L.	-	1
Wild plants	Ranunculus c.f. repens L.	30	13
	Thalictrum flavum L.	1	-
	Brassica sp.	67	5
	Raphanus raphanistrum L.	-	3
	Silene sp.	73	1
	Agrostemma githago L.	-	2
	Chenopodium album L.	63	1
	Atriplex patula/hastata	-	1
	Hydrocotyle vulgaris L.	1	-
	c.f. Apium graveolens L.	1	-
	Aethusa cynapium L.	1	-
	Potentilla sp.	1	-
	Polygonum aviculare agg.	3	1
	Polygonum c.f. lapathifolium L.	-	3
	Rumex c.f. acetosa L.	21	-
	Rumex sp.	-	6
	Menyanthes trifoliata L.	11	1
	Lithospermum sp.	-	2
	Solanum nigrum L.	1	-
	Stachys c.f. palustris L.	-	3
	Galeopsis tetrahit L.	-	1
	Labiatae indet.	7	-
	Valerianella dentata (L) Poll.	1	1
	c.f. Chrysanthemum segetum L.	1	-
	Cirsium sp.	4	-
	Compositae indet	2	-
	Carex sp.	19	-
	Eleocharis sp.	-	4
	Cyperaceae indet.	30	10
	Unidentified	4	15
	Samples volume (litres)	15	15
	Processing method	A	A

Table 9 : Fruits and seeds from 169N (1-11 St Andrew's Street, Duke's Palace)

17ON 46-58 Botolph Street

The earliest activity on the site, represented by small pits and a large gravel quarry, was of 11th/12th century date. Samples from one of these pits and from a 14th/15th century refuse pit produced a few carbonised cereals and legumes with abundant Sambucus seeds.

Context details	Context No.	966	654
	Feature-type	Pit	Pit
	Date	11/12c.	14/15c.
Cereals	Cereal indet.	19	4
	Hordeum sp.	17	1
	Avena sp.	3	-
Legume	Pisum-type	-	4
Fruit	Sambucus nigra L.	100+	-
	Unidentified	1	-
	Sample volume (litres)	15	15
	Processing method	A	A

Table 10: Fruits and seeds from 17ON (46-58 Botolph Street)

171N 22 Wensum Street

During the 1974 excavations at this site part of the early medieval causeway crossing the river, and the central courtyard of a late 14th century building probably an inn, which was destroyed in the fire of 1507, were examined. The plant remains from marsh and 'levelling' deposits associated with the Fyebridge causeway are listed in Table 11 and those from the 1507 fire debris in Table 12 The significance of the assemblages of plant material from the marsh deposit is discussed elsewhere (see report on 'Recent Sediments of the Wensum Valley') and in this report only seeds of utilised plants from these layers are considered.

Botanical descriptions

1. Linum usitatissiumum L., Flax.

A single seed of flax was recovered from context 93, a sandy peat deposit beneath the horizontal planking of the causeway, and therefore Late Saxon or earlier (Fig.9). The specimen is 4.2 x 2.4 mm. The epidermal cells, with the characteristic polygonal ends are well preserved. This is a relatively large seed; a specimen from Middle Saxon deposits at Ipswich was only 3.4 x 2.0 mm. (Murphy 1978).

2. Juglans regia L. Walnut

Context 64 produced a fragment of grooved and pitted walnut endocarp. This fragment probably is of early 12th century date, and is thus the earliest record of the species from Norwich.

3. Hordeum spp. Barley

Large quantities of barley rachis fragments and some caryopses were extracted from a deposit of carbonised straw in context 67, part of the fire debris.

The lengths of 30 internodes were: minimum 2.3 mm. mean 3.1 mm. maximum 3.8 mm. The internodes are relatively slender in build, indicating that a lax-eared variety predominates, though a few slightly broader specimens are present (Fig.9). The first rachis internodes are variable; broad, curved specimens and weakly-curved slender forms are present, along with intermediate types. The specimens shown in Fig give an impression of the range of variation. Most of the collars are eroded, but one broad first rachis segment is associated with a collar of shallow cup form, apparently 'open' or 'notched' and with relatively stout straw (c. 1 mm. diameter).

There are relatively few barley grains and most of these are distorted. The proportions of grains from lateral and median spikelets cannot be determined. However sterile lateral spikelets still attached to short lengths of two-row barley rachis are present. Spikelets from the bases of ears, consisting of empty lemmas and paleas in which no grain has developed have also been extracted. The lemma bases of these undeveloped spikelets bear transverse creases (Fig. 9) while lemmas containing mature grains have horse-shoe shaped bevels at their bases (Fig. 9).

Overall, the presence of two-row hulled barley in this sample is definitely established, and in addition some of the rachis fragments may be from a hulled six-row barley. The lemma bases and rachis internodes indicate that these barleys were lax-eared.

Barley chaff and grains were also present in the burnt daub from contexts 10 and 67. They survive as impressions where the daub was heated in oxidising conditions, and as carbonised material where oxygen was excluded.

4. Secale cereale L. Rye

A short section of rachis, comprising six internodes with strong pubescence along their margins, along with some loose fragments of the stiffly-haired keels of lemmas were recovered from 67.(Fig. 9). Although rye grains are common in samples from Norwich this is the only rachis material identified from the city.

5. Avena sativa L. Oats

A single floret was identified in the burnt straw sample from 67. The floret base is illustrated in Fig.

Layers 92, 93, 90 and 77, beneath and directly associated with, the Late Saxon causeway produced seeds of wild plants from a variety of habitats. Of particular interest, however, is the flax seed. This is the only specimen from the city: flax has not been recovered from later medieval and post-medieval contexts, probably because flax products (fibre and oil) were brought to Norwich in a processed or semi-processed state. In the earlier period it was no doubt grown locally.

The samples from the 1507 fire debris gives some idea of the use of plant material in building construction. The structure on this site was timber framed (oak and pine charcoal were identified) with plastered daub infilling. The daub was tempered with barley straw and chaff, and the presence of Carex (sedge) nutlets may indicate that river deposits were used for the clay component. The mass of carbonised straw, from 67, is largely of barley, with a little rye and oats. This material may represent litter or thatch, although of course reed or wheat straw are the main thatching materials in use nowadays.

Context No.	93	92	77	90	68	32	64	31	65
Hordeum sp.	-	-	-	-	-	-	-	-	1
Avena sp.	-	-	-	-	-	-	-	-	5
Linum usitatissimum L.	1	-	-	-	-	-	-	-	-
Juglans regia L.	-	-	-	-	-	-	+	-	-
Pteridium aquilinum (L) Kuhn (1)	+	-	-	+	-	-	-	-	-
Ranunculus subg. Batrachium sp.	-	-	-	-	-	-	1	-	-
Ranunculus c.f. repens L.	-	1	-	4	-	-	1	-	-
Papaver rhoeas L.	1	-	-	-	-	-	-	-	-
Papaver argemone L.	1	-	-	-	3	-	4	-	4
Papaver sp.	-	-	-	-	-	-	-	1	-
Brassica sp.	-	-	1	1	2	-	1	-	1
Raphanus raphanistrum L.	1	-	-	1	-	-	-	-	-
Reseda luteola L.	-	-	-	2	-	-	-	-	-
Reseda sp.	1	-	-	-	-	-	1	-	-
Lychnis c.f. flos-cuculi L.	-	-	-	1	-	-	-	-	-
Agrostemma githago L.	-	-	1	2	-	-	4	-	-
Cerastium c.f. holosteoides Fr.	1	-	-	1	-	-	1	-	-
Stellaria media (L) Vill.	-	-	1	-	3	-	3	-	-
Caryophyllaceae indet.	3	-	-	-	-	-	1	-	-
Chenopodium album L.	3	-	2	8	5	1	16	1	2
Atriplex patula/hastata L.	-	-	1	1	1	-	2	-	-
Chenopodiaceae indet.	-	-	-	-	1	-	5	2	8
Rubus fruticosus agg.	-	-	-	-	1	-	-	2	-
Potentilla sp.	-	-	-	-	1	-	-	-	-
Prunus spinosa L.	1	-	-	-	-	-	-	-	-
Anthriscus sylvestris (L) Hoffm.	-	-	-	3	-	-	-	-	-
Conium maculatum L.	-	-	-	-	4	-	-	-	-
Umbelliferae indet.	-	-	-	-	-	-	1	-	-
Polygonum aviculare agg.	3	-	-	3	1	-	1	-	-
Polygonum persicaria L.	5	-	-	2	-	-	-	-	-
Polygonum lapathifolium L.	-	-	1	2	-	-	-	-	-
Polygonum c.f. hydropiper L.	-	-	1	-	-	-	-	-	-
Polygonum convolvulus L.	3	-	2	2	-	-	-	-	-
c.f. Rumex acetosella agg.	10	-	-	3	1	-	13	1	-
Rumex sp.	1	-	-	2	-	-	-	-	-
Urtica urens L.	-	-	-	1	97	-	-	-	1
Urtica dioica L.	3	1	1	1	82	1	-	-	2
Betula sp.	-	-	1	-	-	-	-	-	-
Corylus avellana L.	+	+	+	+	+	-	+	-	+
Menyanthes trifoliata L.	-	-	-	-	1	-	-	-	-
Solanum nigrum L.	-	-	-	-	-	-	1	-	-
Mentha arvensis/aquatica L.	-	-	-	-	-	-	1	-	-
Galeopsis tetrahit L.	1	-	-	1	-	-	-	-	-

Labiatae indet.	-	-	-	-	1	-	-	1	-
Sambucus nigra L.	3	-	-	2	2	-	-	-	1
Anthemis cotula L.	6	3	3	8	-	-	9	-	2
Achillea millefolium L.	-	-	-	1	-	-	-	-	-
Centaurea sp.	-	-	-	2	-	-	-	-	-
Lapsana communis L.	-	-	-	1	-	-	-	-	-
Sonchus oleraceus L.	-	1	-	-	-	-	-	-	-
Compositae indet.	-	-	-	1	-	-	5	-	-
Alismataceae indet.	-	-	-	-	-	-	1	-	-
Potamogeton sp.	-	-	-	-	-	-	1	-	-
Juncus sp.	+	-	+	+	+	+	+	+	+
Typha sp.	-	1	2	-	-	-	-	-	1
Eleocharis sp.	-	-	-	-	9	1	4	-	4
Carex sp.	5	-	-	3	7	-	1	-	-
Cyperaceae indet.	-	-	-	1	-	1	-	-	3
Phragmites australis (Cav)Steudl.(2)	+	-	+	+	-	-	+	-	-
Bromus sp.	-	-	1	-	-	-	-	-	-
Gramineae indet.	7	4	2	9	3	-	12	1	2
Indeterminate	10	-	4	3	3	-	6	5	3

Table 11 : Plant remains from layers associated with the Fyebridge Causeway.

Taxa are represented by fruits or seeds unless otherwise indicated.

(1) Leaf segment (2) Culm fragments

Layer 64 also included leaves of Calluna vulgaris (omitted from table)

Mosses (identified by Dr P. Lambley, Norwich Castle Museum)

171N 90 Dicranium c.f. scoparium

171N 93 cf. Pleurozium schreberi

Context No.	10	10	67	67	67
Material	Daub	Charcoal	Burnt Straw	Daub	Charcoal
Hordeum spp. (caryopses)	2[1]	-	20	1	-
Hordeum spp. (rachis internodes)	+[1]	-	370	-	-
Avena sativa L. (floret)	-	-	1	-	-
Secale cereale L (rachis internodes)	-	-	6	-	-
Cereal indet. (caryopses)	-	-	3	-	-
Cereal indet. (culm and leaf frags)	⊕	-	⊕	⊕	-
Chenopodium album L (seed)	1	-	-	-	-
Caryophyllaceae indet (seed)	1	-	-	-	-
Compositae indet. (flower-head)[2]	-	-	1	-	-
Carex spp. (nutlets)	6	-	-	-	-
Gramineae indet (floret)	1	-	1	-	-
Quercus sp. (charcoal)	-	+	-	-	+[3]
c.f. Pinus sp. (charcoal)	-	+	-	-	-
Non-woody stem fragments	-	-	+	-	-
Indet. (seeds)	-	-	2	-	-
Sample volume	-	-	100cc.	-	-

Table 12 : 171N, 22 Wensum Street : Plant remains from 1507 Fire Debris

Flotation was unnecesaary. A small portion (100 cc.) of the carbonised straw from 67 was simply sorted through; a lump of daub from 10 was crushed, and then sorted; and the charcoal samples were large fragments collected by hand.

Notes : 1 Fragments
2 Well-preserved, but not identified due to lack of reference material
3 From untrimmed timber, approximately 8 cm. diameter

+ - present ⊕ - abundant

172N 31 Colegate (Bacon's House)

12th century pits and a 12th century well, re-used as a cess pit, were sealed by several medieval yard levels into which a late 15th century bell-pit had been cut.

The well was lined with a barrel, made of oak staves, including some very slow-grown timber. Samples of its fill (541 and 544) produced well-preserved Prunus fruitstones, with fig, grape, blackberry and strawberry 'seeds'. Fruits and seeds of crop weeds are also common. As in 168N 40 two main forms of Prunus domestica fruitstones are present (see Fig. 3). Dimensions of these, and other Prunus fruitstones, are given in Fig.

The medieval yard levels produced poorly-preserved carbonised cereals and large numbers of Sambucus seeds, and the bell-pit contained few seeds including wetland taxa. This may suggest the use of alluvial-clay in the bell-mould.

Context	Context No.	541	544	532	117	[illegible]
details	Feature-type	Well	Well	Yard level	Yard level	Bell Foundir
	Date	12c	12c	12/13c	13c	15c Pi
	Cereal indet.	-	1	-	5	-
	Hordeum sp.	-	-	-	7	-
Cereals	Triticum aestivum sl.	-	-	-	1	-
	Hordeum sp.(rachis internode)	-	-	-	-	1
	Ficus carica L.	172	123	-	-	-
	Vitis vinifera L.	1	-	-	-	-
	Sambucus nigra L.	22	-	4	75	2
	Rubus fruticosus agg.	4	-	-	-	-
Fruits	Rubus sp.	-	-	-	-	1
	Prunus domestica L. (Type 1)	5	-	-	-	-
	Prunus domestica (Type 2)	16	-	-	-	-
	Prunus avium L.	70	-	-	-	-
	Fragaria vesca L.	1	-	-	-	-
	Ranunculus sp.	-	1	-	-	-
	Brassica sp.	2	-	-	-	-
	Raphanus raphanistrum L.	10	-	-	-	-
	Cruciferae indet.	4	-	-	-	-
	Stellaria media L. (Vill)	6	-	-	-	-
	Silene sp.	4	-	-	-	-
	Agrostemma githago L.	5	-	-	-	-
	Caryophyllaceae indet.	2	-	-	-	-
	Chenopodium album L.	15	-	-	-	-
	Umbelliferae indet.	-	1	-	-	-
	Polygonum aviculare agg.	4	-	-	-	-
	Polygonum lapathifolium L.	1	-	-	-	-
	Polygonum convolvulus L.	1	-	-	-	-
	Rumex sp.	4	-	-	-	-
	Menyanthes trifoliata L.	-	-	-	-	1
	Convolvulus sp.	1	-	-	-	-
	Labiatae indet	2	1	-	-	-
	Anthemis cotula L.	1	-	-	-	-
	Centaurea sp.	3	-	-	-	-
	Cyperaceae indet.	2	2	-	-	2
	Gramineae indet(culm node)	1	-	-	-	-
	Unidentified	-	-	-	-	-
	Sample volume (litres)	15	15	15	15	15
	Processing method	A	A	A	A	A

Table 13 : Plant remains from 172N (Bacon's House, 31, Colegate)
Unless otherwise indicated taxa are represented by fruits or seeds.

281N 49-63 Botolph Street

An 11th century ditch, subsequently re-cut, dug through the natural gravel was sampled. 13th/14th century iron-working debris covered the site, but the earliest substantial buildings were of the 15th century. Pits associated with successive phases of these buildings were sampled.

With the exception of layer 643 the ditch produced little more than the occasional carbonised cereal grain and seeds of S.nigra. 643 contained many seeds of Chenopodiaceae and P. aviculare with a few other weed taxa. No significant quantity of domestic food refuse found its way into this feature. The medieval and post-medieval pits included carbonised cereals and mineralised fruitstones and seeds and nuts. Pit 368 is notable for the quantity of such material, and also, given the large volume of the sample, for the restricted range of wild taxa present.

Context details	Context No.	623	627	636	637	638	643	839
	Feature-type	Ditch	Ditch	Ditch	Ditch	Ditch	Ditch	Ditch
	Date	11/12c	11/12c	11/12c	11/12c	11/12c	11/12c	11/12c
	Cereal indet.	4	2	-	2	2	1	-
	Hordeum c.f. distichon L.	-	-	-	-	-	-	-
	Hordeum sp.	-	-	-	-	1	-	-
Cereals	Triticum aestivum s.l.	-	-	-	-	-	1	-
	Avena sp.	-	-	-	-	1	1	-
	Secale cereale L.	1	-	-	-	-	-	-
	Triticum aestivum(rachis internode)	-	-	-	-	-	-	-
	Hordeum sp.(rachis internode)	-	-	-	-	-	-	-
	Vicia faba L. var. minor	-	-	-	-	-	-	-
Legumes	Pisum-type	-	-	-	-	-	-	-
	Vicia sp. (small)	1	-	-	1	1	-	-
	Ficus carica L.	-	-	-	-	-	-	-
	Vitis vinifera L.	-	-	-	-	-	-	-
	Sambucus nigra L.	-	-	6	31	22	3	1
	Rubus fruticosus agg.	-	-	-	-	-	-	-
Fruits	Rubus idaeus L.	-	-	-	-	-	-	-
	Rubus sp.	-	-	-	-	-	2	-
	Prunus domestica L.	-	-	-	-	-	-	-
	Prunus avium L.	-	-	-	-	-	-	-
	Prunus sp.	-	-	-	-	-	-	-
	Crataegus laevigata(Poir)D.C.	-	-	-	-	-	-	-
	Malus sylvestris Miller	-	-	-	-	-	-	-
	Fragaria vesca L.	-	-	-	-	-	-	-
Nuts	Corylus avellana L.	-	-	-	-	-	-	-
	Juglans regia L.	-	-	-	-	-	-	-
	Ranunculus sp.	-	-	-	-	-	-	-
	Brassica sp.	-	-	-	-	-	-	-
		-	-	-	-	1	-	-

-	-	4	1	-	-	-
-	-	3	-	-	-	-
-	-	1	-	1	-	-
-	-	1	-	-	-	-
-	-	5	-	-	-	-
1	-	-	-	-	-	-
-	-	1	-	-	-	-
-	-	-	-	-	2	-
-	-	-	-	-	-	-
-	-	1	1	-	-	-
-	-	3	-	-	-	-
-	-	1	-	-	-	-
-	-	-	-	-	71	-
1	-	-	-	-	-	-
-	-	-	-	-	1	-
-	-	2	-	-	-	-
-	-	1	-	-	-	-
2	-	-	-	-	-	-
1	-	-	1	1	-	-
-	-	1	-	1	-	-
-	-	-	1	2	1	-
1	-	-	2	-	1	4
-	-	2	1	-	-	-
15	1	79	2	-	3	-
60	15	330	?	150	270	90
A	A	A	A	A	A	A

*1 Includes C.album and Atriplex but these taxa difficult to separate due to encrustation with mineral salts.

2 Estimated numbers. The total for R.idaeus includes a few R.fruticosus

1080	124	368	417	109	160	458
Pit	Cesspit	Pit	Pit	Cesspit	Cesspit	Pit
13/14c	14/15c	15/16c	15/16c	16c	17/18c	Medieval
46	6	312	372	19	2	1
-	-	-	1002	-	-	-
21	4	261	-	15	1	3
10	-	10	-	1	-	-
6	-	1	1	2	-	1
4	-	1	-	-	-	-
2	-	-	-	-	-	-
1	-	-	-	-	-	-
3	-	-	-	-	-	-
2	3	1	1	1	-	1
-	-	-	-	-	-	-
-	-	14,500[2]	240	32	155	-
-	-	375	2	-	1	-
74	-	23	8	100+	100+	2
1	-	-	6	-	94	-
1	-	4,700[2]	-	-	-	-
-	-	-	-	3	1	-
-	-	13	-	-	-	-
-	-	4	-	-	-	-
-	-	36	10	1	-	1
-	-	2	-	2	-	-
-	-	9	3	12	12	-
-	-	3	-	-	-	-
-	-	3	-	-	-	-
-	-	1	-	-	-	-
-	-	1	-	-	-	-
1	-	1	-	-	-	-
-	-	4	1	-	-	-

	Silene sp.	-	-	-	-	-	-	-
	Chenopodium album L.	-	-	-	-	-	-	-
	Atriplex patula/hastata	-	-	-	-	-	-	-
	Chenopodiaceae indet.	-	-	-	-	-	285*1	-
	Medicago lupulina L.	-	-	-	-	-	-	-
	Conium maculatum L.	-	-	-	-	-	-	-
	Aethusa cynapium L.	-	-	-	-	-	-	-
Wild	Euphorbia helioscopia L.	-	-	-	-	-	-	-
plants	Polygonum aviculare agg.	-	-	-	-	1	41	-
	Polygonum convolvulus L.	-	-	-	-	-	6	1
	Rumex sp.	-	-	-	-	-	1	-
	Polygonaceae indet.	-	-	-	-	-	-	-
	Boraginaceae indet.	-	-	-	-	-	-	-
	Convolvulus arvensis L.	-	-	-	-	-	-	-
	Hyoscyamus niger L.	-	-	-	-	-	-	-
	Solanaceae indet.	-	-	-	-	-	-	-
	Galeopsis tetrahit L.	-	-	-	-	-	3	-
	Ballota nigra L.	-	-	-	-	-	-	-
	Labiatae indet.	-	2	-	-	-	1	-
	Cirsium sp.	-	-	-	-	-	1	-
	Cyperacece indet.	-	-	-	-	-	-	-
	Gramineae indet.	-	-	-	-	-	-	-
	Gramineae indet.(culm node)	-	-	-	-	-	1	-
	Unidentified	-	-	-	-	1	4	1
	Sample volume (litres)	15	15	15	15	30	15	15
	Processing method	A	A	A	A	A	A	A

Table 14 : Plant remains from 281N (49-63 Botolph Street)

Unless otherwise indicated taxa are represented by fruits and seeds. Subsequent examination of pottery etc. suggests that contexts 637 and 368 may be contaminated with later material.

* 109 also produced leaves of Calluna vulgaris

282N 129 King Street

In the late 15th century this site was levelled down to the natural chalk, but some 13th/14th century pits and a grave of the late 13th century survived. 16th century pits and dumps of chalk waste were also excavated.

Samples produced a few carbonised cereals and legumes, with Sambucus and grass seeds.

Context details	Context no.	SK1	151	275	193
	Sample no.	–	–	–	–
	Feature-type	Grave	Pit	Pit	Pit
	Date	Late 13th c.	13th-14th c.		16th c.
Cereals	Cereal indet.	-	1	2	8
	Hordeum sp.	3	5	-	3
	Avena sp.	-	1	-	-
	Triticum aestivum sl.	-	-	-	9
Legumes	Vicia faba L.var.minor	-	-	-	4
	Vicia/Pisum sp.	-	-	-	2
Wild Plants	Sambucus nigra	1	-	-	5
	Gramineae	5	2	-	-
Processing details	Sample volume (litres)		30	30	75
	Processing method	A	A	A	A
	% flot sorted	100	100	100	100
Interpretation	Category	2/5	2	2	2/5

Table 15 : Fruits, seeds etc. from 282 N.

283N 33-45 Heigham Street

The excavation of this site on the river gravel revealed the development of several tenements between the 13th/14th - 17th centuries. Samples were taken from a series of medieval and post-medieval ovens, from an early 16th century cess pit (Pit 123) and from other miscellaneous contexts. The ovens produced carbonised cereal assemblages, principally of barley with smaller amounts of oats, rye and wheat but with little or no chaff, straw, or weed seeds. Oven 421 contained germinated barley grains. The samples therefore suggest that the ovens were used for grain drying and/or cooking, and in one case for the roasting of malt. However, it has been suggested that plant material, including spoilt grain, was being burnt in them to produce ash for neutralising the acids in tanned leather; the ovens are associated with probable tanning pits.

The seed assemblages from pit 123, an early 16th century cesspit, are with the exception of the horse-bean (V.faba) entirely typical of post-medieval assemblages in the City. They include most taxa commonly encountered, in characteristic states of preservation. The material is described below.

The pit provided a variety of preservation conditions. The two lowest layers were beneath the water table and contained anaerobically-preserved plant remains. The upper layers were dryer and relatively well aerated; they contained carbonised material together with some mineralised fruits and seeds. Four samples were studied:

46 Layer 124 49 Layers 128-131	aerobic
50 Layer 134 51 Layer 135	anaerobic

Botanical descriptions of crop plants from pit 123

1. Barley

The barley grains are, for the most part, distorted and unsuitable for measurement. (Fig.6c). However, the sample from layers 128-131 contains some better-preserved grains including twisted grains from lateral spikelets, (Fig.6b), which establish the presence of the six-row cultivar Hordeum vulgare L. One grain has a bevelled lemma base (Fig.6a) and several germinated specimens have well-preserved 'sprouts'. The rachis internodes from layer 135 are slender, varying in length from 3.2-3.6 mm. (Fig.6l). The internode from layers 128-131 is damaged, but has clear marginal pubescence. (Fig.6m.).

2. Wheat, rye, oats

The few wheat grains present are badly distorted, but all are relatively short in relation to their widths, maximum width being just above the embryo in general, and may be identified as bread wheat, Triticum aestivum L. (Fig.6e). Oat caryopses are present in samples 46 and 49. All specimens are badly puffed, particularly along their ventral sides. (Fig.6d).

The large size of the oat grains suggests that they are of the cultivated species Avena sativa L. although floret bases are absent. Both short straight grains and longer asymmetrical specimens of rye, Secale cereale L. are present (Fig.6). 16 specimens from sample 49 were measured; their dimensions and indices are as follows:

	Length(mm)	Breadth(mm)	Thickness(mm)	L/Bx100	T/Bx100
min	3.0	2.0	1.9	150	74
mean	5.06	2.41	2.27	212	95
max	6.2	2.8	2.8	295	110

These are quite large grains, obviously distorted to some extent. A few specimens, which have not been measured, had germinated before carbonisation.

3. Horsebean

Sample 49 contained a single well-preserved bean, Vicia faba L. var. minor, with the following dimensions: Length 11.2mm, Cotyledon breadth 7.9 mm, Thickness across cotyledons 6.5 mm. This specimen is considerably larger than the small field beans present in medieval deposits in Norwich, and probably represents an entirely new variety. (Fig.6i).

4. Fig

48 achenes of figs, Ficus carica L., were recovered from sample 49. The hilar areas and 'dorsal' ridges are well preserved, and the achenes range in length from 1.3-1.6 mm.

5. Grape

Grape 'pips', Vitis vinifera L., occurred in samples 50 and 51. The specimen from sample 50 has the following dimensions: Length 5.3 mm. Breadth 3.2 mm. Thickness 2.1 mm. (Fig.6h).

6. Plum

Two small stones of plum, Prunus domestica s.l., were found in samples 50 and 51. They are 11.0-12.0 mm. long and 9.1-7.6 mm. broad. (Fig.6j, k.)

In addition to this food refuse, culm fragments of reed, imported to the site to serve as thatch or litter, were recovered. The bracken fragments from sample 50 probably have a similar origin. Seeds of arable weeds and of plants from other disturbed soils are common, along with wetland taxa (creeping buttercup, redshank, pale persicaria, water-pepper, bogbean, gipsywort and sedges). The site is quite close to areas of marsh and was subject to periodic flooding.

283N PHASE 13th – 14th c. SHEET 1

Context details	Context no.	506										
	Sample no.	107										
	Feature type	Oven										
Cereals	Cereal indet.	17										
	Hordeum sp.	13										
	Hordeum sp.(rachis int.)	–										
	Avena sp.	1										
	Avena sativa L.(floret)											
	Triticum aestivum s.l.											
	Secale cereale L.											
Legumes	Vicia faba L.											
	Pisum-type											
	Leguminosae indet.											
Fruits	Prunus domestica s.l.											
	Prunus sp.											
	Rubus fruticosus agg.											
	Rubus idaeus L.											
	Rubus sp.											
	Ficus carica L.											
	Vitis vinifera											
Wild plants	Pteridium aquilinum(L)Kuhn (frond fragments)											
	Ranunculus cf. repens L.											
	Ranunculus sp.											
	Brassica/Sinapis sp.	1										
	Raphanus raphanistrum L.											
	Cruciferae indet.											
	Agrostemma githago L.											
	Stellaria media (L)Vill											
	Silene sp.											
	Chenopodium album L.											
	Atriplex patula/hastata											
	Aethusa cynapium L.											
	Umbelliferae indet.											
	Polygonum aviculare agg.											
	Polygonum convolvulus L.											
	Polygonum cf persicaria L.											
	Polygonum cf lapathifolium L.											
	Polygonum cf hydropiper L.											
	Polygonum sp.											
	Rumex sp.											
	Urtica dioica L.											
	Menyanthes trifoliata L.											
	Lithospermum arvense L.	1										
	Lycopus europaeus L.											
	Galeopsis tetrahit L.											
	Labiatae indet.											
	Galium aparine L.											
	Sambucus nigra L.	1										
	Chrysanthemum sp.											
	Centaurea sp.											
	Compositae indet											
	Cyperaceae indet.											
	Phragmites australis(Cav)Steudel (culm node)											
	Gramineae indet	3										
	Gramineae indet (culm node)											
	Unidentified											
Processing details	Sample volume (litres)	2										
	Processing method	C										
	% Not sorted	100										

283N PHASE Late 15th c. SHEET 1.

Context details	Context no.	341	343	359	386	421	425	432				
	Sample no.	83/88	85	86	95	99	101	102				
	Feature type	oven	pit	pit	cob spread	oven	oven	oven				
Cereals	Cereal indet.	70	24		2	280	1	1				
	Hordeum sp.	30	3	3		150*	2	2				
	Hordeum sp.(rachis int.)			1		1						
	Avena sp.	4		3		33	2					
	Avena sativa L.(floret)					1						
	Triticum aestivum s.l.	6	5									
	Secale cereale L.	5	3		1							
Legumes	Vicia faba L.											
	Pisum-type											
	Leguminosae indet.					6	1					
Fruits	Prunus domestica s.l.											
	Prunus sp.											
	Rubus fruticosus agg.											
	Rubus idaeus L.											
	Rubus sp.											
	Ficus carica L.											
	Vitis vinifera											
Wild plants	Pteridium aquilinum(L)Kuhn (frond fragments)											
	Ranunculus cf. repens L.											
	Ranunculus sp.											
	Brassica/Sinapis sp.					1						
	Raphanus raphanistrum L.											
	Cruciferae indet.											
	Agrostemma githago L.											
	Stellaria media (L)Vill											
	Silene sp.					4						
	Chenopodium album L.	3				1						
	Atriplex patula/hastata											
	Aethusa cynapium L.											
	Umbelliferae indet.											
	Polygonum aviculare agg.											
	Polygonum convolvulus L.											
	Polygonum cf persicaria L.											
	Polygonum cf lapathifolium L.											
	Polygonum cf hydropiper L.											
	Polygonum sp.	2										
	Rumex sp.		1			3						
	Urtica dioica L.											
	Menyanthes trifoliata L.											
	Lithospermum arvense L.											
	Lycopus europaeus L.											
	Galeopsis tetrahit L.											
	Labiatae indet.											
	Galium aparine L.					1						
	Sambucus nigra L.	2			1							
	Chrysanthemum sp.											
	Centaurea sp.					1						
	Compositae indet			1		2						
	Cyperaceae indet.											
	Phragmites australis(Cav)Steudel (culm node)											
	Gramineae indet			2		9						
	Gramineae indet (culm node)			+		5						
	Unidentified	3		3		2						
Processing details	Sample volume (litres)	2	1	1	2	2	2	2				
	Processing method	C	C	C	C	C	C	C				
	% Hot sorted	100	100	100	100	100	100	100				

283N PHASE 15th/16th c. SHEET 1

ntext	Context no.	160	161									
tails	Sample no.	67	68									
	Feature type	layer	layer									
	Cereal indet.	2	14									
	Hordeum sp.		7									
	Hordeum sp.(rachis int.)											
reals	Avena sp.	c.f.1										
	Avena sativa L.(floret)											
	Triticum aestivum s.l.		1									
	Secale cereale L.	2	3									
gumes	Vicia faba L.											
	Pisum-type											
	Leguminosae indet.											
ruits	Prunus domestica s.l.											
	Prunus sp.											
	Rubus fruticosus agg.											
	Rubus idaeus L.											
	Rubus sp.											
	Ficus carica L.											
	Vitis vinifera											
ild plants	Pteridium aquilinum(L)Kuhn (frond fragments)											
	Ranunculus cf. repens L.											
	Ranunculus sp.											
	Brassica/Sinapis sp.											
	Raphanus raphanistrum L.											
	Cruciferae indet.											
	Agrostemma githago L.											
	Stellaria media (L)Vill											
	Silene sp.											
	Chenopodium album L.											
	Atriplex patula/hastata											
	Aethusa cynapium L.											
	Umbelliferae indet.											
	Polygonum aviculare agg.											
	Polygonum convolvulus L.											
	Polygonum cf persicaria L.											
	Polygonum cf lapathifolium L.											
	Polygonum cf hydropiper L.											
	Polygonum sp.											
	Rumex sp.											
	Urtica dioica L.											
	Menyanthes trifoliata L.											
	Lithospermum arvense L.											
	Lycopus europaeus L.											
	Galeopsis tetrahit L.											
	Labiatae indet.											
	Galium aparine L.											
	Sambucus nigra L.		20									
	Chrysanthemum sp.											
	Centaurea sp.											
	Compositae indet											
	Cyperaceae indet.											
	Phragmites australis(Cav)Steudel (culm node)											
	Gramineae indet											
	Gramineae indet (culm node)											
	Unidentified											
rocessing	Sample volume (litres)	15	15									
details	Processing method	A	A									
	% Not sorted	100	100									

283N PHASE Early 16th century SHEET 1

Context details											
	Context no.	124	128-131	134	135	138	140	148	241	271	293	305
	Sample no.	46	49	50	51	53	55	61	76/78	82	79	80
	Feature type	Layers in cess pit			23	oven	pit	oven	hearth	pit	pit	ove
Cereals	Cereal indet.	40		10	4	8	13	4	14		2	1
	Hordeum sp.	15	89	18	5	18	36	4	11			
	Hordeum sp.(rachis int.)		1		13							
	Avena sp.	10	4									
	Avena sativa L.(floret)											
	Triticum aestivum s.l.	1	2				3	1				
	Secale cereale L.		61	5	2	2	8		1			
Legumes	Vicia faba L.		1									
	Pisum-type											
	Leguminosae indet.			2								
Fruits	Prunus domestica s.l.			1	1							
	Prunus sp.											
	Rubus fruticosus agg.		1									
	Rubus idaeus L.							1				
	Rubus sp.							1				
	Ficus carica L.		48									
	Vitis vinifera			1	1							
Wild plants	Pteridium aquilinum(L)Kuhn (frond fragments)			+								
	Ranunculus cf. repens L.			2	3							
	Ranunculus sp.		1									
	Brassica/Sinapis sp.		8	5	3							
	Raphanus raphanistrum L.		1	3	1							
	Cruciferae indet.			1								
	Agrostemma githago L.			3	1	1						
	Stellaria media (L)Vill			41	72							
	Silene sp.				2							
	Chenopodium album L.		7	12	20				1			
	Atriplex patula/hastata				2							
	Aethusa cynapium L.						1					
	Umbelliferae indet.				1							
	Polygonum aviculare agg.				1							
	Polygonum convolvulus L.			1	2			1				
	Polygonum cf persicaria L.			2								
	Polygonum cf lapathifolium L.				2							
	Polygonum cf hydropiper L.			1								
	Polygonum sp.			1	2							
	Rumex sp.			1	1	1						
	Urtica dioica L.				1							
	Menyanthes trifoliata L.			24	1							
	Lithospermum arvense L.			1								
	Lycopus europaeus L.			1								
	Galeopsis tetrahit L.			2	1							
	Labiatae indet.				15							
	Galium aparine L.						2					
	Sambucus nigra L.	4	12	34	7	1	2					
	Chrysanthemum sp.			1								
	Centaurea sp.			1								
	Compositae indet											
	Cyperaceae indet.				1							
	Phragmites australis(Cav)Steudel (culm node)			+								
	Gramineae indet						1					
	Gramineae indet (culm node)											
	Unidentified		2	6	9	2			1	2		
Processing details	Sample volume (litres)	15	15|1	15|1	15|1	15	15	15	2	1	1	
	Processing method	A	A|C	A|C	A|C	A	A	A	C	C	C	C
	% Not sorted	100	100	100	100	100	100	100	100	100	100	10

Context 135 (sample 51) also contained a moss (Tortula sp.) (Dr P. Lambley)

283N PHASE Late 16th. and 17th.c. SHEET 1

Context details	Context no.	149	117	144	354							
	Sample no.	62	39	58	81							
	Feature type	pit	yard	pit	yard							
	Cereal indet.	56	148	14	1							
	Hordeum sp.	54	172	8	1							
	Hordeum sp.(rachis int.)											
Cereals	Avena sp.	34		1								
	Avena sativa L.(floret)											
	Triticum aestivum s.l.		2	1								
	Secale cereale L.			1								
Legumes	Vicia faba L.											
	Pisum-type	10										
	Leguminosae indet.											
Fruits	Prunus domestica s.l.											
	Prunus sp.		1									
	Rubus fruticosus agg.											
	Rubus idaeus L.											
	Rubus sp.											
	Ficus carica L.											
	Vitis vinifera											
Wild plants	Pteridium aquilinum(L)Kuhn (frond fragments)											
	Ranunculus cf. repens L.											
	Ranunculus sp.											
	Brassica/Sinapis sp.											
	Raphanus raphanistrum L.											
	Cruciferae indet.											
	Agrostemma githago L.											
	Stellaria media (L)Vill											
	Silene sp.											
	Chenopodium album L.											
	Atriplex patula/hastata											
	Aethusa cynapium L.											
	Umbelliferae indet.											
	Polygonum aviculare agg.											
	Polygonum convolvulus L.											
	Polygonum cf persicaria L.											
	Polygonum cf lapathifolium L.											
	Polygonum cf hydropiper L.											
	Polygonum sp.											
	Rumex sp.											
	Urtica dioica L.											
	Menyanthes trifoliata L.											
	Lithospermum arvense L.	1										
	Lycopus europaeus L.											
	Galeopsis tetrahit L.											
	Labiatae indet.											
	Galium aparine L.											
	Sambucus nigra L.	5	5	3	2							
	Chrysanthemum sp.											
	Centaurea sp.											
	Compositae indet											
	Cyperaceae indet.											
	Phragmites australis(Cav)Steudel (culm node)											
	Gramineae indet											
	Gramineae indet (culm node)											
	Unidentified											
Processing details	Sample volume (litres)	15	15	15	1							
	Processing method	A	A	A	C							
	% Not sorted	100	25	100.	100							

284N 178-188 St George's Street

This site, close to 281N, also revealed part of an 11th/12th century ditch and medieval ironworking. The first evidence of buildings dates from the late 16th century. A single sample from a 13th/14th century pit produced a small quantity of carbonised cereals including germinated barley grains, and mineralised fruitstones and seeds.

Context	Context No.	244
details	Feature-type	Pit
	Date	13/14c
Cereals	Cereal indet.	19
	Hordeum sp.	21*
	Avena sp.	5
	Sambucus nigra L.	26
Fruits	*Rubus* c.f. *idaeus* L.	1
	c.f. *Malus sylvestris* L.	2
	Ficus carica L.	2
	Conium maculatum L.	1
	Polygonum convolvulus L.	1
	Galium aparine L.	2
	Sample vol. (litres)	15
	Processing method	A

Table 17: Fruits and seeds from 284N (St George's Street)

* Includes germinated barley grains

285N School Meals Store, King Street

Although the street frontage had been disturbed by cellars, including a late 15th century vaulted undercroft, 11th-12th century post-holes and 13th-14th century pits cut into the natural gravel and sealed by later buildings survived at the rear of the site. The contexts sampled were 26, a late 16th century layer and 105, part of the fill of an 11th/12th century pit.

Context details	Context No.	26	105
	Sample No.	-	-
	Feature-type	Layer	Pit
	Date	Late 16th c.	11th-12th c
	Avena sp.	-	1
	Rubus idaeus L.	1	-
	Crataegus laevigata (Poiret) D.C.	8	-
	Indet	1	-
Processing details	Sample volume (litres)	1	15
	Processing method	A	A
	% flot sorted	100	100

Table 18: Fruits, seeds etc. from 285N

300N (Lower Close)

Plant remains were recovered from a hollow adjacent to a 12th century kitchen area, from gullies and ditches associated with the earliest phase of the Cathedral, and from underlying layers producing slight evidence for Late Saxon occupation.

The excavated site was on a gravel terrace. No anaerobic sediments were encountered and the plant remains recovered are heavily impregnated with insoluble salts, and badly distorted. Even some of the carbonised cereals are coated with a mineral deposit. Although large volumes of soil were processed (270 litres in the case of layers 156-216) few fruits and seeds were recovered.

Some of the better preserved cereal grains are illustrated in Fig. 7 They differ little from later medieval cereals from the town, although the very short form of the wheat grains should be noted. These fall within a range appropriate for club wheat, but are described in Table as Triticum aestivum sensu lato since there are two few well-preserved specimens for this identification to be certain. The poor preservation of these, and other cereals, makes measurement impossible.

The fruits and seeds of wild plants from the site are all of ruderal species common on most sites in the town, and the carbonised cereals and legumes were probably produced by small-scale accidents during cooking.

Table 19 : Fruits, seeds etc. from 300N (Lower Close)

Context details	Context No.	158-216	223		211	140	102
	Sample No.		(i)	(ii)			
	Feature-type	Layer	Gully		Channel	Ditch	Hollow
	Date	Late Saxon	c. 1097				12th c.
Cereals	Cereal indet.	5	-	-	-	3	51
	Hordeum sp.	1	-	-	-	-	16
	Avena sp.	-	-	-	-	-	31
	Triticum aestivum sl.	-	-	-	-	-	14
	Secale cereale L.	1	-	-	-	1	-
Legume	c.f. Pisum sp.	-	-	-	-	-	1
Fruits	Rubus fruticosus agg.	1	-	-	-	15	-
	Rubus sp.	1	-	-	-	-	-
Nut	Corylus avellana L.	-	-	-	-	-	+
Wild Plants	Raphanus raphanistrum L.	-	-	-	-	-	2
	Stellaria media(L)Vill	-	1	-	-	-	-
	Chenopodium album L.	-	1	1	-	-	-
	Chenopodiaceae indet.	-	-	-	-	-	1
	Conium maculatum L.	3	-	-	-	-	-
	Polygonaceae indet.	-	-	-	-	2	-
	Urtica dioica L.	-	8	-	-	-	-
	Hyoscyamus niger L.	2	-	-	-	2	-
	Solanaceae indet.	-	-	-	-	-	1
	Sambucus nigra L.	165	-	-	4	61	200+
	Indet.	-	1	-	1	-	1
Processing details	Sample volume (litres)	270	0.1	15	15	15	60
	Processing method	A	B	A	A	A	A
	% flot sorted	100	100	100	100	100	100

Site 302N Alms Lane

This site was more intensively sampled than any other of the Norwich sites: 300 samples were taken and seeds were subsequently extracted from most of these by Andrew Jones. Plant remains dating from the 10th/11th century to the 18th century were recovered. (See Table 21 for full details.)

Unfortunately preservation conditions were generally poor; there were no fully anaerobic deposits, and the seeds are therefore preserved by carbonisation or mineralisation. Consequent distortion and subsequent erosion have led to a high proportion of approximate and incomplete identifications. Two well-preserved large deposits are, however, worth examining in detail.

1. Context 925 (Sample 130)

The carbonised plant remains recovered from this 10th/12th century layer are listed in Table 20 and described below.

Descriptions of crop plants

1. Hordeum vulgare L. Barley.

The barley grains are all hulled, and many retain their lemmas and paleas. A few twisted grains from lateral spikelets are present, but symmetrical grains appear to predominate; though distortion during carbonisation makes determination of the proportions of straight and twisted grains difficult. Many grains are under-developed, and a few sterile spikelets, consisting of empty lemmas and paleas are present. The lemma bases are mainly shallow bevels, but some specimens may have nicked bases. Two rachilla types are present: short-medium rachillas with straight hairs, up to 3 mm in length and short. medium rachillas with wooly hairs, up to 2.6 mm.

The rachis internodes appear to be of two types: slender internodes either glabrous or with slight marginal pubescence up to 3.8 mm. in length, and broader internodes with strong marginal pubescence, up to 3 mm. long (cf. Van Zeist 1970, 50). The first rachis segments are short and angular, and the collars are decurrent.

Clearly several 'varieties' are represented, both lax and dense-eared, and possibly both two- and six-row, barleys.

2. Triticum aestivum L. Bread wheat

The caryopses are well-preserved; they are short grains with their maximum width just above the embryo and with rounded ventral cheeks. The apical 'brushes' of hairs survive in several cases.

The rachis internodes have maximum widths of 1.5 mm, and maximum lengths of c. 3.0 mm. Allowing for the effects of carbonisation, these internodes appear to represent a variety of bread wheat; they are much more slender than club wheat internodes (Renfrew 1973, 61).

It is interesting to note that short-grained bread wheat caryopses, like these, could on rapid carbonisation, take up a nearly sperical form. Rapidly carbonised grains of this type are common in the samples from 302N, and are described as Triticum aestivum sensu lato.

3. Secale cereale L. Rye

The rye grains are slender, with abruptly truncated apices and sharply triangular cross-sections.

4. Pisum sativum var arvense (L) Poir. Field peas.

The few specimens in this sample are the best preserved peas from Norwich. In almost every other case, the seeds have lost their testas and hila, and only a more-or-less spherical naked seed or isolated cotyledon is left. Such specimens cannot be closely identified, and therefore are referred to as Pisum - type. In sample 130, however, there are two peas with well-preserved, short, ovate hila, of irregular overall shape. Their dimensions are as follows;

Length	Breadth (across cobyledons)	Hilum length
6.0 mm.	5.4 mm.	1.2 mm.
4.0 mm.	2.9 mm.	1.0 mm.

This sample is basically of hulled barley with a few bread wheat and rye grains and peas as impurities. Large quantities of cereal chaff, seeds and seed-heads of common arable weeds are also present. The sample thus appears to represent part of an unprocessed harvested crop still containing all the impurities which it had when reaped. The presence of bracken frond fragments (Pteridium), ash keys (Fraxinus) and seeds of bogbean (Menyanthes) is not easily explained, but presumably these impurities were introduced after harvesting. The sample probably became carbonised during an accidental fire whilst being stored prior to threshing, and it therefore provides evidence for arable farming in the vicinity at this time.

2. Context 1492 (Sample 226)

The plant remains recovered from this 13th century layer of burnt silty clay on the site of tenement B are listed in Table The carbonised deposit consists mainly of hulled barley with a few grains of wheat, oats and rye. No cereal chaff is present, and there are very few weed seeds. Many of the barley and oat grains, and a seed of Agrostemma githago (corn-cockle) had germinated before being carbonised (Fig), which had caused considerable distortion.

This is a fairly typical, though large, Type 4 deposit, which could either represent cleared grain accidentally burnt during the roasting process after malting or alternatively spoilt grain burnt as refuse.

Hordeum vulgare L.	caryopses	85	
Hordeum vulgare L.	rachis internodes	c.170	
Triticum aestivum L.	caryopses	5	
Triticum aestivum L.	rachis internodes	2	
Secale cereale L.	caryopses	4	
Pisum sativum var. arvense (L) Poir	seeds	6	
Vicia sp.	seed	1	
Pteridium aquilinum (L) Kuhn	frond fragments	+	
Papaver sp.	stigmatic disc	1	frag
Brassica sp.	seed	1	
Raphanus raphanistrun L.	siliqua joints	2	
Silene sp.	seed	1	
Stellaria cf. media (L) Vill	seed	1	
Agrostemma githago L.	seed	1	
Caryophyllaceae indet.	seed	1	
Atriplex patula/hastata	seeds	19	
Rumex sp.	nutlets	5	
Fraxinus excelsior L.	fruits	2	
Menyanthes trifoliata L.	seed	1	
Convolvulus arvensis L.	seed	1	
Veronica hederifolia L.	seeds	7	
Galium sp.	fruit	1	
Sambucus nigra L.	seeds	5	
Centaurea sp.	fruiting head(bracts damaged)	+14	cyps
Cyperaceae indet.	nutlets	4	
Gramineae indet.	caryopses	12	
Indet.	seed capsule frag.	1	
Indet.		16	
Soil volume		15	litr
Processing method		A	

Table 20 : Carbonised plant remains from 302N 925
(Soil sample 130)

Table 21

Fruits, seeds etc. identified in samples from 302N

Notes

1. Contexts. The following abbreviations are used:

Re-dep	Re-deposited
Occ.	Occupation layer
Layer	General layer
Ind.	Industrial
Iron	Layers associated with iron-working
Garden	'Garden soil"
Pot	Sample from inside intact pot

2. Sample 130 (Context 925) is listed separately in Table 20

3. Germinated barley grains are indicated by an asterisk.

4. Occasionally two separate samples from the same context have been processed differently. Details are given.

5. Seeds of Sambucus nigra are present in almost all samples. These were therefore not counted.

302N PHASE 10th-11th century SILT 1.

Context details.	Context no.	896	884	920	896	884-920	884			
	Sample no.	127	131	132	134	164 884	183			
	Feature-type	Re-dep natural	Occ.	Iron working	Layer	Layer	Layer			
Cereals.	Cereal indet.	1	1		1		2			
	Hordeum vulgare L.									
	Hordeum sp.				1		1			
	Triticum aestivum s.l.						1			
	Avena sp.	1					1			
	Secale cereale L.									
	Cereal indet.(rachis frag)									
Legumes	Pisum-type		1							
	Vicia sp. (small)									
Fruits	Ficus carica L.									
	Vitis vinifera L.									
	Sambucus nigra L.	+	+	+	+	+	+			
	Rubus fruticosus agg.									
	Rubus idaeus L.									
	Rubus sp.									
	Prunus sp.									
	Crataegus laevigata(Poir)DC.									
	Malus sylvestris Miller.									
Wild plants.	Papaveraceae indet.									
	Brassica sp.									
	Raphanus raphanistrum L.									
	Silene sp.									
	Agrostemma githago L.									
	Chenopodium album L.									
	Chenopodiaceae indet.									
	Malva sp.									
	Conium maculatum L.									
	Aethusa cynapium L.									
	Umbelliferae indet.									
	Polygonum aviculare agg.									
	Rumex sp.									
	Polygonaceae indet.									
	Menyanthes trifoliata L.									
	Lithospermum arvense L.									
	Convolvulus arvensisL.									
	Hyoscyamus niger L.									
	Atropa bella-donna L.									
	Solanaceae indet.									
	Veronica hederifolia L.									
	Stachys sp.									
	Ballota nigra L.									
	Labiatae indet.									
	Galium aparine L.									
	Centaurea sp.									
	Compositae indet.									
	Cyperaceae indet.									
	Bromus mollis/secalinus.									
	Gramineae indet.									
	Gramineae indet. (culm node)									
	Indeterminate.									
Process. details.	Sample volume (litres)	15	15	15	15	15	15			
	Processing method.	A	A	A	A	A	A			
	% flot sorted.	100	100	100	100	100	100			

Unless otherwise indicated taxa are represented by fruits or seeds.

302N PHASE 10th - 12th century SILT 1.

Context details.	Context no.	924	925								
	Sample no.	129	130*								
	Feature-type	Layer	Layer								
Cereals.	Cereal indet.	7									
	Hordeum vulgare L.										
	Hordeum sp.	3									
	Triticum aestivum s.l.										
	Avena sp.										
	Secale cereale L.										
	Cereal indet.(rachis frag)										
Legumes	Pisum-type										
	Vicia sp. (small)										
Fruits	Ficus carica L.										
	Vitis vinifera L.										
	Sambucus nigra L.	+									
	Rubus fruticosus agg.										
	Rubus idaeus L.										
	Rubus sp.										
	Prunus sp.										
	Crataegus laevigata(Poir)DC.										
	Malus sylvestris Miller.										
Wild plants.	Papaveraceae indet.										
	Brassica sp.	1									
	Raphanus raphanistrum L.										
	Silene sp.										
	Agrostemma githago L.										
	Chenopodium album L.										
	Chenopodiaceae indet.										
	Malva sp.										
	Conium maculatum L.										
	Aethusa cynapium L.										
	Umbelliferae indet.										
	Polygonum aviculare agg.										
	Rumex sp.										
	Polygonaceae indet.										
	Menyanthes trifoliata L.										
	Lithospermum arvense L.	1									
	Convolvulus arvensisL.										
	Hyoscyamus niger L.										
	Atropa bella-donna L.										
	Solanaceae indet.										
	Veronica hederifolia L.										
	Stachys sp.										
	Ballota nigra L.										
	Labiatae indet.										
	Galium aparine L.										
	Centaurea sp.										
	Compositae indet.										
	Cyperaceae indet.										
	Bromus mollis/secalinus.	1									
	Gramineae indet.										
	Gramineae indet. (culm node)										
	Indeterminate. (seed capsule)	1									
Process. details.	Sample volume (litres)	15									
	Processing method.	A									
	% flot sorted.	100									

Unless otherwise indicated taxa are represented by fruits or seeds.

* See Table 20.

302N PHASE 11th. century. SHEET 1

Cont xt details.	Context no.	1378								
	Sample no.	257								
	Feature-type	Ditch.								
Cereals.	Cereal indet.									
	Hordeum vulgare L.									
	Hordeum sp.									
	Triticum aestivum s.l.									
	Avena sp.	1								
	Secale cereale L.									
	Cereal indet.(rachis frag)									
Legumes	Pisum-type									
	Vicia sp. (small)									
Fruits	Ficus carica L.									
	Vitis vinifera L.									
	Sambucus nigra L.	+								
	Rubus fruticosus agg.									
	Rubus idaeus L.									
	Rubus sp.									
	Prunus sp.									
	Crataegus laevigata(Poir)DC.									
	Malus sylvestris Miller.									
Wild plants.	Papaveraceae indet.									
	Brassica sp.									
	Raphanus raphanistrum L.									
	Silene sp.									
	Agrostemma githago L.									
	Chenopodium album L.									
	Chenopodiaceae indet.									
	Malva sp.									
	Conium maculatum L.									
	Aethusa cynapium L.									
	Umbelliferae indet.									
	Polygonum aviculare agg.									
	Rumex sp.									
	Polygonaceae indet.									
	Menyanthes trifoliata L.									
	Lithospermum arvense L.									
	Convolvulus arvensisL.									
	Hyoscyamus niger L.									
	Atropa bella-donna L.									
	Solanaceae indet.									
	Veronica hederifolia L.									
	Stachys sp.									
	Ballota nigra L.									
	Labiatae indet.									
	Galium aparine L.									
	Centaurea sp.									
	Compositae indet.									
	Cyperaceae indet.									
	Bromus mollis/secalinus.									
	Gramineae indet.									
	Gramineae indet. (culm node)									
	Indeterminate.									
Process. details.	Sample volume (litres)	1								
	Processing method.	C								
	% flot sorted.	100								

Unless otherwise indicated taxa are represented by fruits or seeds.

302N PHASE 11th-12th century. SHEET 1

Context details.	Context no.	929/849	711	852	882	849	849				
	Sample no.	68(86)	84	99	120	136	144				
	Feature-type	?	Pit	?	Pit	Occ.	Occ				
Cereals.	Cereal indet.	3	1		3	1	1				
	Hordeum vulgare L.										
	Hordeum sp.	1		1	5	1	1				
	Triticum aestivum s.l.										
	Avena sp.			1	7						
	Secale cereale L.										
	Cereal indet.(rachis frag)										
Legumes	Pisum-type	1	1	1							
	Vicia sp. (small)										
Fruits	Ficus carica L.	1									
	Vitis vinifera L.										
	Sambucus nigra L.	+	+	+	+	+	+				
	Rubus fruticosus agg.						1				
	Rubus idaeus L.										
	Rubus sp.	1				1					
	Prunus sp.										
	Crataegus laevigata(Poir)DC.										
	Malus sylvestris Miller.										
Wild plants.	Papaveraceae indet.										
	Brassica sp.										
	Raphanus raphanistrum L.										
	Silene sp.	9									
	Agrostemma githago L.										
	Chenopodium album L.										
	Chenopodiaceae indet.	2									
	Malva sp.										
	Conium maculatum L.	2									
	Aethusa cynapium L.										
	Umbelliferae indet.										
	Polygonum aviculare agg.										
	Rumex sp.										
	Polygonaceae indet.										
	Menyanthes trifoliata L.										
	Lithospermum arvense L.										
	Convolvulus arvensisL.										
	Hyoscyamus niger L.										
	Atropa bella-donna L.										
	Solanaceae indet.										
	Veronica hederifolia L.										
	Stachys sp.										
	Ballota nigra L.										
	Labiatae indet.	3									
	Galium aparine L.										
	Centaurea sp.										
	Compositae indet.										
	Cyperaceae indet.										
	Bromus mollis/secalinus.				1						
	Gramineae indet.										
	Gramineae indet. (culm node)										
	Indeterminate.	817									
Process. details.	Sample volume (litres)	15	15	15	75	15	15				
	Processing method.	A	A	A	A	A	A				
	% flot sorted.	100	100	100	100	100	100				

Unless otherwise indicated taxa are represented by fruits or seeds.

3028 PHASE 12th - 13th century SHEET 1

Cont xt details.	Context no. Sample no. Feature-type	1504 242 Ind?	1511 243 Ind?	1535 245 Gully	1536 246 Pit	1291 200 Quarry fill	1497 229 Iron working				
Cereals.	Cereal indet.		3	2		1					
	Hord um vulgare L.						1				
	Hordeum sp.										
	Triticum aestivum s.l.					1					
	Avena sp.										
	Secale cereale L.			1		1					
	Cereal indet.(rachis frag)										
Legumes	Pisum-type		1				1				
	Vicia sp. (small)										
Fruits	Ficus carica L.										
	Vitis vinifera L.										
	Sambucus nigra L.	+	+	+	+	+	+				
	Rubus fruticosus agg.										
	Rubus idaeus L.										
	Rubus sp.										
	Prunus sp.										
	Crataegus laevigata(Poir)DC.										
	Malus sylvestris Miller.										
Wild plants.	Papaveraceae indet.										
	Brassica sp.					3					
	Raphanus raphanistrum L.			1							
	Silene sp.										
	Agrostemma githago L.										
	Chenopodium album L.										
	Chenopodiaceae indet.										
	Malva sp.										
	Conium maculatum L.										
	Aethusa cynapium L.										
	Umbelliferae indet.										
	Polygonum aviculare agg.										
	Rumex sp.										
	Polygonaceae indet.										
	Menyanthes trifoliata L.										
	Lithospermum arvense L.										
	Convolvulus arvensisL.										
	Hyoscyamus niger L.										
	Atropa bella-donna L.										
	Solanaceae indet.										
	Veronica hederifolia L.										
	Stachys sp.										
	Ballota nigra L.										
	Labiatae indet.										
	Galium aparine L.										
	Centaurea sp.										
	Compositae indet.										
	Cyperaceae indet.										
	Bromus mollis/secalinus.										
	Gramineae indet.										
	Gramineae indet. (culm node)										
	Indeterminate.			2							
Process. details.	Sample volume (litres)	15	15	15	15	0·1	30				
	Processing method.	A	A	A	A	A	A				
	% flot sorted.	100	100	100	100	100	100				

Unless otherwise indicated taxa are represented by fruits or seeds.

302N PHASE 13th. century SILO T 1

Context details.	Context no.	834	869	873	916	891	975	966	987	987	986	1039
	Sample no.	89	102	104	126	137	140	142	143	145	148	152
	Feature-type		(iron) Hearth	(iron) Pit.	?Floor	Occ?	Pit.	Occ.	Cesspit	Pit	Floor	Hearth
Cereals.	Cereal indet.	1	4	5	4				11	21	2	3
	Hordeum vulgare L.						2					
	Hordeum sp.	1	4		3			2	1	6		5
	Triticum aestivum s.l.	1		2					1	2		1
	Avena sp.		5			1		1	1			7
	Secale cereale L.			3	1					1		1
	Cereal indet.(rachis frag)											
Legumes	Pisum-type			1	1				2		1	
	Vicia sp. (small)											
Fruits	Ficus carica L.											
	Vitis vinifera L.											
	Sambucus nigra L.	+	+	+	+	+	+	+	+	+	+	+
	Rubus fruticosus agg.											
	Rubus idaeus L.											
	Rubus sp.											
	Prunus sp.											
	Crataegus laevigata(Poir)DC.											
	Malus sylvestris Miller.											
Wild plants.	Papaveraceae indet.											
	Brassica sp.								2			
	Raphanus raphanistrum L.											
	Silene sp.											
	Agrostemma githago L.											
	Chenopodium album L.											
	Chenopodiaceae indet.											
	Malva sp.											
	Conium maculatum L.											
	Aethusa cynapium L.											
	Umbelliferae indet.											
	Polygonum aviculare agg.											
	Rumex sp.											
	Polygonaceae indet.											
	Menyanthes trifoliata L.											
	Lithospermum arvense L.								1			
	Convolvulus arvensisL.											
	Hyoscyamus niger L.											
	Atropa bella-donna L.											
	Solanaceae indet.											
	Veronica hederifolia L.											
	Stachys sp.											
	Ballota nigra L.											
	Labiatae indet.			1								
	Galium aparine L.											
	Centaurea sp.											
	Compositae indet.											
	Cyperaceae indet.											
	Bromus mollis/secalinus.											
	Gramineae indet.											
	Gramineae indet. (culm node)											
	Indeterminate.	1	1	1						1		1
Process details.	Sample volume (litres)	15	15	15	15	15	15	15	15	15	12	15
	Processing method.	A	A	A	A	A	A	A	A	A	A	A
	% flot sorted.	100	100	100	100	100	100	100	100	100	100	100

Unless otherwise indicated taxa are represented by fruits or seeds.

302N PHASE 13th century. SILT 2.

Context details.	Context no. / Sample no. / Feature-type	36-324 164 Layer	1039 166 ?	1039 162 Hearth?	1086 180 Pump	966 187 Iron.	1405 195 (Iron) Oven	1078 196 pit.	1406 206 Oven	1490 223 Iron.	1479 224 Iron.	1434 225 Iron
	Cereal indet.		8	6	17	1			2	2	11	1
Cereals.	Hordeum vulgare L.		8		10*							
	Hordeum sp.			3			1		1	3	4	
	Triticum aestivum s.l.		1	2	1			1			1	1
	Avena sp.	1	4	6	3			2				
	Secale cereale L.	1	2									
	Cereal indet.(rachis frag)											
Legumes	Pisum-type										1	
	Vicia sp. (small)											
Fruits	Ficus carica L.											
	Vitis vinifera L.											
	Sambucus nigra L.	+	+	+	+	+	+	+	+	+		+
	Rubus fruticosus agg.											
	Rubus idaeus L.											
	Rubus sp.											
	Prunus sp.											
	Crataegus laevigata(Poir)DC.											
	Malus sylvestris Miller.											
Wild plants.	Papaveraceae indet.											
	Brassica sp.											
	Raphanus raphanistrum L.											
	Silene sp.											
	Agrostemma githago L.											
	Chenopodium album L.				1							
	Chenopodiaceae indet.											
	Malva sp.											
	Conium maculatum L.											
	Aethusa cynapium L.											
	Umbelliferae indet.											
	Polygonum convolvulus L.				1							
	Rumex sp.											
	Polygonaceae indet.											
	Menyanthes trifoliata L.											
	Lithospermum arvense L.				1							
	Convolvulus arvensisL.											
	Hyoscyamus niger L.											
	Atropa bella-donna L.									2		
	Solanaceae indet.				4							
	Veronica hederifolia L.											
	Stachys sp.											
	Ballota nigra L.											
	Labiatae indet.											
	Galium aparine L.											
	Centaurea sp.											
	Compositae indet.											
	Cyperaceae indet.											
	Bromus mollis/secalinus.											
	Gramineae indet.	1			1					1		
	Gramineae indet. (culm node)											
	Indeterminate.	1	1	1	1					2	1	
Process. details.	Sample volume (litres)	15	15	15	15	15	15	8	#1	15	15	1
	Processing method.	A	A	A	A	A	A	A	AC	A	A	C
	% flot sorted.	100	100	100	100	100	100	100	100	100	100	100

Unless otherwise indicated taxa are represented by fruits or seeds.

302N PHASE 13th. century. SHEET 3.

Cont xt details.	Context no. / Sample no. / Feature-type	1466 228 Iron	1477 Iron	2165 253 Iron	2168 285 Iron	2166 287 Iron	2172 288 Iron	2191 290 Iron	2195 291 Iron	2209 292 Iron	2172 293 Iron Furnace
Cereals.	Cereal indet.			·		11		1	1	4	
	Hordeum vulgare L.										
	Hordeum sp.			2		12		7		1	
	Triticum aestivum s.l.							1	1		1
	Avena sp.							1			
	Secale cereale L.										
	Cereal indet.(rachis frag)										
Legumes	Pisum-type										
	Vicia sp. (small)							1			
Fruits	Ficus carica L.										
	Vitis vinifera L.										
	Sambucus nigra L.	+		+	+		+	+		+	+
	Rubus fruticosus agg.										
	Rubus idaeus L.										
	Rubus sp.			1							
	Prunus sp.										
	Crataegus laevigata(Poir)DC.										
	Malus sylvestris Miller.										
Wild plants.	Papaveraceae indet.										
	Brassica sp.										
	Raphanus raphanistrum L.										
	Silene sp.										
	Agrostemma githago L.										
	Chenopodium album L.										
	Chenopodiaceae indet.										
	Malva sp.										
	Conium maculatum L.			3							
	Aethusa cynapium L.										
	Umbelliferae indet.										
	Polygonum aviculare agg.										
	Rumex sp.										
	Polygonaceae indet.							1			
	Menyanthes trifoliata L.										
	Lithospermum arvense L.										
	Convolvulus arvensisL.										
	Hyoscyamus niger L.										
	Atropa bella-donna L.										
	Solanaceae indet.										
	Veronica hederifolia L.										
	Stachys sp.										
	Ballota nigra L.										
	Labiatae indet.			3							
	Galium aparine L.										
	Centaurea sp.										
	Compositae indet.										
	Cyperaceae indet.										
	Bromus mollis/secalinus.							1			
	Gramineae indet.										
	Gramineae indet. (culm node)										
	Indeterminate.										
Process. details.	Sample volume (litres)	1	1	1	1	1	1	1	1	1	
	Processing method.	C	C	C	C	C	C	C	C	C	
	flot sorted.	100	100	100	100	100	100	100	100	100.	

Unless otherwise indicated taxa are represented by fruits or seeds.

302N PHASE 13th - 15th century. SHEET 1

Context details.	Context no.	213	742	213	832	272	275	272-326	1083	2167
	Sample no.	63	75	77	88	106	138	164	197	284
	Feature-type	?	Pit	?Wall	?	Occ.	?Floor	Layer	Build-up.	Pit
Cereals.	Cereal indet.	20	10	1	2	11	6		2	7
	Hordeum vulgare L.			1		12				
	Hordeum sp.	7	5				4	3	6	3
	Triticum aestivum s.l.	5	9	1	1	1				
	Avena sp.	1								
	Secale cereale L.	5				3	1	1	1	2
	Cereal indet.(rachis frag)									
Legumes	Pisum-type	4	2	2		2	3			
	Vicia sp. (small)	1				1				
Fruits	Ficus carica L.									
	Vitis vinifera L.									
	Sambucus nigra L.	+	+	+	+	+	+	+	+	+
	Rubus fruticosus agg.									
	Rubus idaeus L.									
	Rubus sp.							3		
	Prunus sp.									
	Crataegus laevigata(Poir)DC.									
	Malus sylvestris Miller.									
Wild plants.	Papaveraceae indet.									
	Brassica sp.									2
	Raphanus raphanistrum L.									
	Silene sp.									
	Agrostemma githago L.									
	Chenopodium album L.									
	Chenopodiaceae indet.									
	Malva sp.									
	Conium maculatum L.									
	Aethusa cynapium L.									
	Umbelliferae indet.									
	Polygonum aviculare agg.									
	Rumex sp.									
	Polygonaceae indet.									
	Menyanthes trifoliata L.									
	Lithospermum arvense L.							1		
	Convolvulus arvensisL.									2
	Hyoscyamus niger L.									
	Atropa bella-donna L.									
	Solanaceae indet.									
	Veronica hederifolia L.									
	Stachys sp.									
	Ballota nigra L.									
	Labiatae indet.									
	Galium aparine L.									
	Centaurea sp.									
	Compositae indet.									
	Cyperaceae indet.									1
	Bromus nollis/secalinus.									5
	Gramineae indet.							2		
	Gramineae indet. (culm node)									
	Indeterminate.		1		1	1				1
Process details.	Sample volume (litres)	15	15	15	15	15	15	15	15	1
	Processing method.	A	A	A	A	A	A	A	A	C
	% flot sorted.	100	100	100	100	100	100	100	100	100

Unless otherwise indicated taxa are represented by fruits or seeds.

302N PHASE 14th. century SILT 1.

Context details.	Context no.	492	492	1460	1520	1563	1639	1527		
	Sample no.	150	156	202	241	248	251	252		
	Feature-type	Occ.	Occ.	Ynd.	Pit.	Occ.	Floor	Build-up.		
Cereals.	Cereal indet.	2	2	2	2		1			
	Hordeum vulgare L.		5							
	Hordeum sp.	1			5					
	Triticum aestivum s.l.		2		1					
	Avena sp.									
	Secale cereale L.				1					
	Cereal indet.(rachis frag)									
Legumes	Pisum-type		2							
	Vicia sp. (small)		1							
Fruits	Ficus carica L.		1							
	Vitis vinifera L.									
	Sambucus nigra L.	+	+	+	+	+	+	+		
	Rubus fruticosus agg.									
	Rubus idaeus L.									
	Rubus sp.	1								
	Prunus sp.									
	Crataegus laevigata(Poir)DC.									
	Malus sylvestris Miller.									
Wild plants.	Papaveraceae indet.									
	Brassica sp.									
	Raphanus raphanistrum L.									
	Silene sp.									
	Agrostemma githago L.									
	Chenopodium album L.									
	Chenopodiaceae indet.									
	Malva sp.									
	Conium maculatum L.									
	Aethusa cynapium L.									
	Umbelliferae indet.									
	Polygonum aviculare agg.									
	Rumex sp.									
	Polygonaceae indet.									
	Menyanthes trifoliata L.									
	Lithospermum arvense L.									
	Convolvulus arvensisL.									
	Hyoscyamus niger L.									
	Atropa bella-donna L.									
	Solanaceae indet.									
	Veronica hederifolia L.									
	Stachys sp.									
	Ballota nigra L.									
	Labiatae indet.									
	Galium aparine L.		1		1					
	Centaurea sp.									
	Compositae indet.									
	Cyperaceae indet.									
	Bromus mollis/secalinus.									
	Gramineae indet.									
	Gramineae indet. (culm node)									
	Indeterminate		1		1		1			
Process. details.	Sample volume (litres)	15	15	0.1	14	1	1	1	1	
	Processing method.	A	A	A	A	C	C	C	C	
	% flot sorted.	100	100	100	100	100	100	100	100	

Unless otherwise indicated taxa are represented by fruits or seeds.

302N PHASE 14R/15th.C. SILT 1.

Context details.	Context no. / Sample no. / Feature-type	208 / 29. / Cobble wall	732 / 72 / Kerb wall	761 / 81 / Build-up	828 / 86 / Build-up	937 / 141 / Pit.	1067 / 149 / Floor?	1080 / 182 / Floor.	1034 / 198 / Build-up	1786 / 209 / Floor	1788 / 211 / Build-up	1781 / 218 / Build-up
Cereals.	Cereal indet.		6	22	8	19		•		1	7	7
	Hordeum vulgare L.			21								
	Hordeum sp.		2			20					3	1
	Triticum aestivum s.l.			3	5	3	1				1	4
	Avena sp.			2	3				1			
	Secale cereale L.			1	1	1						
	Cereal indet.(rachis frag)											
Legumes	Pisum-type	1	1	1	20	2						2
	Vicia sp. (small)											
Fruits	Ficus carica L.	1										
	Vitis vinifera L.										1	
	Sambucus nigra L.	+	+	+	+	+		+		+	+	+
	Rubus fruticosus agg.											
	Rubus idaeus L.											
	Rubus sp.											
	Prunus sp.											
	Crataegus laevigata(Poir)DC.											
	Malus sylvestris Miller.					1						
Wild plants.	Papaveraceae indet.											
	Brassica sp.										1	
	Raphanus raphanistrum L.											
	Silene sp.											
	Agrostemma githago L.											
	Chenopodium album L.											
	Chenopodiaceae indet.											
	Malva sp.											
	Conium maculatum L.											
	Aethusa cynapium L.											
	Umbelliferae indet.											
	Polygonum aviculare agg.											
	Rumex sp.											
	Polygonaceae indet.											
	Menyanthes trifoliata L.											
	Lithospermum arvense L.											
	Convolvulus arvensisL.											
	Hyoscyamus niger L.											
	Atropa bella-donna L.											
	Solanaceae indet.											
	Veronica hederifolia L.											
	Stachys sp.											
	Ballota nigra L.											
	Labiatae indet.											
	Galium aparine L.				1							
	Centaurea sp.											
	Compositae indet.											
	Cyperaceae indet.											
	Bromus mollis/secalinus.											
	Gramineae indet.								1			
	Gramineae indet. (culm node)											
	Indeterminate.					3						
Process. details.	Sample volume (litres)	15	15	15	15	15	1	15	1	10	15	15
	Processing method.	A	A	A	A	A	A	A	C	A	A	A
	% flot sorted.	100	100	100	100	100	100	100	100	100	100	100

Unless otherwise indicated taxa are represented by fruits or seeds.

302N PHASE 14th/15th c. SILT 2.

Context details.	Context no.	1781	1788	1995	2043	2160	2126	2060		
	Sample no.	238	253	269	272	286	294	297		
	Feature-type	Dump/occ. levels	Build-up	Horizon	Build-up	Build-up	Build-up	Build-up		
Cereals.	Cereal indet.	4	1		1	.	1	1		
	Hordeum vulgare L.									
	Hordeum sp.	4	1		1	1	3			
	Triticum aestivum s.l.									
	Avena sp.			1						
	Secale cereale L.						2			
	Cereal indet.(rachis frag)									
Legumes	Pisum-type			1	1	2	1			
	Vicia sp. (small)									
Fruits	Ficus carica L.									
	Vitis vinifera L.					1				
	Sambucus nigra L.	+	+	+	+	+				
	Rubus fruticosus agg.									
	Rubus idaeus L.									
	Rubus sp.									
	Prunus sp.									
	Crataegus laevigata(Poir)DC.									
	Malus sylvestris Miller.									
Wild plants.	Papaveraceae indet.									
	Brassica sp.		1							
	Raphanus raphanistrum L.									
	Silene sp.									
	Agrostemma githago L.									
	Chenopodium album L.									
	Chenopodiaceae indet.									
	Malva sp.									
	Conium maculatum L.									
	Aethusa cynapium L.									
	Umbelliferae indet.									
	Polygonum aviculare agg.									
	Rumex sp.									
	Polygonaceae indet.									
	Menyanthes trifoliata L.									
	Lithospermum arvense L.									
	Convolvulus arvensisL.									
	Hyoscyamus niger L.									
	Atropa bella-donna L.									
	Solanaceae indet.									
	Veronica hederifolia L.									
	Stachys sp.									
	Ballota nigra L.									
	Labiatae indet.									
	Galium aparine L.									
	Centaurea sp.									
	Compositae indet.									
	Cyperaceae indet.									
	Bromus mollis/secalinus.									
	Gramineae indet.	2					2	1		
	Gramineae indet. (culm node)									
	Indeterminate.									
Process. details.	Sample volume (litres)	1	1	1	1	1	1	1		
	Processing method.	C	C	C	C	C	C	C		
	% flot sorted.	100	100	100	100	100	100	100		
Interpretation: Category.										

Unless otherwise indicated taxa are represented by fruits or seeds.

302N PHASE 15th. century SILT 1 295 Arms Lane

Context details.	Context no.	472	1146	1800	552	552	913			
	Sample no.	115	174	214	244	249	259			
	Feature-type	?	Pit.	Build-up	Ind.	Occ.	Build-up			
Cereals.	Cereal indet.	1	2	2	1		2			
	Hordeum vulgare L.									
	Hordeum sp.		4			3				
	Triticum aestivum s.l.	1	1							
	Avena sp.									
	Secale cereale L.		2							
	Cereal indet.(rachis frag)									
Legumes	Pisum-type		1			1				
	Vicia sp. (small)									
Fruits	Ficus carica L.									
	Vitis vinifera L.									
	Sambucus nigra L.	+	+		+	+	+			
	Rubus fruticosus agg.									
	Rubus idaeus L.									
	Rubus sp.									
	Prunus sp.									
	Crataegus laevigata(Poir)DC.									
	Malus sylvestris Miller.									
Wild plants.	Papaveraceae indet.					1				
	Brassica sp.		1							
	Raphanus raphanistrum L.									
	Silene sp.									
	Agrostemma githago L.									
	Chenopodium album L.									
	Chenopodiaceae indet.									
	Malva sp.									
	Conium maculatum L.									
	Aethusa cynapium L.									
	Umbelliferae indet.									
	Polygonum aviculare agg.									
	Rumex sp.									
	Polygonaceae indet.									
	Menyanthes trifoliata L.									
	Lithospermum arvense L.									
	Convolvulus arvensisL.									
	Hyoscyamus niger L.									
	Atropa bella-donna L.									
	Solanaceae indet.									
	Veronica hederifolia L.									
	Stachys sp.									
	Ballota nigra L.									
	Labiatae indet.									
	Galium aparine L.									
	Centaurea sp.									
	Compositae indet.									
	Cyperaceae indet.					1				
	Bromus mollis/secalinus.									
	Gramineae indet.									
	Gramineae indet. (culm node)									
	Indeterminate.		1			1				
Process. details.	Sample volume (litres)	16	15	1	15	1	1			
	Processing method.	A	A	C	A	C	C			
	% flot sorted.	100	100	100	100	100	100			

Unless otherwise indicated taxa are represented by fruits or seeds.

302N PHASE Late 15th/16th century SHEET 1

Context details.											
	Context no.	428	470	481	480	494					
	Sample no.	105	111	113	116.	151					
	Feature-type	Floor?	Hearth	Hearth	Occ.	Occ					
Cereals.	Cereal indet.	8	2	2							
	Hordeum vulgare L.										
	Hordeum sp.	4				2					
	Triticum aestivum s.l.	5									
	Avena sp.		1								
	Secale cereale L.										
	Cereal indet.(rachis frag)										
Legumes	Pisum-type	2	1								
	Vicia sp. (small)										
Fruits	Ficus carica L.	2									
	Vitis vinifera L.										
	Sambucus nigra L.	+	+	+	+	+					
	Rubus fruticosus agg.										
	Rubus idaeus L.										
	Rubus sp.										
	Prunus sp.										
	Crataegus laevigata(Poir)DC.										
	Malus sylvestris Miller.										
Wild plants.	Papaveraceae indet.										
	Brassica sp.										
	Raphanus raphanistrum L.										
	Silene sp.										
	Agrostemma githago L.										
	Chenopodium album L.										
	Chenopodiaceae indet.										
	Malva sp.										
	Conium maculatum L.										
	Aethusa cynapium L.										
	Umbelliferae indet.										
	Polygonum aviculare agg.										
	Rumex sp.										
	Polygonaceae indet.										
	Menyanthes trifoliata L.										
	Lithospermum arvense L.										
	Convolvulus arvensisL.										
	Hyoscyamus niger L.										
	Atropa bella-donna L.										
	Solanaceae indet.	1			3						
	Veronica hederifolia L.										
	Stachys sp.										
	Ballota nigra L.										
	Labiatae indet.										
	Galium aparine L.										
	Centaurea sp.										
	Compositae indet.										
	Cyperaceae indet.										
	Bromus mollis/secalinus.										
	Gramineae indet.										
	Gramineae indet. (culm node)										
	Indeterminate.										
Process. details.	Sample volume (litres)	15	30	15	15	15					
	Processing method.	A	A	A	A	A					
	% flot sorted.	100	100	100	100	100					

Unless otherwise indicated taxa are represented by fruits or seeds.

302N PHASE Early 16th century SILT 1

ontext etails.	Context no.	373	375	362	373	349	402	402	467	474	429	471	1
	Sample no.	10	11	14.	20	23	38	39	90	91	110	163	2
	Feature-type	Occ.	Occ.	Garden	Garden	Occ.	Occ.	Occ.	Pit	Pit	Floor?	Occ.	B
	Cereal indet.	6	5	2	1				1	1	1	3	
reals.	Hordeum vulgare L.												
	Hordeum sp.	4	7	3				1		1	1		
	Triticum aestivum s.l.			1						2			
	Avena sp.	1	3	1					1	1		1	
	Secale cereale L.											1	
	Cereal indet.(rachis frag)												
egumes	Pisum-type	2	1	1			1	1	12.		1		
	Vicia sp. (small)												
ruits	Ficus carica L.				1	4							
	Vitis vinifera L.												
	Sambucus nigra L.	+	+	+	+	+	+	+	+	+	+	+	
	Rubus fruticosus agg.												
	Rubus idaeus L.												
	Rubus sp.												
	Prunus sp.												
	Crataegus laevigata(Poir)DC.												
	Malus sylvestris Miller.												
ild	Papaveraceae indet.							1				1	
lants.	Brassica sp.		1		2								
	Raphanus raphanistrum L.												
	Silene sp.												
	Agrostemma githago L.												
	Chenopodium album L.												
	Chenopodiaceae indet.												
	Malva sp.												
	Conium maculatum L.												
	Aethusa cynapium L.												
	Umbelliferae indet.												
	Polygonum aviculare agg.	1											
	Rumex sp.												
	Polygonaceae indet.	1											
	Menyanthes trifoliata L.												
	Lithospermum arvense L.												
	Convolvulus arvensisL.												
	Hyoscyamus niger L.												
	Atropa bella-donna L.	81			23								
	Solanaceae indet.			3			3	3	1				
	Veronica hederifolia L.												
	Stachys sp.												
	Ballota nigra L.												
	Labiatae indet.		1									1	
	Galium aparine L.												
	Centaurea sp.												
	Compositae indet.												
	Cyperaceae indet.												
	Bromus mollis/secalinus.												
	Gramineae indet.												
	Gramineae indet. (culm node)												
	Indeterminate.	5	9	1									
rocess.	Sample volume (litres)	15	15	15	15	15	15	15	15	15	15	15	
etails.	Processing method.	A	A	A	A	A	A	A	A	A	A	A	
	% flot sorted.	100	100	100	100.	100.	100	100	100	100	100	100	

Unless otherwise indicated taxa are represented by fruits or seeds.

302N PHASE Early 16th. century SILT 2.

Cont xt details.	Context no.	2128									
	Sample no.	281									
	Feature-type	Hearth?									
Cereals.	Cereal indet.	1									
	Hordeum vulgare L.										
	Hordeum sp.	1									
	Triticum aestivum s.l.										
	Avena sp.										
	Secale cereale L.										
	Cereal indet.(rachis frag)										
Legumes	Pisum-type										
	Vicia sp. (small)										
Fruits	Ficus carica L.										
	Vitis vinifera L.										
	Sambucus nigra L.										
	Rubus fruticosus agg.										
	Rubus idaeus L.										
	Rubus sp.										
	Prunus sp.										
	Crataegus laevigata(Poir)DC.										
	Malus sylvestris Miller.										
Wild plants.	Papaveraceae indet.										
	Brassica sp.										
	Raphanus raphanistrum L.										
	Silene sp.										
	Agrostemma githago L.										
	Chenopodium album L.										
	Chenopodiaceae indet.										
	Malva sp.										
	Conium maculatum L.										
	Aethusa cynapium L.										
	Umbelliferae indet.										
	Polygonum aviculare agg.										
	Rumex sp.										
	Polygonaceae indet.										
	Menyanthes trifoliata L.										
	Lithospermum arvense L.										
	Convolvulus arvensisL.										
	Hyoscyamus niger L.										
	Atropa bella-donna L.										
	Solanaceae indet.										
	Veronica hederifolia L.										
	Stachys sp.										
	Ballota nigra L.										
	Labiatae indet.										
	Galium aparine L.										
	Centaurea sp.										
	Compositae indet.										
	Cyperaceae indet.										
	Bromus mollis/secalinus.										
	Gramineae indet.										
	Gramineae indet. (culm node)										
	Indeterminate.	1									
Process. details.	Sample volume (litres)	1									
	Processing method.	C									
	% flot sorted.	100									

Unless otherwise indicated taxa are represented by fruits or seeds.

302N PHASE 16th century. SHEET 1

Context details.	Context no.	652	820	1157	1230	1301	1830				
	Sample no.	49	87	173	176	236	254				
	Feature-type	Rubbish heap	?	Pit	Well	Pit	Building				
Cereals.	Cereal indet.	1	3		2	3					
	Hordeum vulgare L.					1	1				
	Hordeum sp.	3	1	2	1	2					
	Triticum aestivum s.l.										
	Avena sp.	1									
	Secale cereale L.										
	Cereal indet.(rachis frag)	1									
Legumes	Pisum-type	1	4								
	Vicia sp. (small)					1					
Fruits	Ficus carica L.			15							
	Vitis vinifera L.										
	Sambucus nigra L.	+	+	+			+				
	Rubus fruticosus agg.										
	Rubus idaeus L.										
	Rubus sp.										
	Prunus sp.										
	Crataegus laevigata(Poir)DC.										
	Malus sylvestris Miller.			2							
Wild plants.	Papaveraceae indet.										
	Brassica sp.										
	Raphanus raphanistrum L.										
	Silene sp.										
	Agrostemma githago L.										
	Chenopodium album L.										
	Chenopodiaceae indet.					1					
	Malva sp.										
	Conium maculatum L.										
	Aethusa cynapium L.										
	Umbelliferae indet.										
	Polygonum aviculare agg.										
	Rumex sp.										
	Polygonaceae indet.										
	Menyanthes trifoliata L.										
	Lithospermum arvense L.										
	Convolvulus arvensisL.										
	Hyoscyamus niger L.										
	Atropa bella-donna L.										
	Solanaceae indet.										
	Veronica hederifolia L.										
	Stachys sp.										
	Ballota nigra L.										
	Labiatae indet.										
	Galium aparine L.										
	Centaurea sp.										
	Compositae indet.										
	Cyperaceae indet.										
	Bromus mollis/secalinus.										
	Gramineae indet.										
	Gramineae indet. (culm node)										
	Indeterminate.				1						
Process details.	Sample volume (litres)	15	15	15	15	1	1				
	Processing method.	A	A	A	A	C	C				
	% flot sorted.	100	100	100	100	100	100				

Unless otherwise indicated taxa are represented by fruits or seeds.

302N PHASE Late 16th century. SILT 1

Context details.	Context no.	344	338	226	34	243	281	222	212	287	1790	1314
	Sample no.	3	15	15	25 -28	32	30	42	42	48	213	237
	Feature-type	Occ.	Garden	Cesspit	Cesspit	Cesspit	Cesspit	Cesspit	Cesspit	Cesspit	Ash.	Ash.
Cereals.	Cereal indet.	21	6		18	4			3	8		6
	Hordeum vulgare L.				16	5						
	Hordeum sp.	6	14		7		1	1	2	10		3
	Triticum aestivum s.l.		2		1	4		2	4	1		
	Avena sp.		3				1			1		
	Secale cereale L.				26	2	1		1			
	Cereal indet.(rachis frag)											
Legumes	Pisum-type		5		1		1		4			
	Vicia sp. (small)											1
Fruits	Ficus carica L.	1			124	284				1		
	Vitis vinifera L.				5	5						
	Sambucus nigra L.	+	+		+	+	+		+	+		
	Rubus fruticosus agg.				86	58			3			
	Rubus idaeus L.											
	Rubus sp.	2										
	Prunus sp.				1							
	Crataegus laevigata(Poir)DC.											
	Malus sylvestris Miller.	1			3	5						
Wild plants.	Papaveraceae indet.											
	Brassica sp.											
	Raphanus raphanistrum L.											
	Silene sp.											
	Agrostemma githago L.											
	Chenopodium album L.										2	
	Chenopodiaceae indet.	1										
	Malva sp.											
	Conium maculatum L.											
	Aethusa cynapium L.											
	Umbelliferae indet.											
	Polygonum aviculare agg.											
	Rumex sp.	4										
	Polygonaceae indet.	1										
	Menyanthes trifoliata L.	1										
	Lithospermum arvense L.											
	Convolvulus arvensisL.											
	Hyoscyamus niger L.											
	Atropa bella-donna L.											
	Solanaceae indet.	2										
	Veronica hederifolia L.											
	Stachys sp.											
	Ballota nigra L.											
	Labiatae indet.											
	Galium aparine L.											
	Centaurea sp.											
	Compositae indet.											3
	Cyperaceae indet.											
	Bromus mollis/secalinus.											
	Gramineae indet.											2
	Gramineae indet. (culm node)											2
	Indeterminate.	5	2		3	1	1					1
Process details.	Sample volume (litres)	15	15	45	180	30	15	15	15	15	0.1	1
	Processing method.	A	A		A	A	A	A	A	A	A	C
	% flot sorted.	100	100		100	100	100	100	100	100	100	100

Unless otherwise indicated taxa are represented by fruits or seeds.

302N PHASE late 16th-17th c. SILT 1.

ontext etails.	Context no.	93	487	727
	Sample no.	13	114	69.
	Feature-type	Garden	Garden	Pit.
creals.	Cereal indet.	3	1	10
	Hordeum vulgare L.			
	Hordeum sp.	1	3	4
	Triticum aestivum s.l.			1
	Avena sp.			2
	Secale cereale L.			
	Cereal indet.(rachis frag)			
egumes	Pisum-type	1	3	2
	Vicia sp. (small)			
ruits	Ficus carica L.			5
	Vitis vinifera L.			
	Sambucus nigra L.	+	+	+
	Rubus fruticosus agg.			
	Rubus idaeus L.			
	Rubus sp.			
	Prunus sp.			
	Crataegus laevigata(Poir)DC.			
	Malus sylvestris Miller.			
ild plants.	Papaveraceae indet.			
	Brassica sp.			
	Raphanus raphanistrum L.			
	Silene sp.			
	Agrostemma githago L.			
	Chenopodium album L.			
	Chenopodiaceae indet.			
	Malva sp.			
	Conium maculatum L.			
	Aethusa cynapium L.			
	Umbelliferae indet.			
	Polygonum aviculare agg.			
	Rumex sp.			
	Polygonaceae indet.			
	Menyanthes trifoliata L.			
	Lithospermum arvense L.			
	Convolvulus arvensisL.			
	Hyoscyamus niger L.			
	Atropa bella-donna L.			
	Solanaceae indet.			
	Veronica hederifolia L.			
	Stachys sp.			
	Ballota nigra L.			
	Labiatae indet.			
	Galium aparine L.			
	Centaurea sp.			
	Compositae indet.			
	Cyperaceae indet.			
	Bromus mollis/secalinus.			
	Gramineae indet.			
	Gramineae indet. (culm node)			
	Indeterminate.			1*
Process. details.	Sample volume (litres)	15	15	
	Processing method.	A	A	
	% flot sorted.	100	100	

Unless otherwise indicated taxa are represented by fruits or seeds.

* Appears to be a clove of ?garlic or other species of the Liliaceae (G C Hillman)

302N PHASE 17th. century. SHEET 1

ontext etails.	Context no.	95	97	184	372	95	610	221	694	864	862	936	P
	Sample no.	1	2	5	12	16	51	54	94	97	101	135	L
	Feature-type	Floor	Floor	Flushing fine layer	Cellar Pit	Garden	Cesspit	Oven	Pit	Oven	Pit	Pit	
	Cereal indet.	1	1		11		5				5	4	
ereals.	Hordeum vulgare L.												
	Hordeum sp.				4		9			1	2	3	
	Triticum aestivum s.l.				2		1		1			1	
	Avena sp.								•			1	
	Secale cereale L.						1						
	Cereal indet.(rachis frag)												
egumes	Pisum-type												
	Vicia sp. (small)								1			1	
ruits	Ficus carica L.				1		3					1	
	Vitis vinifera L.												
	Sambucus nigra L.		+	+	+		+	+	+		+	+	
	Rubus fruticosus agg.			1	14		21				8	1	
	Rubus idaeus L.												
	Rubus sp.	1		1									
	Prunus sp.												
	Crataegus laevigata(Poir)DC.				1								
	Malus sylvestris Miller.						1				1	2	
ild	Papaveraceae indet.												
lants.	Brassica sp.							1					
	Raphanus raphanistrum L.												
	Silene sp.												
	Agrostemma githago L.												
	Chenopodium album L.												
	Chenopodiaceae indet.												
	Malva sp.												
	Conium maculatum L.												
	Aethusa cynapium L.						1						
	Umbelliferae indet.												
	Polygonum aviculare agg.												
	Rumex sp.												
	Polygonaceae indet.				1	2							
	Menyanthes trifoliata L.												
	Lithospermum arvense L.												
	Convolvulus arvensisL.												
	Hyoscyamus niger L.												
	Atropa bella-donna L.												
	Solanaceae indet.												
	Veronica hederifolia L.												
	Stachys sp.												
	Ballota nigra L.												
	Labiatae indet.												
	Galium aparine L.												
	Centaurea sp.												
	Compositae indet.												
	Cyperaceae indet.												
	Bromus mollis/secalinus.												
	Gramineae indet.												
	Gramineae indet. (culm node)												
	Indeterminate.	1			1							2	
Process.	Sample volume (litres)	15 30	15	7	15	15	15	15	15	0.1	15	15	
etails.	Processing method.	A	A	A	A	A	A	A	A	A	A	A	
	% flot sorted.	100	100	100	100	100	100	100	100	100	100	100	

Unless otherwise indicated taxa are represented by fruits or seeds.

302N PHASE 17th. century SHEET 2.

Cont xt details.	Context no.	221	1869								
	Sample no.	165	300								
	Feature-type	Oven	Cess Pit								
Cereals.	Cereal indet.	2									
	Hordeum vulgare L.										
	Hordeum sp.	2	1								
	Triticum aestivum s.l.										
	Avena sp.										
	Secale cereale L.	1									
	Cereal indet.(rachis frag)										
Legumes	Pisum-type										
	Vicia sp. (small)										
Fruits	Ficus carica L.										
	Vitis vinifera L.										
	Sambucus nigra L.	+									
	Rubus fruticosus agg.										
	Rubus idaeus L.										
	Rubus sp.										
	Prunus sp.										
	Crataegus laevigata(Poir)DC.										
	Malus sylvestris Miller.										
Wild plants.	Papaveraceae indet.										
	Brassica sp.										
	Raphanus raphanistrum L.										
	Silene sp.										
	Agrostemma githago L.										
	Chenopodium album L.										
	Chenopodiaceae indet.										
	Malva sp.										
	Conium maculatum L.										
	Aethusa cynapium L.										
	Umbelliferae indet.										
	Polygonum aviculare agg.										
	Rumex sp.										
	Polygonaceae indet.										
	Menyanthes trifoliata L.										
	Lithospermum arvense L.										
	Convolvulus arvensisL.										
	Hyoscyamus niger L.										
	Atropa bella-donna L.										
	Solanaceae indet.										
	Veronica hederifolia L.										
	Stachys sp.										
	Ballota nigra L.										
	Labiatae indet.										
	Galium aparine L.										
	Centaurea sp.										
	Compositae indet.										
	Cyperaceae indet.	2									
	Bromus nollis/secalinus.										
	Gramineae indet.										
	Gramineae indet. (culm node)										
	Indeterminate.		2								
Process. details.	Sample volume (litres)	15	1								
	Processing method.	A	C								
	% flot sorted.	100	100								

Unless otherwise indicated taxa are represented by fruits or seeds.

302N - PHASE 18th. century SILT 1

Context details.	Context no.	214									
	Sample no.	21									
	Feature-type	Occ.									
Cereals.	Cereal indet.	1									
	Hordeum vulgare L.										
	Hordeum sp.										
	Triticum aestivum s.l.	3									
	Avena sp.										
	Secale cereale L.										
	Cereal indet.(rachis frag)										
Legumes	Pisum-type										
	Vicia sp. (small)										
Fruits	Ficus carica L.										
	Vitis vinifera L.										
	Sambucus nigra L.	+									
	Rubus fruticosus agg.										
	Rubus idaeus L.										
	Rubus sp.	1									
	Prunus sp.										
	Crataegus laevigata(Poir)DC.										
	Malus sylvestris Miller.										
Wild plants.	Papaveraceae indet.										
	Brassica sp.										
	Raphanus raphanistrum L.										
	Silene sp.										
	Agrostemma githago L.										
	Chenopodium album L.										
	Chenopodiaceae indet.										
	Malva sp.										
	Conium maculatum L.										
	Aethusa cynapium L.										
	Umbelliferae indet.										
	Polygonum aviculare agg.										
	Rumex sp.										
	Polygonaceae indet.										
	Menyanthes trifoliata L.										
	Lithospermum arvense L.										
	Convolvulus arvensisL.										
	Hyoscyamus niger L.										
	Atropa bella-donna L.										
	Solanaceae indet.										
	Veronica hederifolia L.										
	Stachys sp.										
	Ballota nigra L.										
	Labiatae indet.										
	Galium aparine L.										
	Centaurea sp.										
	Compositae indet.										
	Cyperaceae indet.										
	Bromus mollis/secalinus.										
	Gramineae indet.										
	Gramineae indet. (culm node)										
	Indeterminate.										
Process. details.	Sample volume (litres)	5									
	Processing method.	A									
	% flot sorted.	100									

Unless otherwise indicated taxa are represented by fruits or seeds.

302N ~ PHASE Undated Features. SHEET 1.

ontext etails.	Context no.	147	601	659	716/729	724	225	688	728	729	753	851	9
	Sample no.	46	48	65	68	68	68	68	70	71	76	93	12
	Feature-type	Pit	Pit	Build-up	Build-up	Build-up	Build-up	Build-up	Hearth	Hearth	Floor	Pit/Ditch	
ereals.	Cereal indet.		16	3	7	11	7	21	42	2	15	4	
	Hordeum vulgare L.	5				18	14						
	Hordeum sp.		61	3	5			13	43		3	1	
	Triticum aestivum s.l.	6	8	2		1	1	1	4	2	2		
	Avena sp.		6	1			2	1			2	2	
	Secale cereale L.		7						17	2			
	Cereal indet.(rachis frag)								1				
egumes	Pisum-type		R			3			1	8		1	
	Vicia sp. (small)		2			1							
ruits	Ficus carica L.	7	1		1	9	3	62		1			
	Vitis vinifera L.		1										
	Sambucus nigra L.	+	+	+	+	+	+	+	+	+	+	+	
	Rubus fruticosus agg.	182				5	3	3					
	Rubus idaeus L.												
	Rubus sp.												
	Prunus sp.												
	Crataegus laevigata(Poir)DC.												
	Malus sylvestris Miller.												
Wild plants.	Papaveraceae indet.												
	Brassica sp.											1	
	Raphanus raphanistrum L.						1						
	Silene sp.												
	Agrostemma githago L.												
	Chenopodium album L.												
	Chenopodiaceae indet.												
	Malva sp.												
	Conium maculatum L.		1										
	Aethusa cynapium L.				1								
	Umbelliferae indet.								1				
	Polygonum aviculare agg.												
	Rumex sp.												
	Polygonaceae indet.												
	Menyanthes trifoliata L.												
	Lithospermum arvense L.												
	Convolvulus arvensisL.												
	Hyoscyamus niger L.												
	Atropa bella-donna L.												
	Solanaceae indet.							1					
	Veronica hederifolia L.					1							
	Stachys sp.												
	Ballota nigra L.												
	Labiatae indet.							2					
	Galium aparine L.												
	Centaurea sp.												
	Compositae indet.							1					
	Cyperaceae indet.												
	Bromus mollis/secalinus.												
	Gramineae indet.					1			2				
	Indet.	1			2		2	1		1			
rocess. etails.	Sample volume (litres)	15	15	15	15	10&30	15	15	15	10	15	15	
	Processing method.	A	A	A	A	A	A	A	A	A	A	A	
	% flot sorted.	100	100	100	100	100	100	100	100	100	100	100	

Unless otherwise indicated taxa are represented by fruits or seeds.

302N PHASE Undated Features . SHEET 2.

ntext tails.	Context no.	1205	1204	478	1225	1113	1238	1267	1458	1457	1454	1487	148
	Sample no.	153	154	157/8	167	175	191	201	204	205	207	220	221
	Feature-type	Compit	Compit	Floor	Pit	Pit	Pit	Occ.	Ind?	Ind?	Slag.	Ind?	Ind
reals.	Cereal indet.	3	8	13	14	17	[illegible]	45		2		10	24
	Hordeum vulgare L.	4											
	Hordeum sp.		55	8		11	[illegible]	3				3	11
	Triticum aestivum s.l.			3		8							3
	Avena sp.		3	2		4							
	Secale cereale L.			1		1							
	Cereal indet.(rachis frag)												
gumes	Pisum-type		3	2		6							
	Vicia sp. (small)												
uits	Ficus carica L.					21							1
	Vitis vinifera L.												
	Sambucus nigra L.	+	+	+	+	+			+	+	+	+	+
	Rubus fruticosus agg.	274	202			3							
	Rubus idaeus L.											1	
	Rubus sp.												
	Prunus sp.												
	Crataegus laevigata(Poir)DC.												
	Malus sylvestris Miller.		1			1							
ild lants.	Papaveraceae indet.				3								
	Brassica sp.												
	Raphanus raphanistrum L.			1									
	Silene sp.												
	Agrostemma githago L.												
	Chenopodium album L.												
	Chenopodiaceae indet.												
	Malva sp.												
	Conium maculatum L.												
	Aethusa cynapium L.												
	Umbelliferae indet.		1										
	Polygonum aviculare agg.												
	Rumex sp.												2
	Polygonaceae indet.												
	Menyanthes trifoliata L.												
	Lithospermum arvense L.												
	Convolvulus arvensisL.												
	Hyoscyamus niger L.												
	Atropa bella-donna L.											82	25
	Solanaceae indet.												
	Veronica hederifolia L.												
	Stachys sp.					1							
	Ballota nigra L.												1
	Labiatae indet.												
	Galium aparine L.												
	Centaurea sp.				1								
	Compositae indet.												
	Cyperaceae indet.									1			2
	Bromus mollis/secalinus.		1	1									
	Gramineae (cn)						[illegible]	2					
	Indet		3	5		1	1						1
rocess. etails.	Sample volume (litres)	10	15	30	15	15	1	15 / 1	1	1	15	15	15
	Processing method.	A	A	A	A	A	C	A / C	C	C	A	A	A
	% flot sorted.	100	100	100	100	100	100	100 / 100	100	100	100	100	100

Unless otherwise indicated taxa are represented by fruits or seeds.

302N PHASE Undated features SHEET 3.

ntext tails.	Context no.	1222	1494	1296	1999						
	Sample no.	1489	227	240	270						
	Feature-type	Ind.	Ind.	Pit	Burnt						
reals.	Cereal indet.	2		35	9						
	Hordeum vulgare L.										
	Hordeum sp.			39	1						
	Triticum aestivum s.l.	1		7	1						
	Avena sp.			6							
	Secale cereale L.			1							
	Cereal indet.(rachis frag)										
gumes	Pisum-type		1	3							
	Vicia sp. (small)										
uits	Ficus carica L.										
	Vitis vinifera L.										
	Sambucus nigra L.	+	+	+	+						
	Rubus fruticosus agg.										
	Rubus idaeus L.										
	Rubus sp.										
	Prunus sp.										
	Crataegus laevigata(Poir)DC.										
	Malus sylvestris Miller.										
ld ants.	Papaveraceae indet.										
	Brassica sp.										
	Raphanus raphanistrum L.										
	Silene sp.										
	Agrostemma githago L.										
	Chenopodium album L.										
	Chenopodiaceae indet.										
	Malva sp.										
	Conium maculatum L.										
	Aethusa cynapium L.										
	Umbelliferae indet.										
	Polygonum aviculare agg.										
	Rumex sp.										
	Polygonaceae indet.										
	Menyanthes trifoliata L.										
	Lithospermum arvense L.										
	Convolvulus arvensisL.										
	Hyoscyamus niger L.										
	Atropa bella-donna L.										
	Solanaceae indet.			1							
	Veronica hederifolia L.										
	Stachys sp.										
	Ballota nigra L.			1							
	Labiatae indet.			1							
	Galium aparine L.										
	Centaurea sp.										
	Compositae indet.										
	Cyperaceae indet.										
	Bromus mollis/secalinus.										
	Gramineae indet.										
	[redacted] Indet.			9							
ocess. tails.	Sample volume (litres)	15	0.1	150	1						
	Processing method.	A	A	A	C						
	% flot sorted	100	100	100	100						

Unless otherwise indicated taxa are represented by fruits or seeds.

318N Jarrold's Printing Works, Whitefriars

Valley peat extends for at least 250m. north of the River Wensum in the Cowgate/Whitefriars area, reflecting the former presence of a stretch of marsh known in the medieval period as the Cows Croft and used, as the name suggests, as wet meadow. Black fen peat covered the entire area of this excavation with a minimum thickness of 70 cm; it contained abundant plant material, with molluscs and pottery, leather and animal bone. Clearly domestic refuse was being dumped in the area by the 13th/14th century. The peat was covered by layers of dumped sand, into which a 13th/14th century gully head had been cut.

The fruits and seeds from the peat may be divided into five main groups.

1. Crop plants Carbonised cereals and a plumstone.

2. Plants of disturbed habitats (Stellaria, Chenopodium, Atriplex, Rubus, Conium, P. aviculare, Urtica urens, U. dioica, Corylus, Hyoscyamus, Solanum, Sambucus.)

3. Arable weeds (Brassica, Raphanus, Silene, Agrostemma, P. convolvulus, Lithospermum, Anthemis, Centaurea.)

4. Dry grassland and 'bare ground' species (Scleranthus, Aphanes, Rumex acetosella, Plantago major).

5. Wetland species (Ranunculus Scleratus, Polygonum c.f. lapathifolium, Polygonum c.f. persicaria, Menyanthes, Cyperaceae.)

Seeds from several sources have become incorporated into this sediment; the wetland taxa would have grown locally, whilst the dry grassland plants are presumably derived from adjacent higher gravelly ground. The deposition of domestic refuse, including carbonised cereals and crop weeds, by increasing soil nitrogen levels and causing soil disturbance would have encouraged the development of weed and scrub vegetation.

The main specimen of interest from the gully, 57, is a fragment walnut endocarp. This species is rare in samples from Norwich.

Fungus

Context no. 57 produced a mature specimen of Bovista nigrescens Pers. ex. Pers., a puffball (identified by Dr P. Lambley, Norwich Castle Museum). The fruiting bodies of this, and other puffball species, are apparently resistant to microbial attack in wet deposits; the fungus has been reported from several archaeological sites (Jones, 1977; Watling and Seaward 1976).

Examples of the spherical, warted brown basidiospores, with their colourless stalks, from the interior of the fruiting body are illustrated (Fig. 10). A few capitillium threads, showing acute branching are also shown.

The fruiting body of this fungus, common in woods and pastures, becomes detached from the soil surface on maturity, and is then blown by the wind, dispersing spores. This particular specimen was presumably blown into the accumulating marsh deposit.

3O8N 26 Coslany Street

Small quantities of plant remains were recovered from layers of 11th century metalworking debris.

Context details	Context No.	3	6	10	41
	Feature-type	Metalworking		Debris	
	Date		11th c.		
Cereals	Hordeum sp.	-	3	-	-
	Avena sativa L.	-	1	-	-
	c.f. Avena sp.	-	2	-	-
	Cereal indet.	-	-	-	1
Fruit	Sambucus nigra L.	1	1	1	-
	Sample volume (litres)	2	2	2	2
	Processing method	C	C	C	C

Table 22 : Fruits and seeds from 3O8N

Context details	Context No.		57		60			
	Sample No.		(i)	(ii)	(i)	(ii)	(iii)	(iv)
	Feature-type		Slot		Marsh deposit			
	Date		13th-14th c.			13th-14th c.		
Cereals	Cereal indet.		-	3	-	2	-	4
	Hordeum sp.	ca.	-	5	-	-	-	1
	Hordeum sp.	ri.	-	-	1	-	-	-
	Avena sp.	ca.	-	-	-	2	-	-
	Triticum aestivum L.	ca.	-	-	-	1	-	-
	Secale cereale L.	ca.	-	2	-	-	1	4
Fruits	Prunus Domestica s.l.	fs.	-	-	1	-	-	-
	Rubus fruticosus agg.	fs.	1	-	-	5	3	-
Nuts	Corylusavellana L.	n.	-	-	1	-	-	-
	Juglans regia L.	end frag.	1	-	-	-	-	-
Wild Plants	Ranunculus Sclenatus L.	a.	-	-	5	-	2	1
	Ranunculus sp.	a.	-	5	-	7	-	3
	Brassica/Sinapis sp.	s.	-	1	1	14	2	11
	Raphanus raphanistrum L.	sj.	-	-	-	-	-	3
	Silene sp.	s.	-	-	-	-	-	2
	Agrostemma githago L.	s.	-	2	-	4	-	3
	Stellaria media (L)Vill	s.	-	2	-	5	2	-
	Scleranthus annuus L.	nu.	-	-	-	-	2	-
	Caryophyllaceae indet.	s.	-	10	2	5	-	1
	Chenopodium album L.	s.	-	4	2	20	5	17
	Atriplex patula/hastata	s.	-	-	1	-	1	3
	Chenopodiaceae indet.	s.	-	-	2	-	4	-
	Potentilla sp.	a.	-	-	-	3	-	-
	Aphanes arvensis agg.	a.	-	-	-	-	1	-
	Conium maculatum L.	mer.	-	-	-	1	-	3
	Polygonum aviculare agg.	nu.	-	2	1	2	2	2
	Polygonum convolvulus L.	nu.	-	-	-	1	1	-
	Polygonum cf.persicaria L.	nu.	-	1	-	-	-	-
	Polygonum cf. lapathiholium L.	nu.	-	-	-	11	4	13
	Rumex acetosella agg.	nu.	-	1	1	1	3	1
	Rumex sp.	nu+per.	-	-	-	2	1	3
	Rumex sp.	nu.	-	5	-	-	-	2
	Urtica urens L.	s.	-	-	5	4	-	-
	Urtica dioica L.	nu.	-	-	15	-	21	-

	Menyanthes trifoliata L.	s.	-	1	-	3	-	-
	Lithospermum arvense L.	nu.	-	-	-	-	1	-
	Solanum nigrum L.	s.	-	-	-	6	-	2
	Hyoscyamus niger L.	s.	-	-	-	2	-	-
	Solanaceae indet.	s.	-	-	1	-	-	-
	Labiatae indet.	nu.	-	1	1	1	-	-
	Plantago major L.	s.	-	-	1	-	-	-
	Sambucus nigra L.	s.	-	2	6	46	15	23
	Anthemis cotula L.	cy.	-	-	4	-	3	-
	Centaurea sp.	cy.	-	-	-	3	-	-
	Picris sp.	cy.	-	-	-	-	1	-
	Compositae indet.	cy.	-	-	-	-	1	1
	Cyperaceae indet.	nu.	-	-	-	1	-	-
	Indet.		2	-	1	4	5	10
Processing details	Sample volume (litres)		0.1	15	0.1	15	0.2	15
	Processing method		B	A	B	A	B	A
	% flot sorted		100	100	100	100	100	100

TABLE 23 : Fruits, seeds etc. from 318N (Jarrold's Printing Works, Whitefriars.)

351N Oak Street

Successive medieval and post-medieval buildings on the gravel terrace were investigated. This was the last major excavation conducted by the Norwich Survey and sampling was on a fairly small scale, being designed merely to check whether the site would produce similar material to the earlier excavations. Bearing in mind the results from 302N it was felt that the extensive sampling of general 'occupation' deposits was not on balance worthwhile. Sampling was therefore restricted to well-defined contexts including hearths and cess pits.

The 16th-century cess pits at the site contained waterlogged sediments, but the plant remains were heavily impregnated with insoluble salts. Prunus fruitstones frim contexts 111 and 167 are illustrated (Fig. 2). Only one larger group of carbonised cereals was recovered from 375, a layer within the mid-16th century cess pit 85. This included hulled barley grains with bevelled lemma bases (Fig.), some of which had germinated before carbonisation.

Table 24 : Fruits, seeds etc. from 351N (Oak Street).

Abbreviations:

a	-	achene
ca	-	caryopsis
c.fr	-	carbonised whole fruit
cn	-	culm node
cy	-	cypsela
fb	-	flower base
fs	-	fruitstone
fro	-	frond fragments
mer	-	mericarp
n.fr	-	nutshell fragments
nu	-	nutlet
ri	-	rachis internode
s	-	seed
*	-	fragments
+	-	present, but not quantifiable
G	-	germinated
Occ	-	occupation level

Context details	Context No.		114	132	550	542	508	259	260	110	111	68
	Sample No.		5	22	16	15	18	1	2	9	10	19
	Feature-type		Occ.	Gully	Hearth?	Hearth	Pit	Cess Pit	Cess Pit	Cess Pit	Cess Pit	Cess Pi
	Date		12th cent.		13th c.	Late 15th c.			16th century			Early
	Cereal indet.	ca	-	-	2	-	-	-	1	-	-	-
	Hordeum sp.	ca	-	-	5	2	1	2	-	-	-	-
	Hordeum sp.	ri	-	1	-	-	1	-	-	-	-	-
Cereals	Avena sp.	ca	-	-	-	-	1	-	-	-	-	-
	Avena sativa L.	fb	-	-	-	1	-	-	-	-	-	-
	Triticum aestivum sl.	ca	-	-	-	-	-	-	-	-	1	-
	Secale cereale L.	ca	-	3	-	-	-	-	-	-	-	-
	Cereal indet.	ri	-	-	-	-	-	-	-	-	-	-
	Ficus carica L.	a	-	-	-	-	-	-	13	7	6	-
	Vitis vinifera L.	s	-	-	-	-	-	-	-	-	-	-
	Sambucus nigra L.	s	-	10	1	-	4	-	1	-	-	-
	Rubus fruticosus agg.	fs	-	-	-	-	-	-	-	-	1	-
Fruits	Rubus sp.	sp	-	2	-	-	-	-	-	-	-	-
	Fragaria vesca L.	a	-	-	-	-	-	-	-	-	-	-
	Prunus domestica s.l.	fs	-	-	-	-	-	-	-	-	2	-
	Prunus c.f. domestica s.l.	fr	-	-	-	-	-	-	-	-	-	-
	Prunus domestica ssp. insititia L.	fs	-	-	-	-	-	-	-	-	4	-
	Prunus avium L.	fs	-	-	-	-	-	-	-	-	3	-
	Malus sylvestris Miller	fs	-	-	-	-	-	-	-	-	2	3
Nut	Corylus avellana L.	nfr	+	-	-	-	-	-	-	-	-	-
	Pteridium aquilinum (L) Kuhn.	fro	-	-	-	-	-	-	-	-	-	-
	Ranunculus sp.	a	-	-	-	-	-	-	-	-	-	-
	Papaver rhoeas L.	s	-	-	-	-	-	-	-	3	-	-
	Papaver sp.	s	-	-	-	-	-	-	-	1	-	-
	Chelidonium majus L.	s	-	-	-	-	-	-	-	5	-	-
	Brassica sp.	s	-	-	-	-	-	-	-	-	3	-
		s	-	1	-							

	c.f. Viola sp.	s	-	-	-	-	-	-	-	2	-	-
	Agrostemma githago L.	s	-	-	-	-	-	-	-	-	37*	-
	Stellaria media (L) Vill	s	-	-	-	-	1	-	-	-	-	-
	Caryophyllaceae indet.	s	-	-	-	1	-	-	-	-	1	-
	Chenopodium album L.	s	-	-	-	1	1	-	-	-	-	-
	Chenopodiaceae indet.	s	-	2	-	-	2	-	-	2	-	-
	Rosaceae indet.	a	-	-	-	-	-	-	-	-	-	-
Wild	Conium maculatum L.	mer	-	-	-	-	1	-	-	-	-	1
plants	Umbelliferae indet.	mer	-	-	-	-	-	-	-	-	-	-
	Polygonum persicaria L.	nu	-	-	-	-	-	-	-	-	1	-
	cf. Polygonum convolvulus L.	nu	-	-	-	-	-	-	-	-	-	-
	Rumex sp.	nu	-	1	-	-	-	-	-	-	2	-
	Polygonaceae indet.	nu	-	-	-	-	-	-	-	-	-	-
	Verbena officinalis L.	nu	-	-	-	-	-	-	-	-	-	-
	Lamium sp.	nu	-	-	-	1	-	-	-	-	-	-
	Centaurea cyanus L.	cy	-	-	-	-	-	-	-	-	-	-
	Centaurea sp.	cy	-	-	-	-	-	-	-	-	1	-
	Lapsana communis L.	cy	-	-	-	-	-	-	-	-	1	-
	Sonchus asper (L) Hill	cy	-	-	-	-	-	-	-	-	1	-
	Bromus mollis/secalinus	ca	-	-	-	-	-	-	-	-	-	-
	Gramineae indet.	ca	1	-	1	1	-	-	1	-	-	1
	cf. Lolium temulentum L.	ca	-	-	-	-	-	-	-	-	-	-
	Gramineae indet.	cn	-	-	-	-	-	-	-	-	-	-
	Moss		-	-	-	-	-	-	-	-	+	-
	Indeterminate			2	1	1		1		2	6	2
rocessing	Sample volume (litres)		1	2	2	2	2	1	1	1	1	2
Details	Processing method		C	C	C	C	C	C	C	C	C	C
	% flot sorted		100	100	100	100	100	100	100	100	50	100

270	366	368	375	257 (Upper)	257 (Lower)	167	184	401	48	297	120	
23	6	8	21	3	4	11	12	20	14	17	24	
Post-hole	Cess pit	Cess pit	Cess pit	Cess pit	Cess pit	Cess pit	Occ.	Forge	Cess pit	Occ.	Pit lining	
16th c.	Mid 16th century			Late 16th century					17th century		17th/18th c.	
3	-	-	25	2	-	-	-	-	1	-	3	
-	-	-	48(G)	1	1	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	
-	1	-	-	2	-	-	-	-	-	-	-	
-	-	-	1	-	-	-	-	-	-	-	-	
-	-	-	1	-	-	-	-	-	-	-	-	
-	-	-	15	-	-	-	-	-	-	-	-	
-	-	-	2	1*	-	-	-	-	-	-	-	
-	-	3	100+	-	2	57	-	-	-	-	-	
-	-	-	-	-	-	2	-	-	-	-	-	
-	-	1	-	-	-	-	-	-	-	-	-	
-	-	-	11	-	-	39	-	-	4	-	78	
-	-	-	-	-	-	1	-	-	-	-	3 c.f. idaeus	
-	-	-	-	-	-	7	-	-	-	-	-	
-	-	-	-	-	-	4	-	-	-	-	-	
-	-	-	-	-	-	-	1	-	-	-	-	
-	-	-	-	-	-	2	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	
-	-	20	-	1*	4	15	-	-	-	-	1	
-	-	-	-	-	-	-	-	-	-	-	-	
-	-	+	-	+	-	+	-	-	-	-	+	
-	-	-	-	-	-	2	-	-	-	-	-	
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-	-	3	-	-	-	1	-	-	-	-	-	

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-	-	10*	-	-	-	-	-	-	-	-	-
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-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	6	-	-	2	-	-	-	-	-
-	-	-	1	-	-	-	-	-	-	-	1
-	-	2	-	-	-	-	-	-	-	-	-
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-	-	-	-	-	-	2	-	-	-	-	-
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-	-	1*	-	-	-	-	-	-	-	-	-
1	-	-	1	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	1
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-	1	-	-	-	-	-	-	-	-	-	-
1	-	-	2	-	2	2	-	-	-	-	-
-	-	1	-	-	-	-	-	-	-	-	-
-	1	-	6	-	1	-	-	-	-	-	-
-	-	-	-	-	+	-	-	-	-	-	-
2	-	1	-	1	7	18	13	1	-	1	4
2	1	1	-	1	1	1	1	2	2	2	2
C	C	C	C	C	C	C	C	C	C	C	C
100	100	25	100	100	100	20	100	100	100	100	100

Figures: Scales graduated in millimetres.

Fig. 1 : Cereal rachis fragments

a. 281N. 1080 Triticum aestivum (bread wheat) rachis internode

b. 302N. 925 Triticum aestivum rachis internode

c. 283N. 359 Hordeum sp. (barley). Upper part of culm with first four rachis internodes. Short broad first rachis segment, typical of 6-row barley, collar eroded.

d. 302N. 925 Hordeum sp. (barley). Upper part of culm with three rachis segments. Short, broad first rachis segment, decurrent collar.

e. 302N. 925 Hordeum sp. (barley). Long rachis internodes from a lax-eared variety. Slight marginal pubescence.

Fig. 2 : Prunus fruitstones

a-b 172N. 541 Prunus domestica, plum large form (Type 1)

c-d 168N. 40 Prunus domestica, plum large form (Type 1)

e-f 172N. 541 Prunus domestica, plum small form (Type 2)

g 168N. 40 Prunus domestica, plum small form (Type 2)

h 168N. 40 Prunus domestica, ssp insititia, bullace

i-j 172N. 541 Prunus avium, cherry

k-l 168N. 40 Prunus avium, cherry

m-n 351N. 111 Prunus domestica

o-p 351N. 167 Prunus domestica

Fig. 3 : 172N 541. Scatter diagram showing dimensions of Prunus fruitstones

Fig. 4 : 168N 40 Scatter diagram showing dimensions of Prunus fruitstones.

Fig. 5 : 302N, cereals and peas.

a-c	302N.	925	Hordeum vulgare, grain from median spikelet with lemma base and rachilla; grain from lateral spikelet; underdeveloped grain.
d.	302N	1492	Hordeum sp. typical germinated grain
e.	302N	925	Triticum aestivum s.l. grain with apical hairs
f.	302N	925	Secale cereale, rye grain
g-h	302N	925	Pisum sativum, peas

Fig. 6 : 283N : 16th century crops from feature 123

a-b	283N	128-131	Hordeum sp. Barley grains, from median and lateral spikelets
c	283N	124	Hordeum sp. typical poorly-preserved barley grain
d.	283N	124	Avena sp. 'Puffed' Oat grain
e.	283N	124	Triticum aestivum Typical wheat grain
f-g	283N	128-131	Secale cereale Rye grains
h	283N	134	Vitis vinifera Grape
i	283N	128-131	Vicia faba Large horsebean
j-k	283N	134 and 135	Prunus domestica Small plumstones
l	283N	135	Hordeum sp. Rachis internodes
m	283N	128-131	Hordeum sp. Rachis internodes

Fig. 7 : 300 N : Late Saxon cereals

a-b 300N 102 Triticum aestivium s.l. Bread or club wheat
c 300N 102 Avena sp. Small oat grain
d 300N 153-216 Secale cereale, rye grain
e 300N 153-216 Hordeum sp. Barley grain, partly obscured by calcareous deposit.

Fig 8 : Miscellaneous crop plants

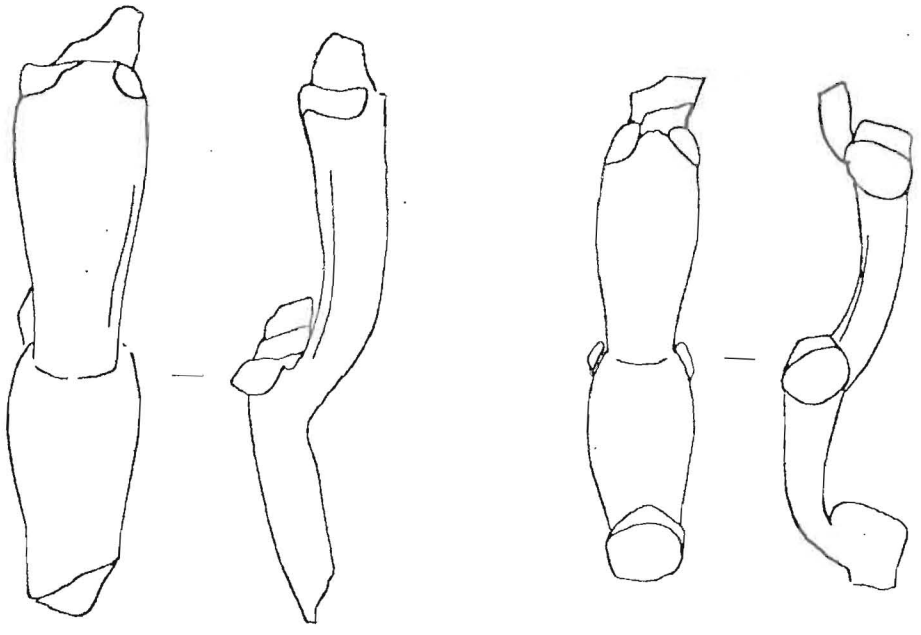
a-b 172N 541 Vitis vinifera, grape
c 302N 34 Vitis vinifera, grape
d 282N 194 Vicia faba var. minor Horsebean
e 302N 344 Malus sylvestris Apple
f 149N 912 Hordeum vulgare c.f. var. nudum Naked Barley?
g 168N 40 Fragaria vesca Strawberry
h 283N 128-131 Ficus carica Fig.
i 281N 368 Corylus avellana Hazel
j 281N 368 Juglans regia Walnut, endocarp fragment.

Fig. 9 : 171N : Crop plants

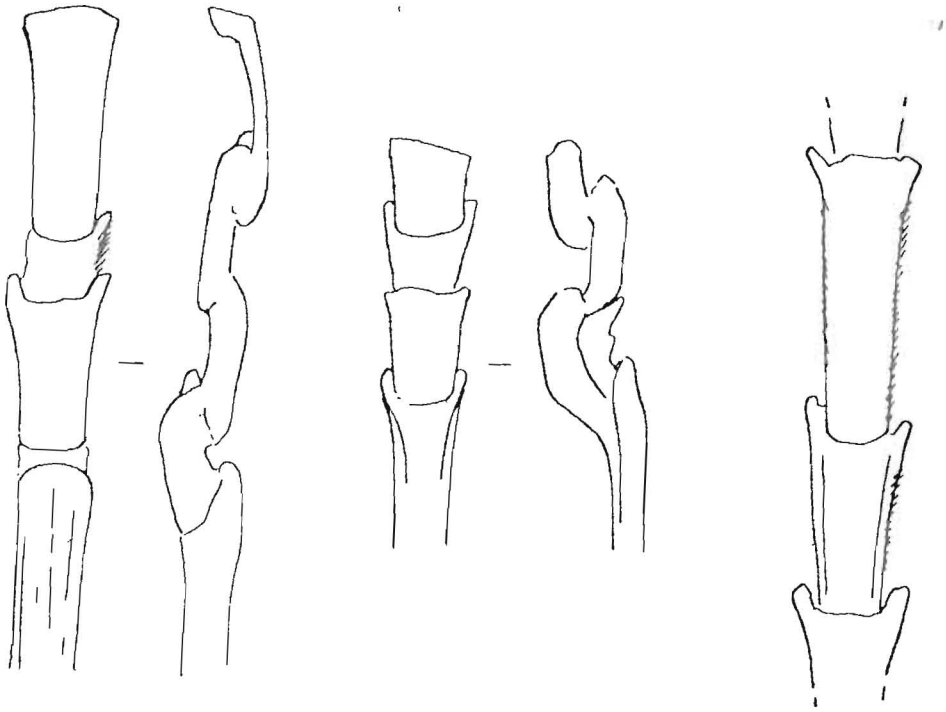
a-d Hordeum sp., rachis internodes
e-f Hordeum sp., first rachis segments 67
g Secale cereale, section of rachis
h Linum usitatissimum, flax seed 93
i-j Hordeum sp., lemma bases 67
k Avena sativa, floret base 67

Fig. 10 : 318N 57 Bovista nigrescens

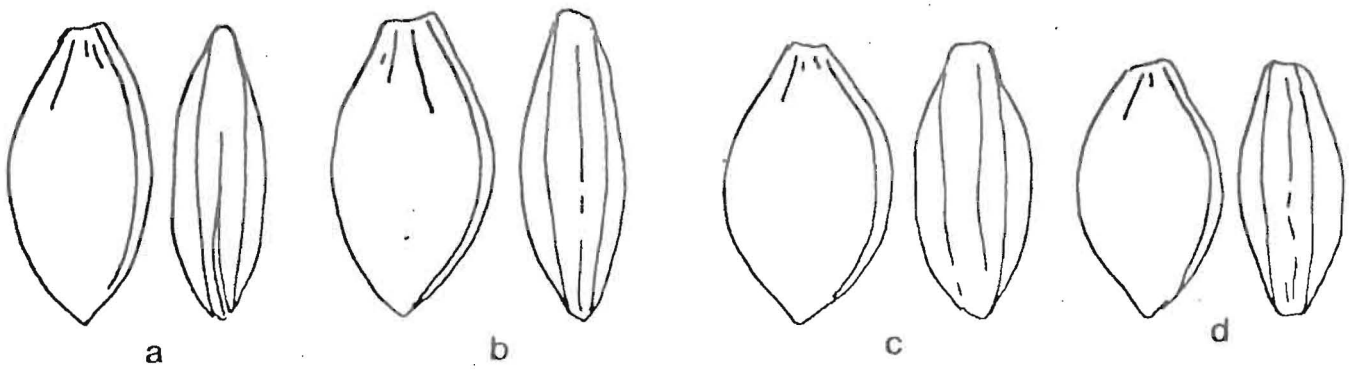
Basidiospores and capitillium threads



a b



c d e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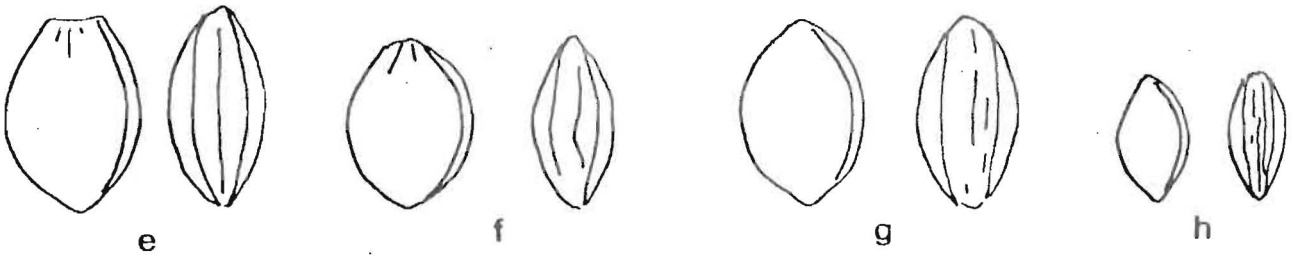
b
c
d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g
h


i
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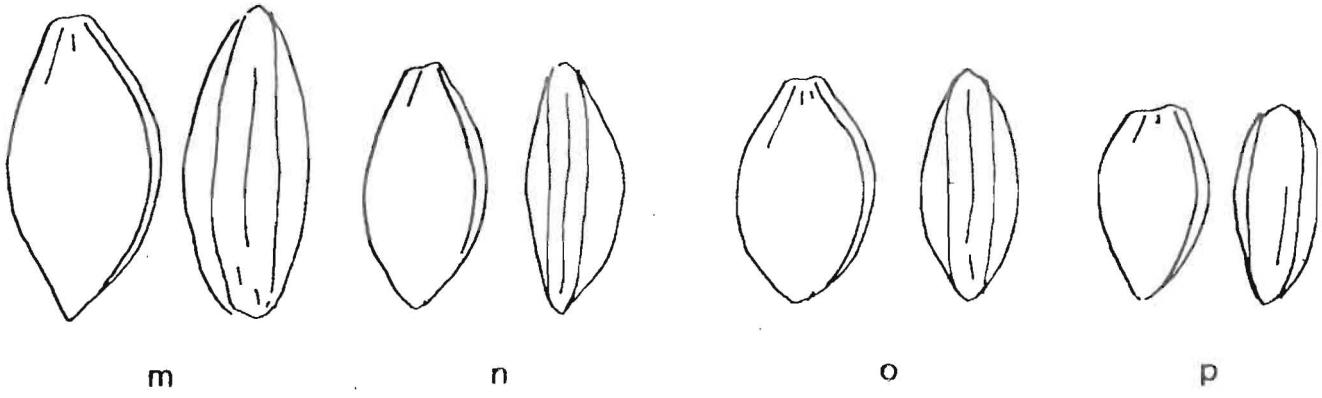
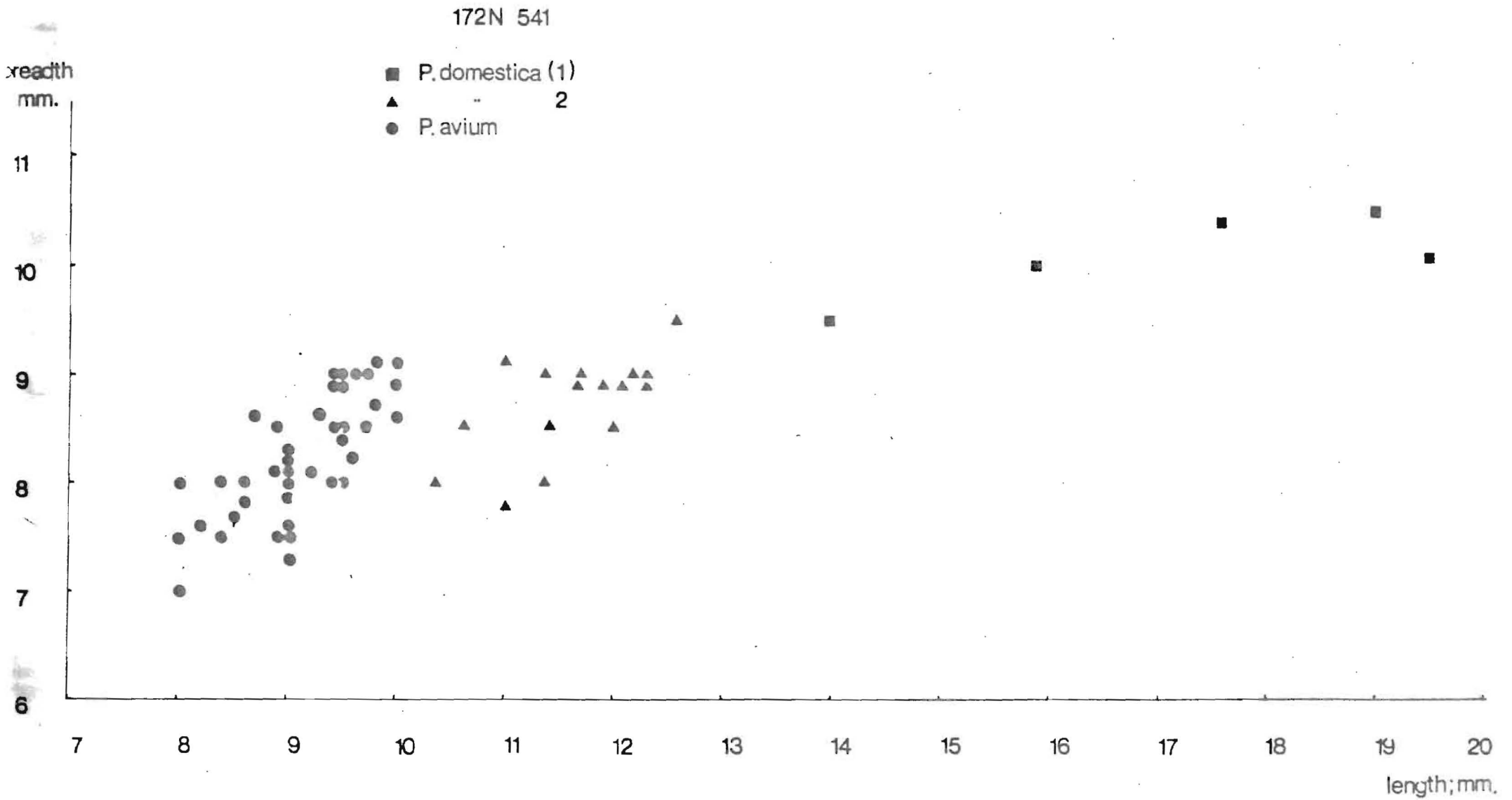
l


m
n
o
p


172N 541
P. domestica (1)
" 2
P. avium
breadth
mm.
11
10
9
8
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7
8
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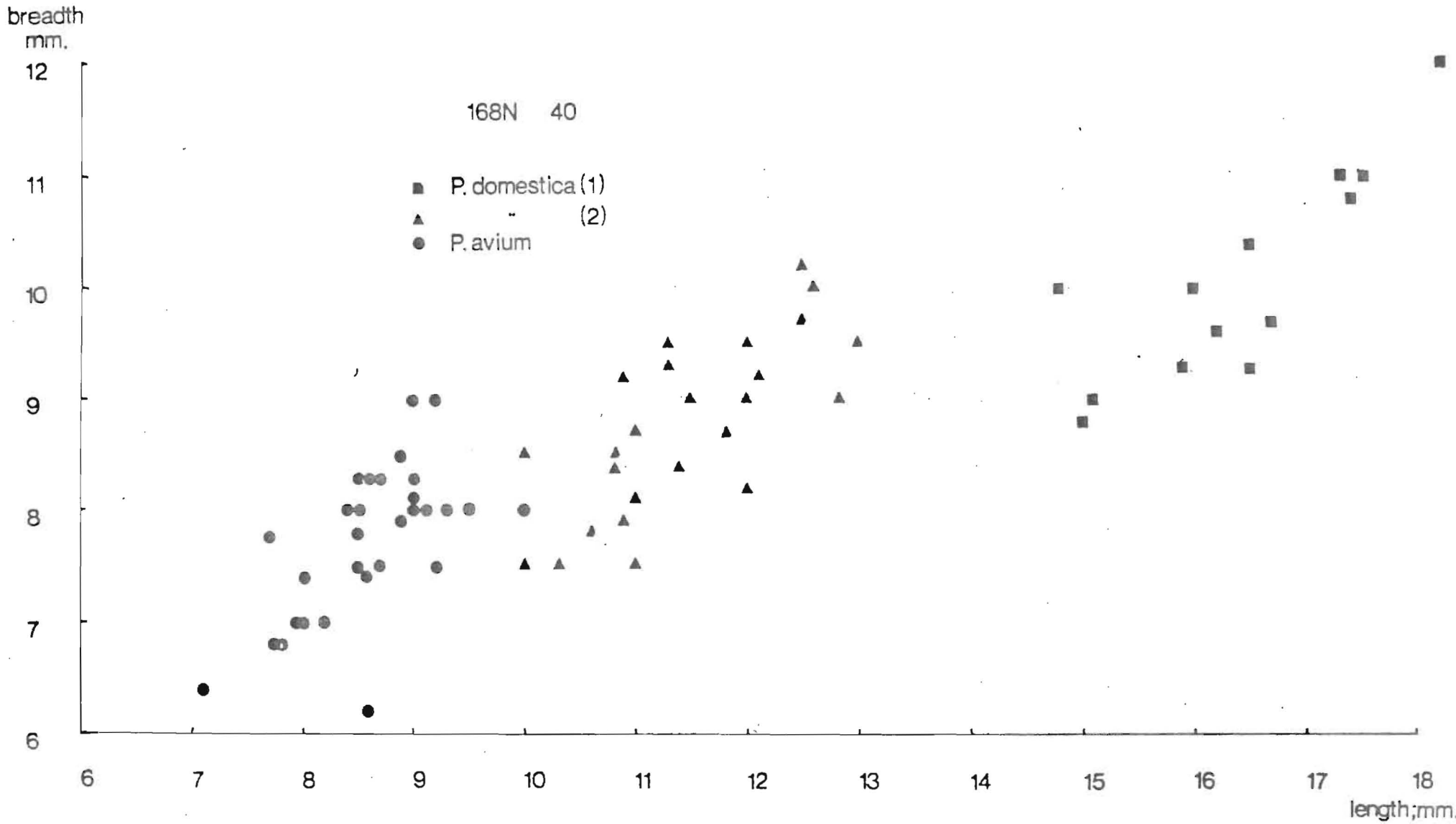
12
13
14
15
16
17
18
19
20
length; mm.


breadth
mm.
12
11
10
9
8
7
6
168N 40
P. domestica (1)
" (2)
P. avium
6
7
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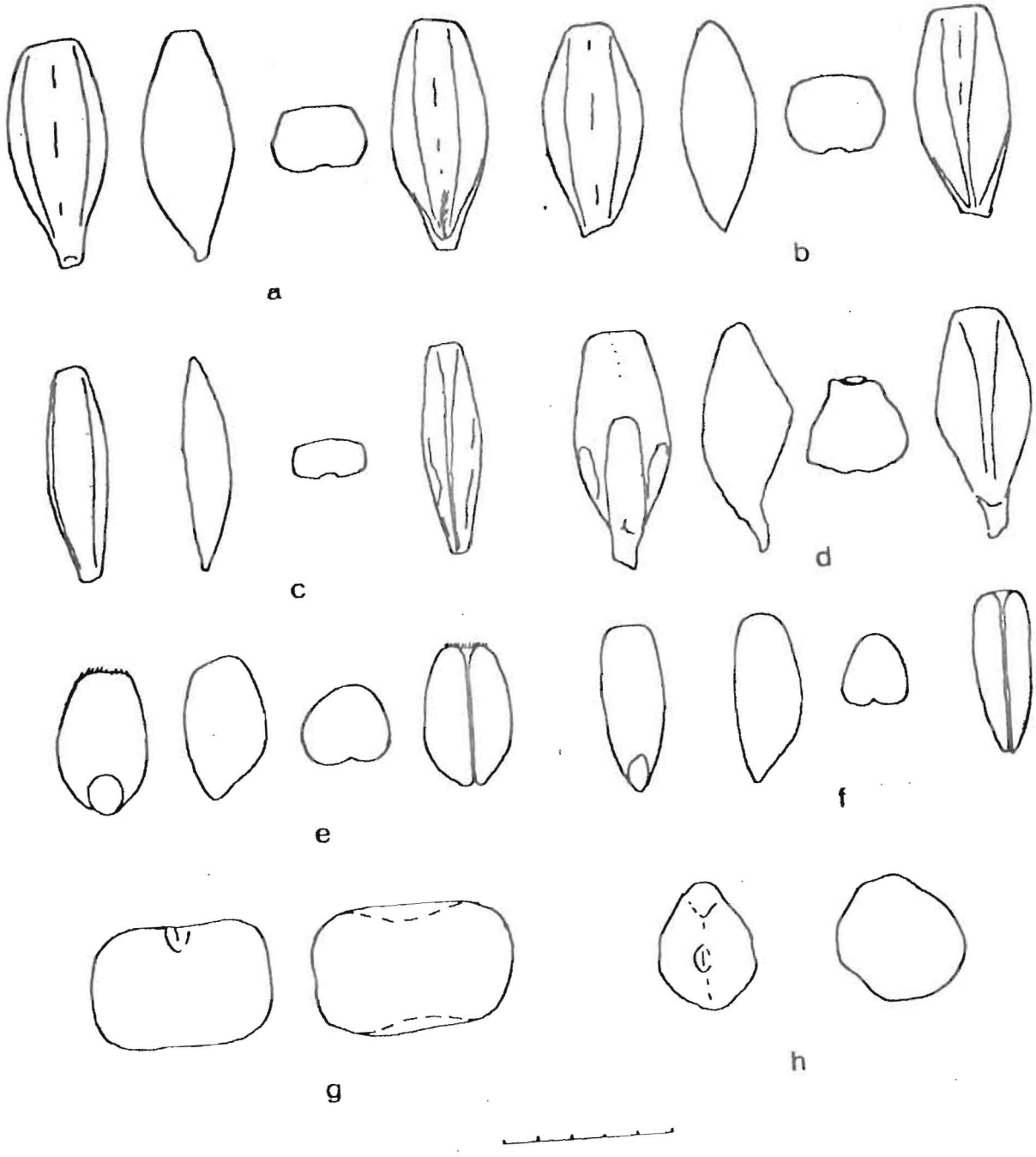
9
10
11
12
13
14
15
16
17
18
length;mm.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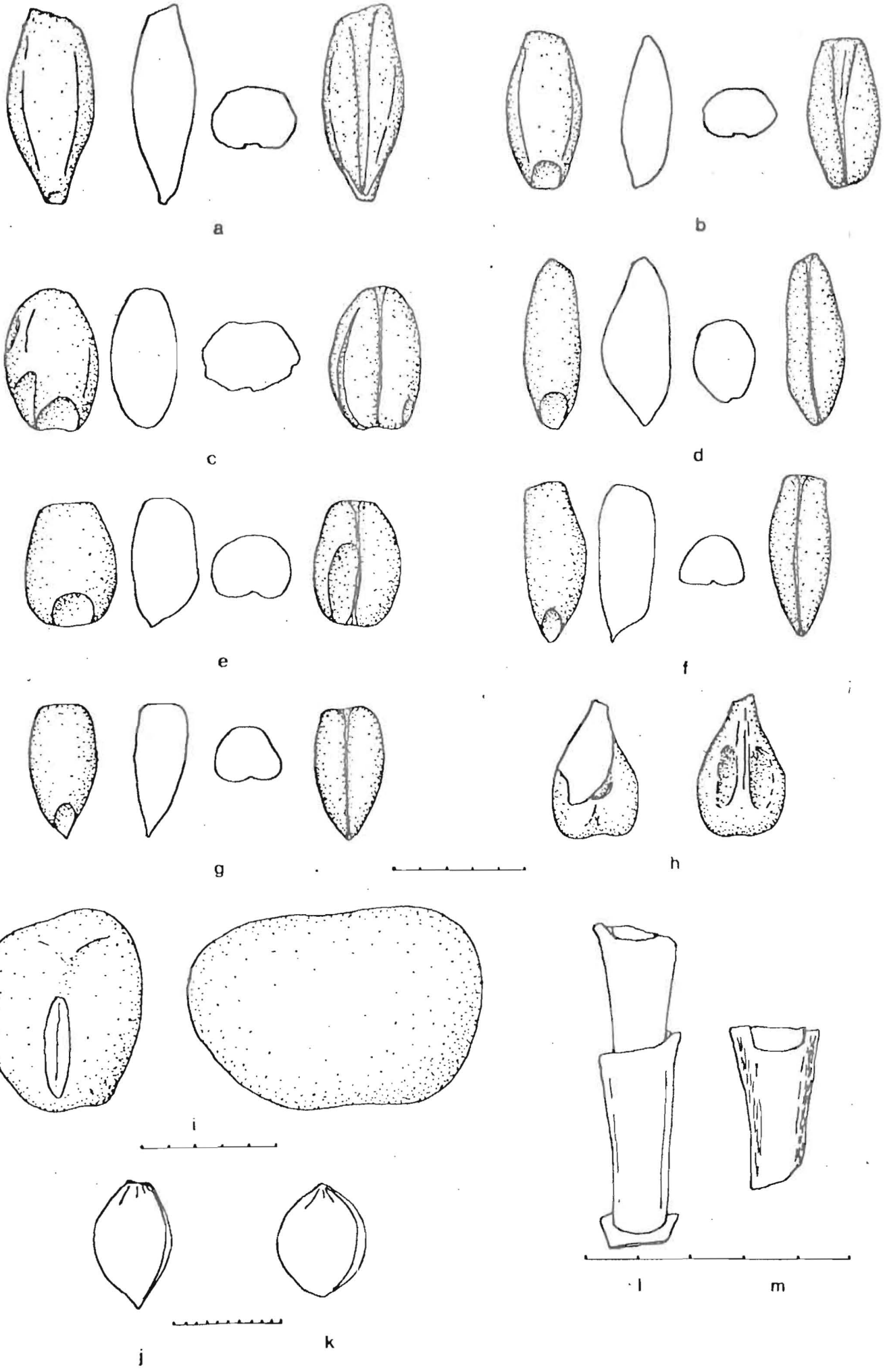
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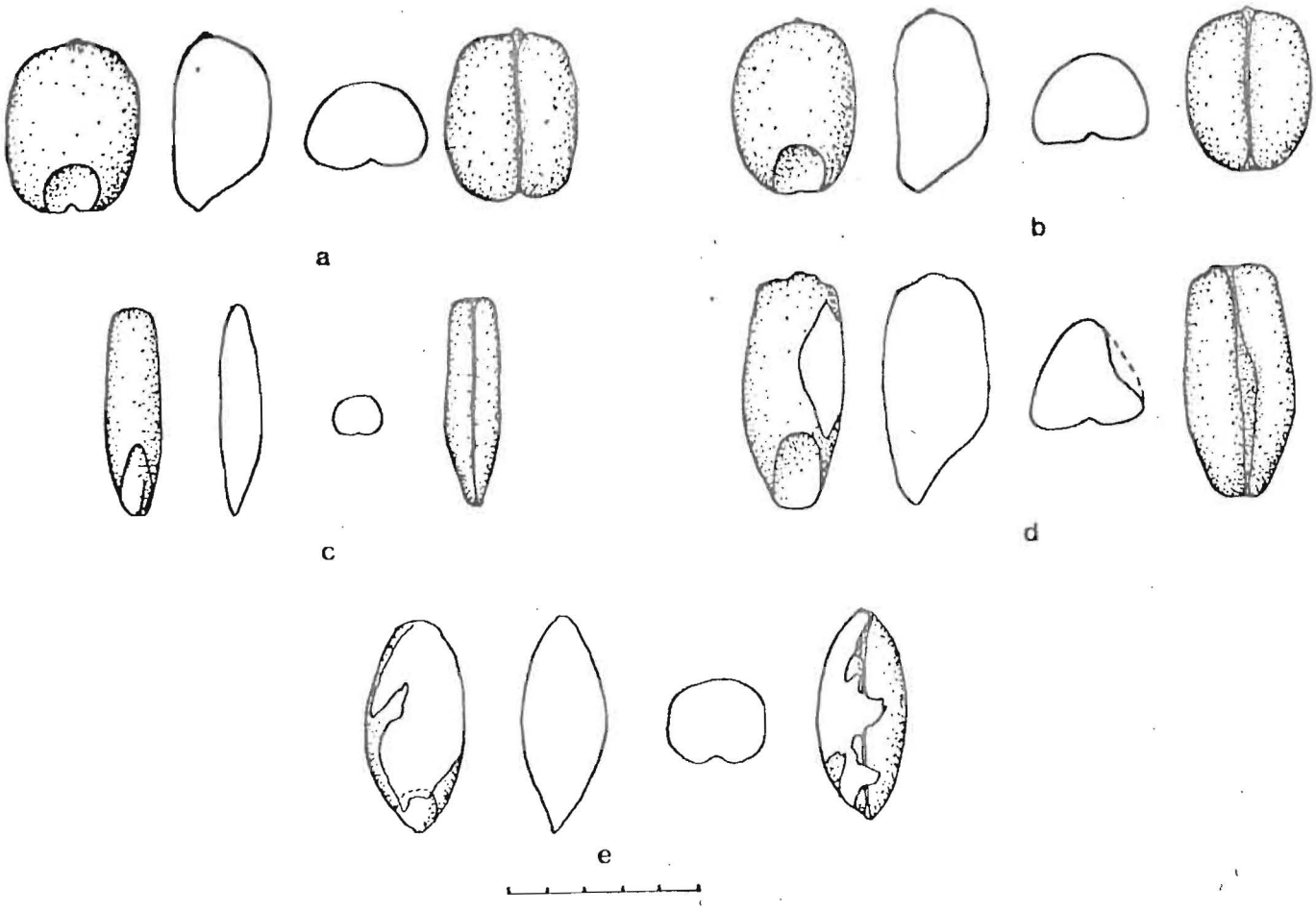
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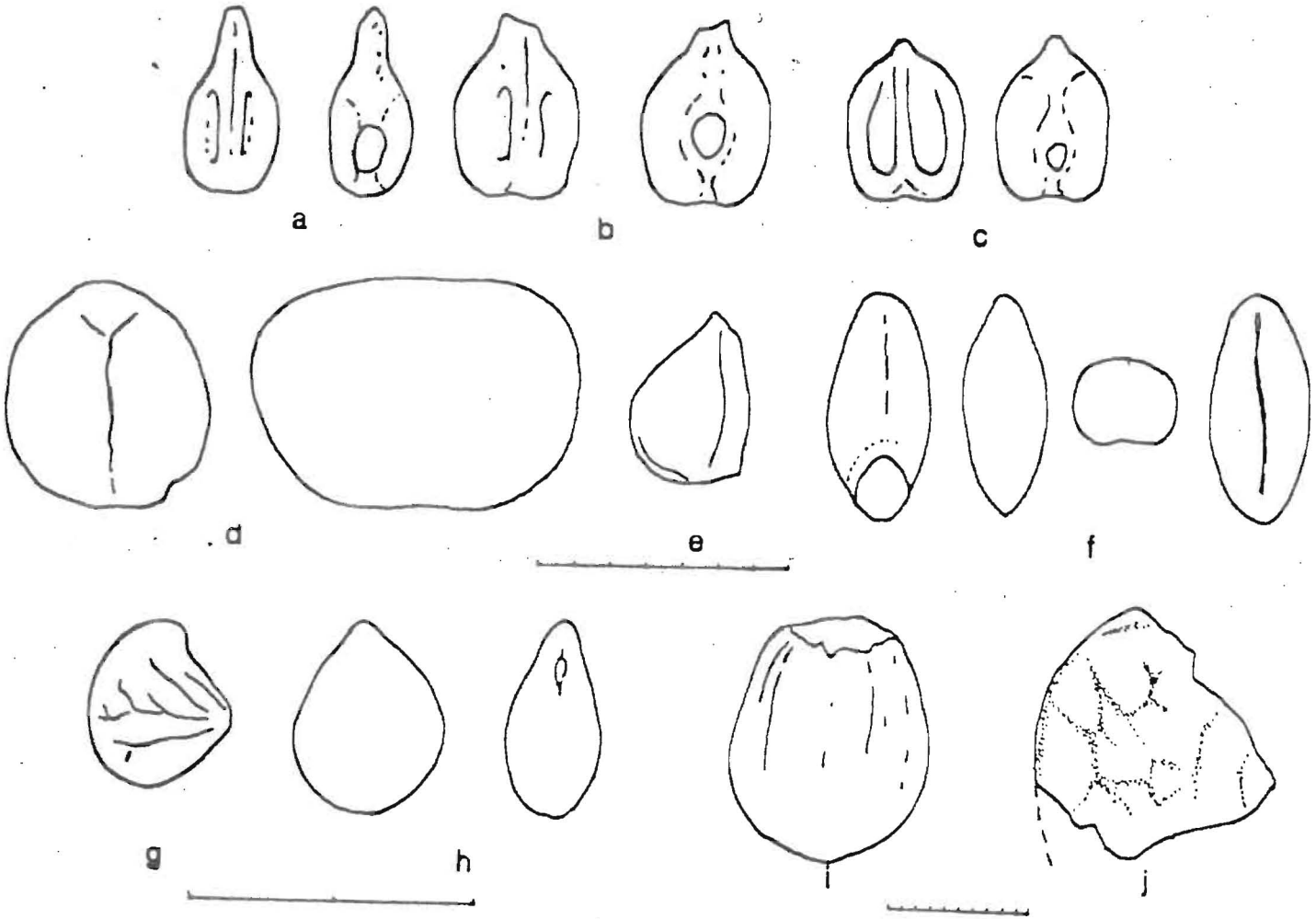
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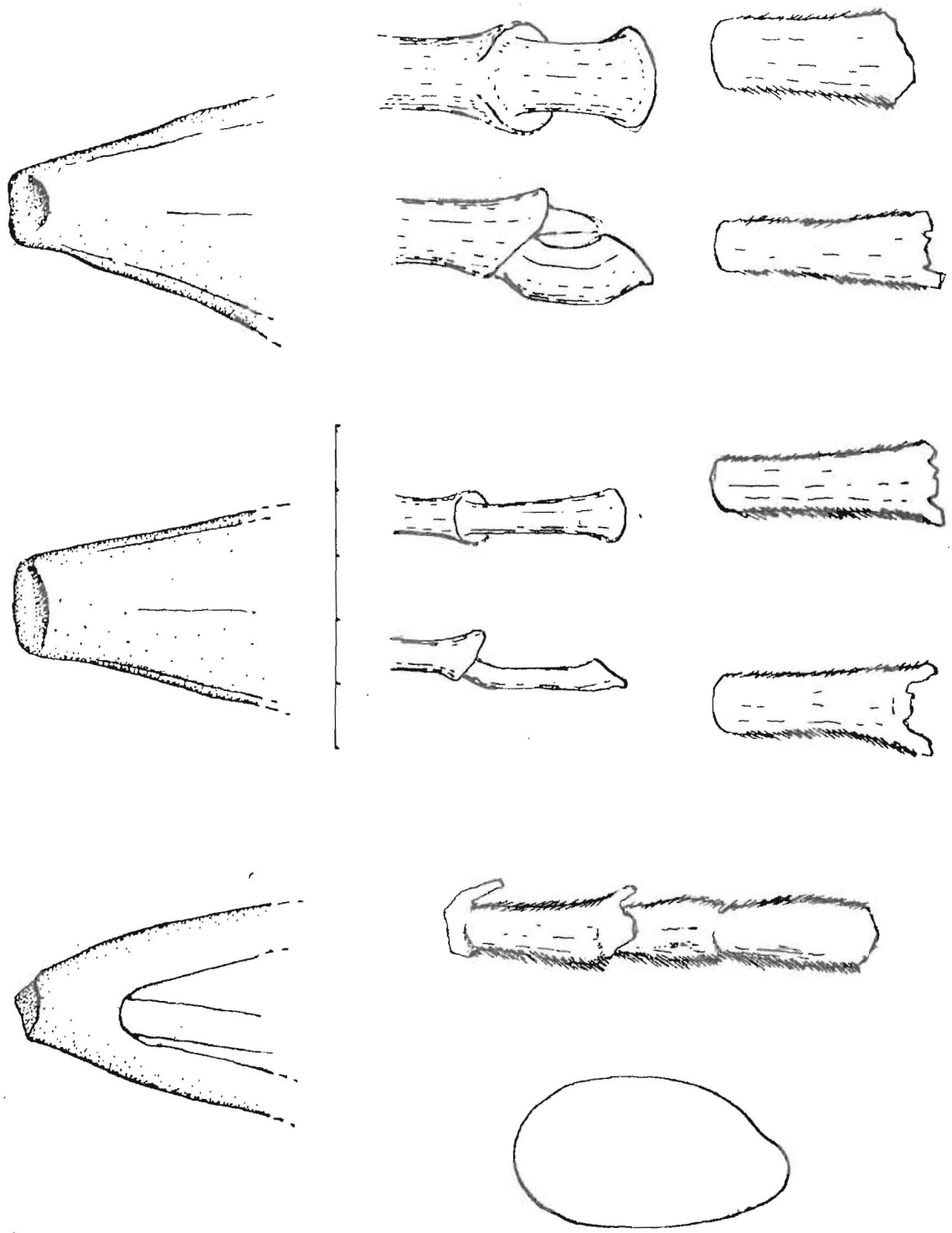
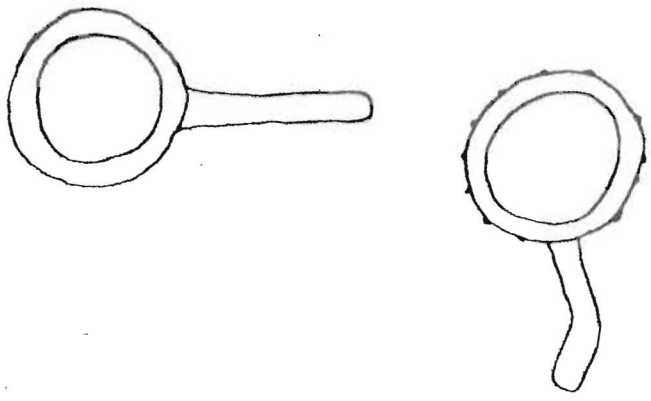
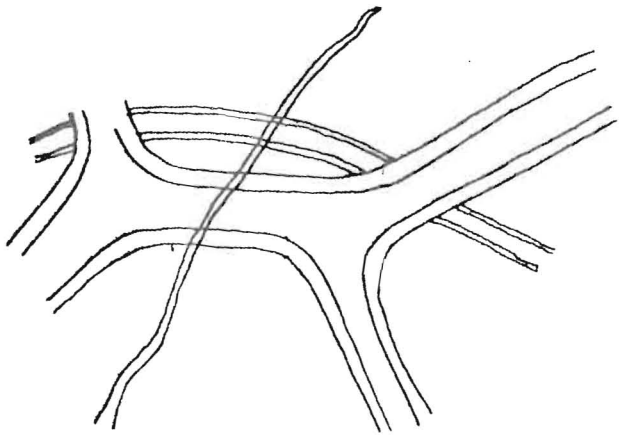




5μ.



10μ

Plates

1.	302N. 925	*Hordeum vulgare*, barley caryopses
2.	302N. 925	Cereal chaff. Mainly barley (*Hordeum sp.*) rachis internodes and under-developed caryopses, with some wheat (*Triticum aestivum*) rachis internodes.
3.	302N. 925	Impurities in barley crop. Includes peas (*Pisum sativum*), wheat grains (*Triticum aestivum*), rye grains (*Secale cereale*). See text for full list of species present.
4.	283N. 421	Germinated barley grains (*Hordeum* sp.)
5.	283N. 49	Large bean (*Vicia faba* var. *minor*)
6.	281N. 368	Grape seeds (*Vitis vinifera*)
7.	281N. 368	Fig achenes (*Ficus carica*)
8.	281N. 368	Raspberry 'seeds' (*Rubus idaeus*), with some of blackberry (*Rubus fruticosus*).
9.	168N. 40	Fruitstones of large plum (*Prunus domestica*)
10.	168N. 40	Fruitstones of small plum (*Prunus domestica*)
11.	168N. 40	Fruitstones of sloe (*Prunus spinosa*)
12.	168N. 40	Fruitstones of cherry (*Prunus avium*)
13.	351N. 167	'Seeds' of apple (*Malus sylvestris*)
14.	281N. 368	Hazel-nut (*Corylus avellana*) and fragment of walnut endocarp (*Juglans regia*)
15.	171N. 67	Part of the deposit of carbonised barley straw (*Hordeum* sp.) from the 1507 fire debris.
16.	168N. 40	*Pteridium aquilinum* (bracken)
17.	318N. 57	*Bovista nigrescens* (puffball)

1.

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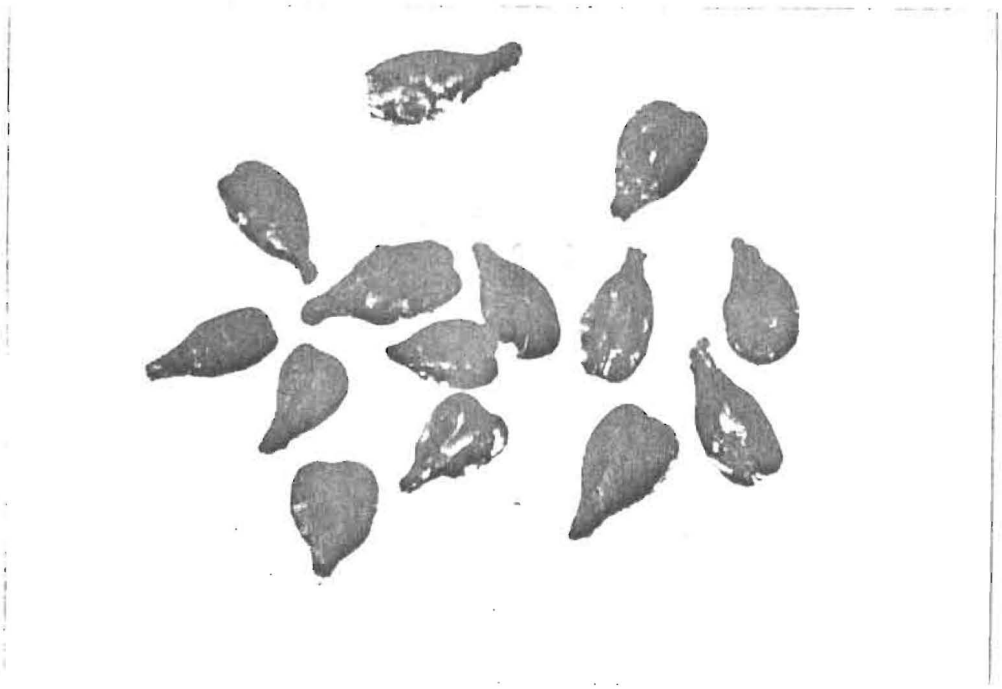
5.



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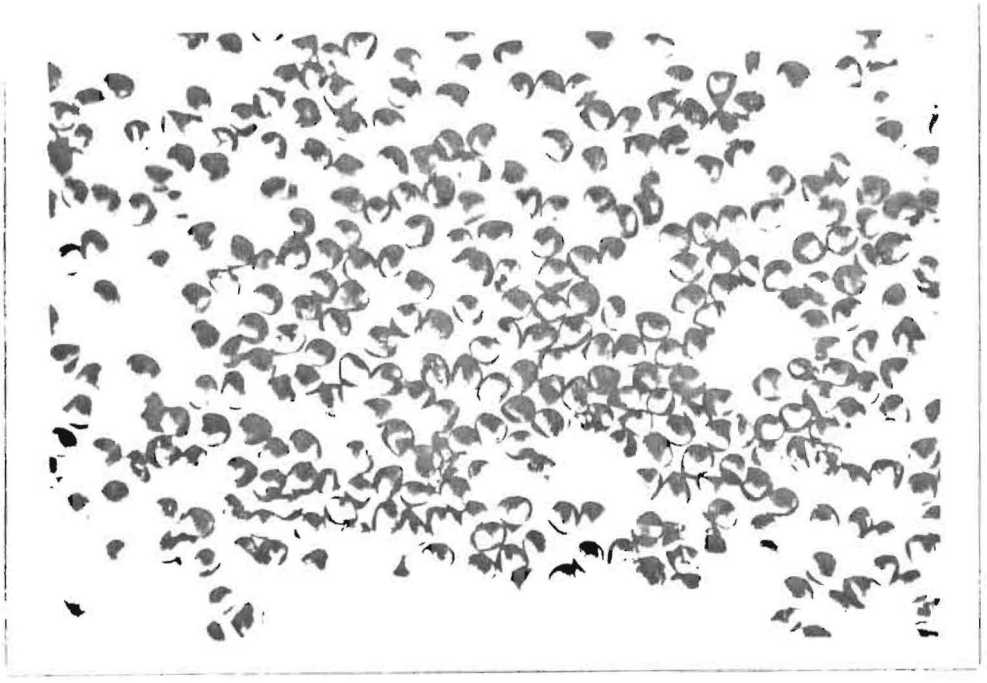

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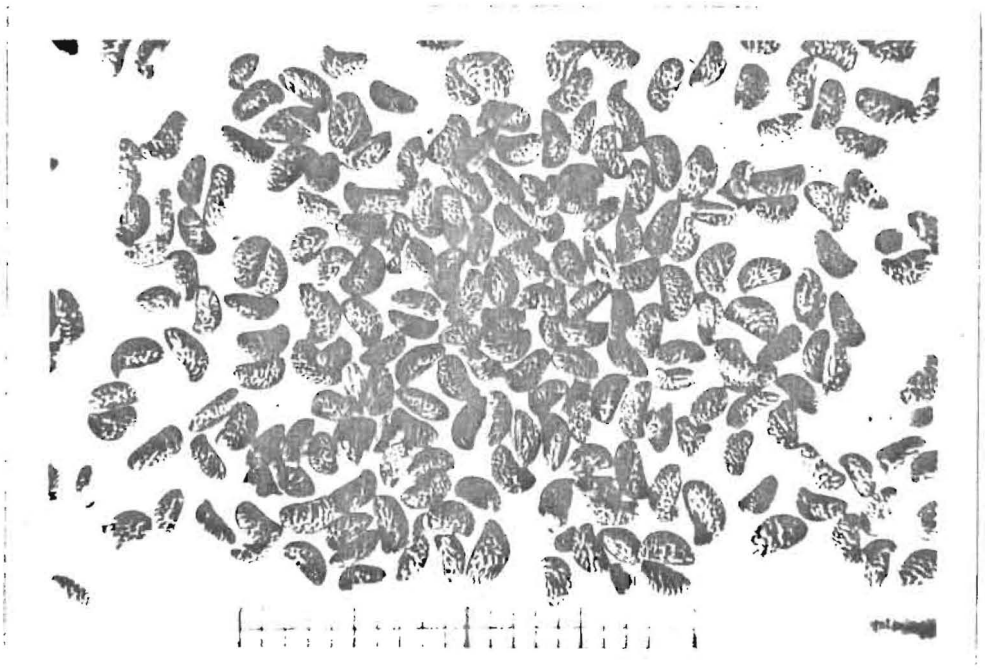

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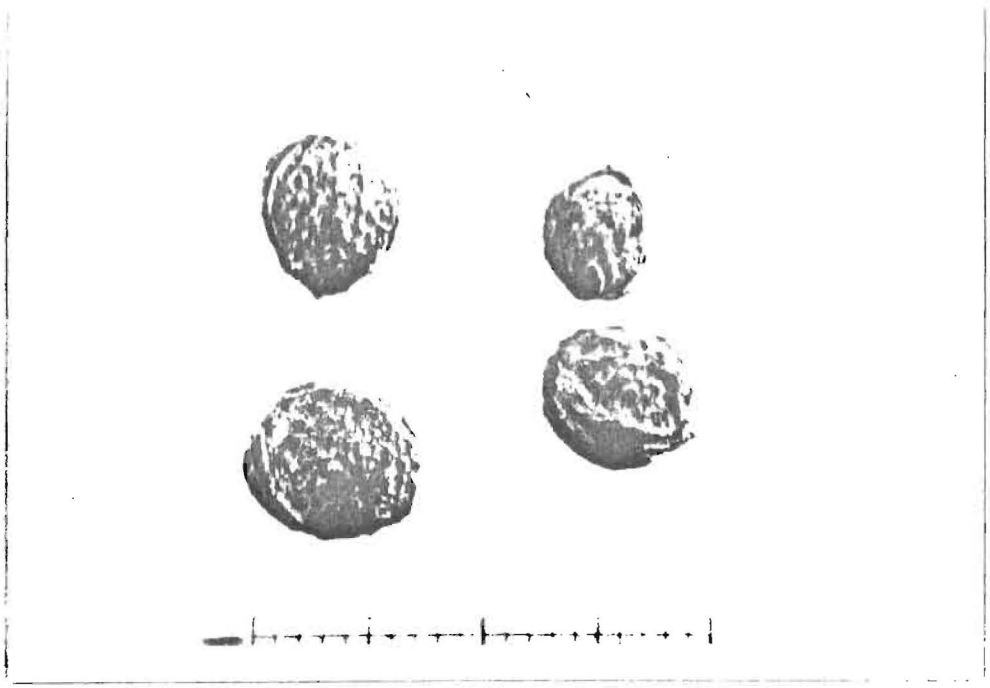

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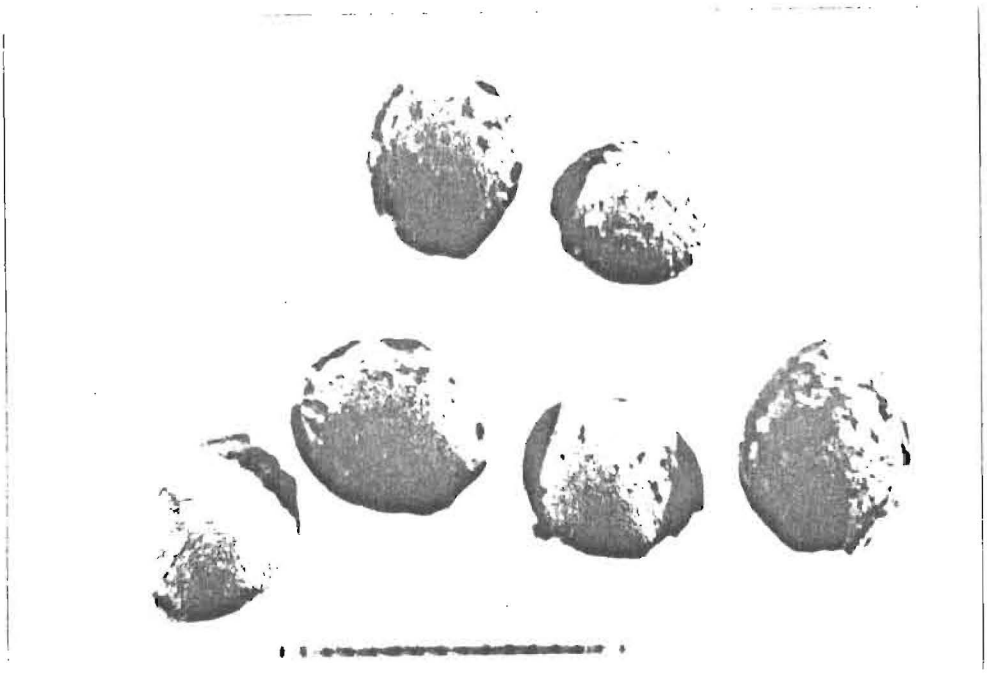

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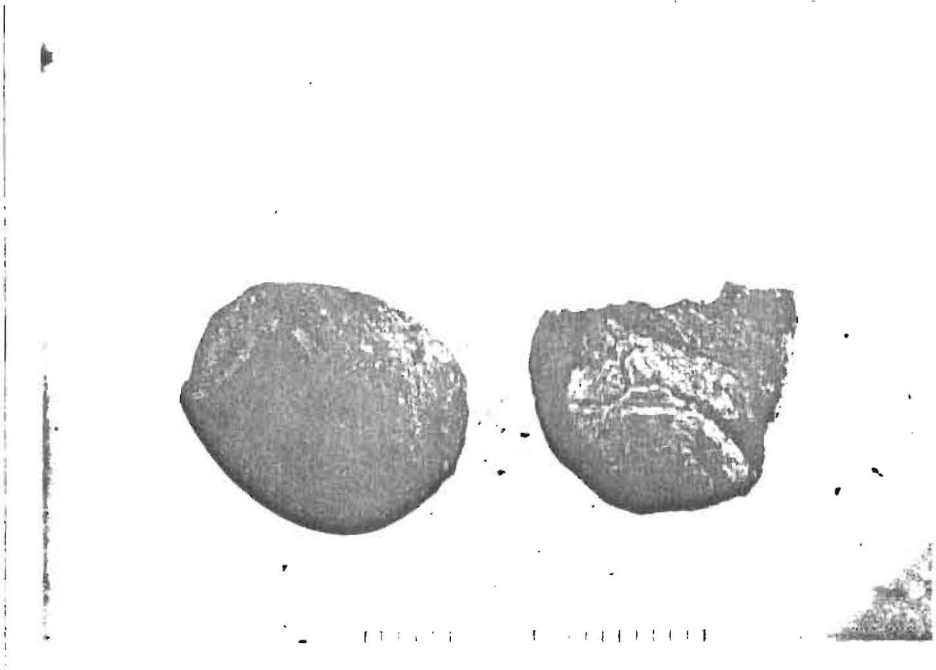
13.



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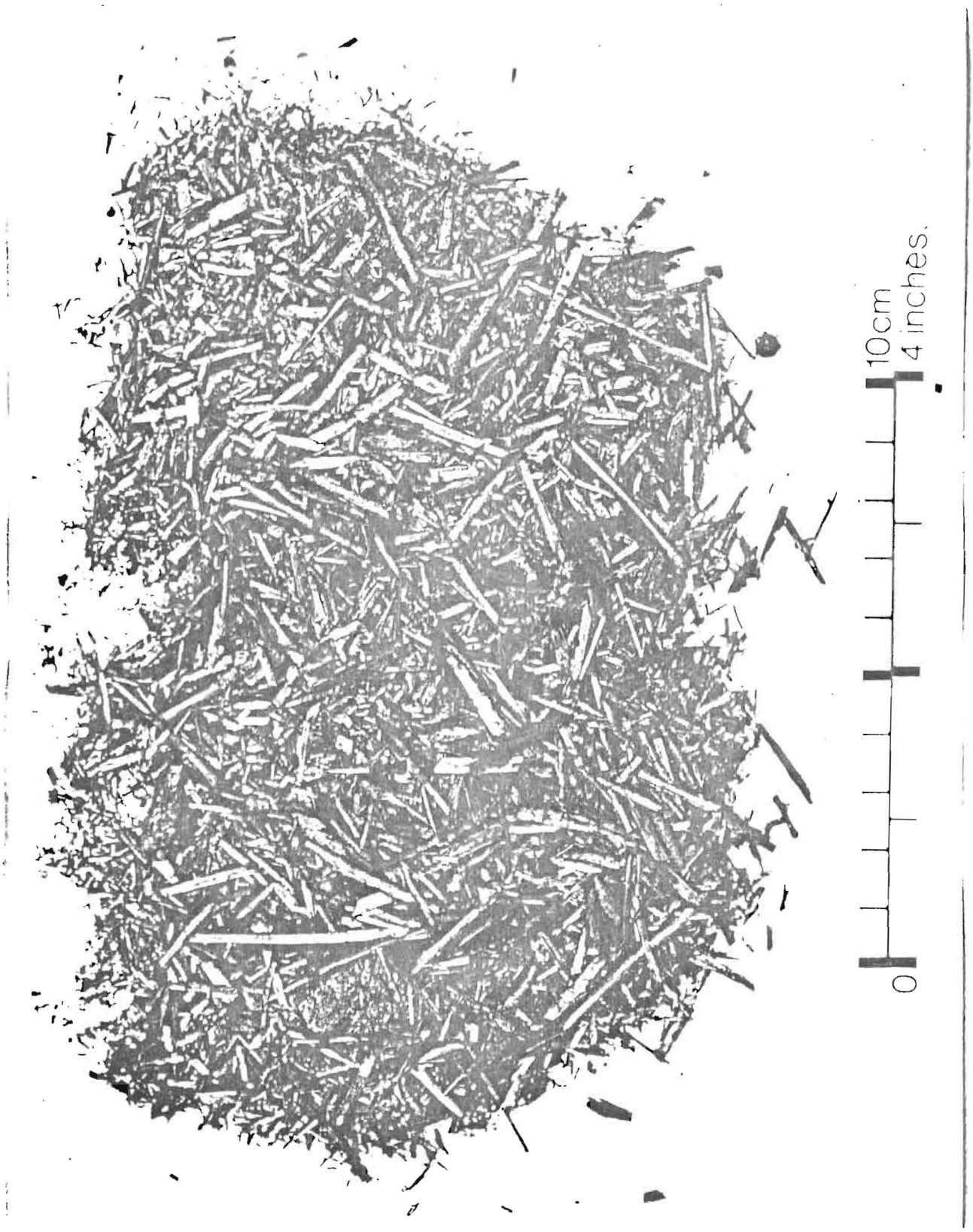
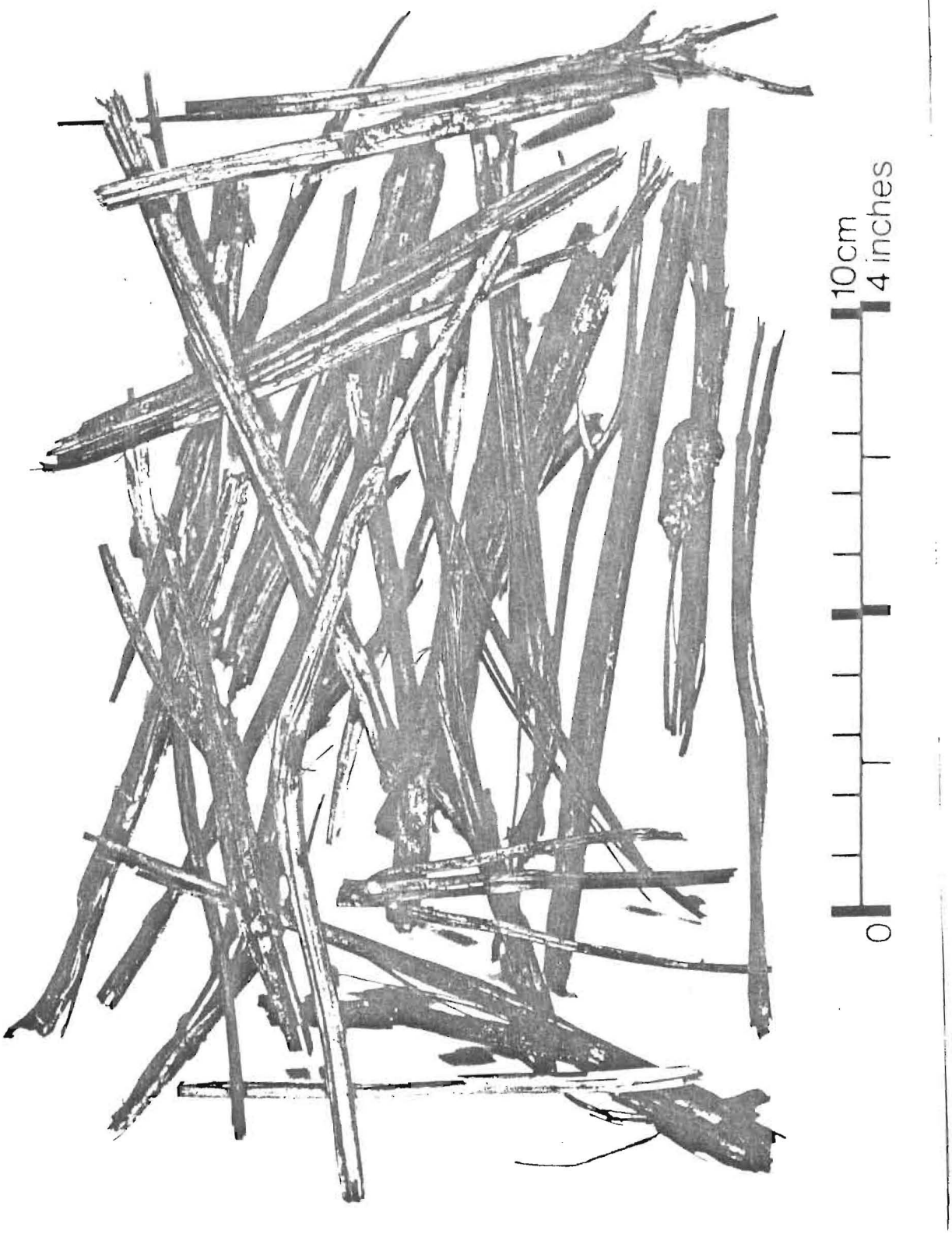

0
10cm
4 inches.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General discussion

The crop plants, and some wild species which may have been utilised, are listed in Table 25. With a few exceptions these crops occur consistently in deposits dating from the 12th to the 17th centuries. Flax was only recovered from a single deposit (171N 93), probably of late Saxon date; its absence in later samples is thought to indicate that flax products (fibre, linen, oil) reached the city in a processed or semi-processed state during the medieval and post-medieval periods. Strawberry, raspberry and walnut were recovered from a relatively small number of deposits and their distribution through time is consequently erratic. Two-row barley was rarely identified; there were few deposits containing well-preserved rachis material.

Given the number of samples examined, the list of cultivated species identified is very short. At Ipswich, by way of comparison, a much smaller number of samples from Saxon and medieval deposits produced a list of comparable length including taxa such as Coriandrum sativum (coriander) and c.f. Anethum graveolens (dill) which are absent at Norwich (Murphy 1978). However, preservation conditions were in general much poorer at Norwich; and if it were not for a very few anaerobic deposits in wells and cess pits the Norwich species list would be shorter still.

A quantitative analysis of the frequency of the various crop plants in successive site phases has been made at site 302N, where a large number of samples was available. The method used is 'Presence Analysis' (Hubbard 1975), in which taxa are scored as 'present' or 'absent' in each sample, irrespective of the number of specimens. Normally the frequency of each taxon is represented as a percentage of the total number of samples in each site phase, but in this case there are too few samples per phase to permit the calculation of percentages. The results are given in Table 25. Dennell ( ) has criticised an over-simple interpretation of such analysis; certainly the frequency of presence of a particular crop plant need not relate directly to its economic importance. Bearing this in mind, 'Presence Analysis' does at least provide a convenient means of summarising the data, and is used merely in this way in Table 25.6

The presence analysis shows very little change through time. Barley is present in about a half to two thirds of samples of all periods and the remaining cereals and pea-type legumes are consistently present at lower, though variable, frequencies. The remaining taxa-fruits of various kinds - are not well represented. The slight increase in their frequencies in the post-medieval samples is largely a result of the fact that cess deposits, in which the preservation of fruitstones by mineralisation commonly occurs, are more common in the later periods.

It seems likely that this relatively static situation results from the fact that the utilisation of cereals and pulses did not change significantly during the period under consideration. Throughout the medieval and post-medieval periods certain crops would have been used largely as whole grain or seeds (eg. barley for malting and stews) whilst others would generally have been used as meal or flour (wheat and rye flour, oatmeal). Much of the milling was in fact centralised, being done at watermills in the Westwick Area. The earliest documentary references are of the 13th century, although mills probably existed in the area before that date (Blomefield iv, 505; NRO City Court Roll 1, rot 2m Case 1a; Helen Sutermeister, pers. comm.). Blomefield (1806 iv, 256) notes that the city bakers

Hordeum vulgare L.	Six-row hulled barley
Hordeum distichon L.	Two-row hulled barley
Triticum aestivum sl.	Wheat
Avena sativa L.	Oats
Secale cereale L.	Rye
Vicia faba L. var minor	Horsebean
Pisum sativum var arvense (L)Poir	Pea
Linum usitatissimum L.	Flax
Vitis vinifera L.	Grape
Ficus carica L.	Fig
Malus sylvestris Miller	Apple
Prunus avium L.	Cherry
Prunus domestica L. ssp. insititia	Bullace
Prunus domestica L.	Plum
Prunus spinosa L.	Sloe
Rubus idaeus L.	Raspberry
Rubus fruticosus agg.	Bramble
Fragaria vesca L.	Strawberry
Corylus avellana L.	Hazel
Juglans regia L.	Walnut

Table 25: Principle food plants (wild and cultivated) from Norwich

Table 26 : Presence analyses of samples from 302N

Phase	10th/11th - 12th century	13th century	13th-15th century	16th century	17th-18th century
Hordeum spp. (Barley)	10	21	24	19	11
Triticum aestivum sl. (Wheat)	3	15	16	6	6
Avena sp. (Oats)	5	12	5	11	2
Secale cereale L. (Rye)	3	7	13	3	3
Pisum-type (Peas)	7	5	19	14	6
Ficus carica L. (Figs)	1	-	2	5	4
Vitis vinifera L. (Grapes)	-	-	2	1	-
Rubus fruticosus app. (Bramble)	1	-	-	1	5
Rubus sp. (Bramble/Raspberry)	2	1	2	1	2
Prunus sp. (Plums etc.)	-	-	-	1	-
Crataegus (Hawthorn)	-	-	-	-	1
Malus sylvestris Miller (Apples)	-	-	-	3	3
Total number of samples per phase	21	34	41	30	17

N.B. Layers 243, 222, 212, and 287 within the Late 16th century cess pit 34 are treated as one context for the puposes of this analysis

were obliged to grind at the New Mills, and the miller was a municipal employee. Obviously those cereals which reached the consumer as flour or meal could not be represented in the palaeobotanical record, and consequently those consumed or processed as whole grain at the sites of consumption will be over-represented. In summary most urban samples of this type illustrate a pattern of human consumption which changes little through time, but give little or no information about changes in production.

Although the samples from Norwich are not informative so far as changes in agrarian production are concerned, an examination of their composition can be used to detect activities associated with crop processing and utilisation. They can be divided into seven main categories, of which the first four are related to the consumption and processing of cereals and pulses.

1. Carbonised deposits consisting of cereal grains, chaff and straw, with large numbers of weed seeds.

Deposits of this type are interpreted as harvested crops carbonised accidentally whilst being stored prior to threshing, winnowing and riddling. The only substantial deposit of this type comes from a 10th/12th century layer at Alms Lane (302N 925). The sample is basically of hulled barley with a few wheat and rye grains and peas as impurities. Large quantities of cereal chaff, seeds and seed-heads of common arable weeds are also present, along with bracken frond fragments, ash keys and seeds of bogbean which presumably were introduced into the assemblage after harvesting. This isolated sample provides the only botanical evidence for probable cereal production in the city area in the early medieval period.

2. Carbonised deposits of varying size containing cereal grains and legumes with little chaff, straw or weed seeds.

These are interpreted as 'cleaned' cereals and legumes carbonised during fires in granaries, during grain drying or during the cooking of whole grain over open hearths. Small deposits of this type are extremely common and probably represent casual small-scale losses during cooking.

3. Deposits of straw, chaff and crop weeds with few cereal grains

The best examples of such material were recovered from the destruction layers of the 1507 fire at 171N. A mass of charred barley straw, chaff and grains was found associated with burnt daub incorporating similar material (67). This plant material represents the waste residue from crop processing, in this case utilised as either thatch or litter and tempering for the daub.

4. Deposits of carbonised barley grains including germinated specimens

These deposits contain, in general, very few impurities. They are interpreted as malted grains accidentally carbonised as a result of poor temperature control during roasting. The largest sample is from a 13th century layer at Alms Lane (302N 1492) but small deposits of carbonised germinated barley were recovered from several sites. This suggests that malting and brewing was a widespread, uncentralised activity.

A general scheme for cereal and legume processing, based loosely around that devised for medieval deposits from Winchester (Frank Green, pers. comm.) is given in Fig.

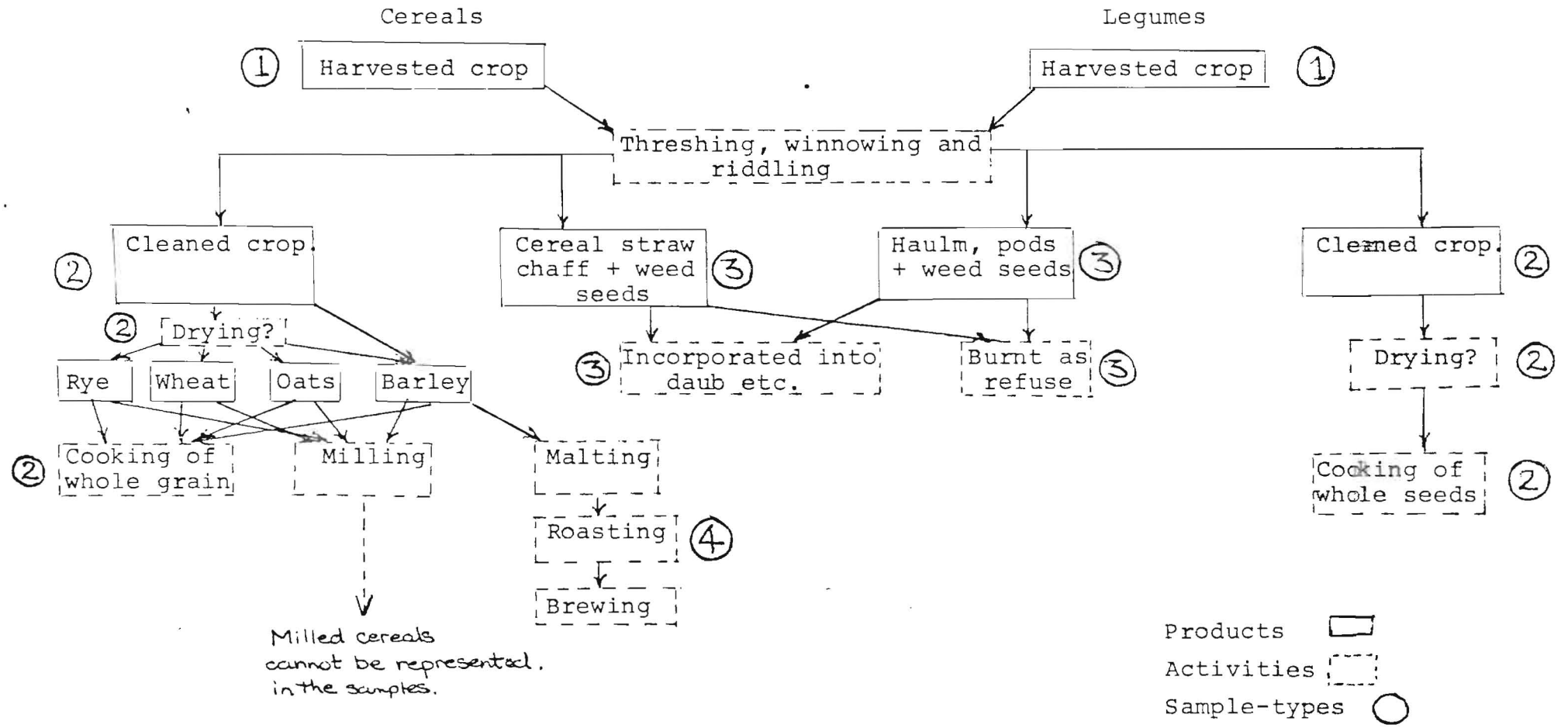

Fig 1. An outline scheme for crop processing and utilisation.

5. Aerobic deposits containing mineralised (subfossil) seeds

The assemblages of plant remains from these deposits are a product of differential preservation. Fruits and seeds of Sambucus nigra (elder), Chenopodium album (fat-hen), Ficus carica (fig), Vitis vinifera (grape) Rubus fruticosus (bramble) Maluv sylvestris (apple) and Prunus spp. (plums etc.), besides having testas and endocarps which appear to be relatively resistant to attack by micro-organisms are also frequently found impregnated with insoluble calcium salts. Other taxa can to some extent be preserved in this way, although the process of mineralisation does cause distortion of diagnostic features, making determination difficult. Consequently the assemblages give a partial and thus biased impression of the seeds of cultivars and wild plants originally present. Assemblages of this type are extremely common at Norwich, often occurring in association with small Type 2 assemblages.

6. Fully anaerobic deposits in cess pits, wells and refuse pits

Most of the sites excavated in the city were on river gravels, above the flood-plain, where premanently waterlogged sediments were naturally rare. However, a few anaerobic deposits were available for examination, notably 172N 541, (a twelfth-century well), 168N 40, (a century pit) and 283N 123, (a sixteenth-century cess pit). The plant remains from these deposits included well-preserved seeds and 'stones' of soft fruit (plum, cherry, fig, grape, strawberry, bramble, apple etc.); associated with seeds of a fairly restricted range of weed and ruderal plants (eg. Chenopodium, Atriplex, Rumex, Urtica, Polygonum spp. and Stellaria) and of crop weeds (eg. Raphanus raphanistrum, Agrostemma githago, Anthemis cotula). Wetland taxa were sporadically represented. Fragments of bracken frond, reed culm and heather leaves occur in these deposits; in 168N 40, for example, bracken made up the bulk of the organic component of the sediment. These materials were presumably imported to the sites for use as thatch and floor coverings. The mosses from these anaerobic sediments appear to be accidental inclusions of no economic significance.

7. Natural or semi-natural sediments of the river valley

Valley peats and alluvial deposits were examined at several sites, notably 169N, 171N and 318N. They contained remains of wetland plants, and seeds derived from adjacent upland areas representing several plant communities, and often produced remains of crop plants indicating the dumping of food refuse on the marsh surface.

It may be assumed that the vegetation of the valley floor would have originally included examples of all stages in the succession from open water through reed swamp (Phragmites communis), swamp carr with Carex paniculata and alder carr (Alnus glutinosa) to fen-wood formation (Tansley 1953). The Yare Valley, though increasingly subject to pressures similar to those which led to the destruction of the natural vegetation of the Wensum Valley at Norwich, still has examples of reed-beds, marsh and carr in the vicinity of the City (Watts, et.al. 1976). The basal peat (93) at 171N contained culm nodes of Phragmites with fruits and seeds of sedges (Carex spp.), rushes (Juncus spp.) and reedmace (Typha sp.) indicating a local environment of marsh and reedswamp in the early medieval period,

whilst the peats at 169N and 318N produced restricted wetland floras, possibly best interpreted as wet grassland. No direct evidence for the existence of alder carr has been recovered, though alder wood does occur, for example at 171N. From an early date the exploitation of these wetland plant communities for timber, fuel and reed and their use as pasture and meadow (documented at several localities eg. in the Cowgate/Whitefriars area, between Foundry Bridge and Bishopgate and around the Cow Tower; Blomefield 1806) would have led to a progressive reduction in species diversity; and artificial drainage together with the raising of levels by dumping refuse and soil resulted eventually in their local extinction.

These low-lying deposits have also produced a few remains of heathland plants: Calluna vulgaris (ling) Pteridium aquilinum (bracken) and a tentatively-identified specimen of the moss Pleurozium schreberi, the principle bryophyte of the Callunetum (Watson 1959). Herbaceous taxa occurring both in heaths and dry acid grassland are also represented; examples are Rumex acetosella, Scleranthus cf. Annuus and Aphanes arvensis. Calluna and Pteridium-heaths, still well-represented on Mousehold Heath, were formerly much more widespread in the Norwich area on the glacial gravels which extend for over 10 km towards Salhouse and Ranworth. (Funnell 1976). Dry grassland communities would also have developed locally on the river gravels of the Wensum. The examples of heathland plants from the samples at Norwich may partly be derived by natural means from these areas of heath and grassland, though as is noted above some may have been deliberately imported.

The final component of the assemblages from the 'natural' peats comprised seeds of weeds and ruderals, representing a very similar range of species to that found in anaerobic deposits of cess and refuse pits.

Suggestions for future work

It seems clear that the extensive sampling for plant remains which seemed appropriate in the early 1970's would prove progressively less profitable if continued. The results would probably merely duplicate those already obtained. In place of extensive sampling a much more intensive approach, designed to answer specific questions now seems more useful. The two particular topics which now require examination are as follows:

1. The character of the floor of the valley at different periods. The plant remains and other macrofossils from the alluvial deposits should be investigated for the information they can give about variations in the local water-table (see report 'Recent Sediments of the Wensum Valley' for further discussion).

2. The nature of the late Saxon agrarian economy. To what extent were the late Saxon settlements food producers as opposed to consumers? Cereal deposits from Saxon layers should produce some information relating to this question.

In addition, examination of anaerobic deposits, particularly of the early medieval and late Saxon periods may produce further environmental and economic information; at present very few anaerobic sediments have been investigated.

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