ANCIENT MONUMENTS LABORATORY

REPORT

4017

SERIES/No CONTRACTOR

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TITLE Anglia Television Extension, Norwich. Macroscopic plant remains, soil profile, well sediments, mollusca. Revised 25 August 1982

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Site:	Anglia Television Extension, Norwich
County:	Norfolk
Reference No:	416N
Type of site:	Late Saxon Church, cemetery and well, later occupation
Geology:	Outwash sands and gravels over chalk
Director:	B. Ayres
Type of material:	Macroscopic plant remains; soil profile; well sediments; mollusca.

Anglia TV.

Part VIII: Environmental Evidence

I Introduction

Investigations of biological remains, soils and sediments at this site were on a small scale. Soil conditions in the well-drained sand- and gravel-based deposits were generally suitable for the preservation of only a limited range of macrofossils, notably carbonised and mineralised plant material, mineralised fly puparia and other anthropods, bone and, in some deposits, shell. Some samples were taken from dry medieval and post-medieval refuse deposits in pits and other features, but following initial examination it was not thought that further study of these samples would add significantly to the information gained from similar deposits at several Norwich Survey excavations (Murphy 1978 a,b; 1979 and forthcoming; Jones, A.K.G. forthcoming). Consequently attention was focussed on a small number of potentially more informative contexts: a buried soil profile adjacent to the north-east bailey ditch, structured organic deposits obtained by boring from the base of the Late Saxon well, and charcoal apparently representing structural timbers associated with the church buildings.

II Buried soil (46)

Close to the edge of the main ditch a buried soil (46) was sealed beneath a dumped chalky deposit (44). The section was as follows:

1. 0-10cm Layer 44. Dumped chalky loam.
2. 10-20cm Firm brown (10 YR 4.5/3) sand; rare angular and rounded flints up to 3cm, very rare chalk pebbles up to 2cm; charcoal flecks; fine fibrous roots; narrow boundary.
3. 20-42cm Firm brown (10 YR 4/3) sand; rare angular and rounded flints up to 3 cm; few faint pale mottles; charcoal flecks; fine fibrous roots; narrow boundary.
4. 42-62cm Firm dark brown (7.5 YR 4/4) sand; rare angular and rounded flints up to 4cm; charcoal flecks; fine fibrous roots; narrow boundary.
5. 62-90cm+ Friable light yellowish brown (10 YR 5.5/4) sand; almost stoneless, but with a few small chalk flecks; 1cm diameter root-hole channels filled with brown sand.

The parent materials were glacial sands and, in places, gravels all overlying chalk.

Samples were sent to Dr Richard MacPhail, who comments:

'The soil appears to be a gleyic brown calcareous sand. It is base-rich and has the following pH - 8.1 - 8.3; this is the average for all five zones sampled. It is difficult to say without seeing the soil in the field, but it appears that the topmost A1 horizon is missing - but this may only have been a few cms thick. Zones 2, 3, 4 and 5 (see above) would therefore appear to be A12, B, B2 and C horizons. Overall the soil does not show any great maturity, and could well have formed under an open, dry grassland.'

No clear distinction could be made between this soil and a further buried soil within the ditch itself (also numbered 46): the two appeared to merge laterally. Column samples for mollusc analysis were taken from the profile described above, but shells were extremely rare: only a few specimens of Cecilioides acicula, Trichia spp, Vallonia spp and Zonitidae were extracted. The low frequencies of shells in these samples support the suggestion that the upper part of the soil profile is missing. Notes on the mollusca from this column and from the ditch are given on microfiche ( ), and plant remains from 46 are discussed below.

III Deposits in well (1006)

Although complete excavation was impractical, a borehole was made by May Gurney Limited as part of the site investigation for construction work. This provided small sediment samples, mainly disaggregated but partly as intact cores. The samples show the well deposits to have consisted of an upper dark aerobic loam containing domestic refuse; layers of sandy clay loam with chalk, flints and building debris; a gleyed chalky horizon and basal anaerobic deposits. Whether the well was timber-lined cannot be determined, though the lowest deposits contained some wood fragments.

Six samples were retained for examination. The depths given are taken from an arbitrary surface scraped over by the machine, but this level approximates to the surface of the chalk. Since the samples were mainly disaggregated, fine details of sediment structure (e.g. minor laminations etc.) could not be distinguished and the descriptions given therefore refer to the overall character of each sample.

5-5.5m Dark brown (10 YR 3/3) loam with rare small patches of light yellowish brown (10 YR 6/4) sandy clay: small flints and chalk pebbles; abundant charcoal fragments;

charred cereals, charred and mineralised seeds; oyster and mussel shell fragments (large); common fish and small mammal bone, large mammal bone fragments. (This is essentially similar to the upper fill exposed during the excavation; it continues to a depth of at least 6.5m.)

8.5m — Yellowish brown (10 YR 5/4) sandy clay loam; medium fractured flints and small chalk fragments; mortar/plaster fragments; very rare small charcoal fragments; rare fishbone and large mammal bone fragments.

10.5m — Yellowish brown (10 YR 5/3.5) variable sandy loam and sandy clay loam with small patches of sand; small indistinct pale mottles; slight iron panning; small flints and chalk fragments; small charcoal fragments; oyster and mussel shell fragments; fish and bird bone; fragments of large mammal bone. (Layer of chalky rubble at about 10.7-10.9m.)

11.0m — Greyish brown (10 YR 4.5/2) loam; large distinct yellowish-brown (10 YR 5/4) mottles; iron panning; abundant small chalk fragments, rare small flints; small charcoal fragments, charred cereals, Sambucus seeds; oyster and mussel shell fragments; fish rib.

13.0m — Waterlogged black silt loam; rare small flints and chalk fragments; wood fragments, seeds, mosses, decayed plant tissue; rare small charcoal fragments; insect remains, oyster and mussel shell fragments; fish, small mammal bone, fragments of large mammal bone.

13.0-13.4m — Dark brown (7.5 YR 3/2) waterlogged organic deposit, low mineral content; rare large flints and small-medium chalk fragments; abundant wood fragments, seeds, mosses, decayed plant tissue; rare small charcoal fragments; insect remains, oyster shell fragments and land molluscs; fish, small mammal and amphibian bone, fragments of large mammal bone; scraps of avian eggshell.

13.4m+ — Chalk.

IV Plant macrofossils

Samples from the anaerobic deposits at the base of the well (1006) and from soil profiles in, and adjacent to, the defensive ditch (46) were examined. Only small samples (1kg) were available from cores taken from the well. Plant remains

were extracted by wash-over and wet-sieving, using a minimum mesh size of 250 microns. In addition, samples of charcoal, apparently representing structural timbers associated with the church, were identified. Plant macrofossils identified are listed in Tables .

Discussion

In common with most assemblages of plant remains preserved in urban waterlogged deposits, the material from the lowest layers of the well is clearly derived from several sources, though a more restricted range of plant communities is represented than at the low-lying sites of the valley floor.

Some of the fruits and seeds from these deposits probably came from plants growing immediately around the well-head. The trampled conditions of this area would have been suitable for a relatively small number of species, such as Plantago major, Polygonum aviculare, Capsella bursa-pastoris and Poa annua. It is probable that locally damp habitats were also present around the well, from which the seeds of rushes and nutlets of sedges may be derived, though the few remaining wetland plants identified (alder, ragged robin, reedmace and spike-rush) are unlikely to have been growing locally, and were presumably imported to the site from the valley floor with timber, reeds or by other accidental processes.

The majority of the seeds, however, are of segetals, ruderals and scrub plants, almost all of the species already identified in samples from excavations in Norwich (Murphy, 1979). Many of these plants have fairly wide habitat ranges and are abundant on disturbed soils; most could have been growing in waste ground in the area, though a few are more typically segetals and are probably derived from harvested cereal crops. Fruits of Anthemis cotula are particularly abundant, and this species has also been identified at high frequencies in waterlogged Saxo-Norman deposits at Whitefriars Street, Norwich and Bridge Street, Ipswich (Murphy, forthcoming). A. cotula is nowadays most common in East Anglia on heavy Boulder Clay soils (Petch and Swann 1968, 210). The immature fruit of Xanthium strumarium from near the base of the well is of some interest, for Godwin (1975) gives no British subfossil records of this species. Tutin et al (1976, 143) distinguish two subspecies: ssp. strumarium, native in east, south and central Europe, but occurring as a casual in the north and west, and ssp. italicum, an introduction from the New World. Lange (1968) discusses early medieval subfossil records from central Europe. The single fruit from the present site need not indicate that this plant grew as a casual in early medieval Norwich: the bur-like fruit is clearly adapted for dispersal by

attachment to the coats of animals and thus the Norwich specimen could easily have arrived with furs or perhaps textiles imported from the Continent.

Remains of crop plants were not common in these samples. Three charred oat grains (species indeterminate) and some non-charred fragments of cereal rachis, tentatively identified as rye, were recovered. The sample from 13-13.4m produced a single seed of flax (Linum usitatissimum), a crop which has hitherto only been recovered from a late Saxon or earlier marsh deposit at 22 Wensum Street (171N) and from waterfront deposits at Whitefriars Street, Norwich (421N), and is not known from later medieval and post-medieval contexts in the city. It seems probable that this indicates some local cultivation in the earlier medieval period, whilst flax products (linseed oil and linen) subsequently reached Norwich in a processed or semi-processed form.

A few leaves of heather (Calluna vulgaris) were recovered. On deforestation the light soils of the area can become podsolised, and heath vegetation become established; for example during the medieval period Mousehold Heath came to occupy the site of the former Thorpe Wood as a result of woodland clearance (Rackham 1976, 136). The remains of Calluna must be derived from areas such as this, but such small quantities were present that it is difficult to determine whether deliberate collection for flooring etc. or accidental importation is represented.

Since complete excavation was impossible, and the samples were recovered by boring it is not known whether the well had had a timber lining. However, besides twigs of sloe(?) and hazel, the basal layers contained pieces of mature oak and ash wood, which may have formed part of some internal lining. The mosses from the samples have very wide habitat ranges, and provide no specific environmental information.

The charcoal from contexts 1114, 1115 and 2156 included mature oak and sweet chestnut. Chestnut wood and charcoal is known from the Romano-British period, but it is possible that imported timber was involved (Godwin 1975). By the medieval period documentary and place-name evidence, combined with identifications of charcoal suggests that the species was widely established in Southern Britain. (Rackham, 1976, 98.) In Norfolk chestnut charcoal has been identified as part of the fuel of an 11th century pottery kiln at Langhale (Jones, 1976). Its use for such a humble purpose serves to confirm that the tree was naturalised in Norfolk by this date, and there is thus no need to suggest importation of timber for use in the church.

Context no.	1006	1006(d)
Depth	13m	13-13.4m
Ranunculus acris-type	1	-
Ranunculus sp.	-	1
Papaver rhoeas L.	1	-
Papaver argemone L.	-	6
Brassica sp.	-	6
Raphanus raphanistrum L. (frags)	+	-
c.f. Capsella bursa-pastoris (L) Medicus	-	1
Reseda [illegible] L. cf.	-	1
Lychnis c.f. flos-cuculi L.	1	-
Agrostemma githago L. (frags)	+	2
Cerastium/Stellaria sp.	1	4
Spergula arvensis L.	2	7
Caryophyllaceae indet.	2	2
Chenopodium album L.	2	6
Chenopodium c.f. ficifolium Sm.	3	-
Atriplex sp.	-	4
Chenopodiaceae indet.	-	1
Linum usitatissimum L.	-	1
Rubus sp.	-	1
Umbelliferae indet.	1	-
Polygonum aviculare agg.	3	5
Polygonum persicaria/lapathifolium	3	-
Polygonum convolvulus L. (frags)	+	3
Rumex acetosella agg. (a)	2	24
Rumex sp.	-	3
Polygonaceae indet. (frags)	5	2
Urtica dioica L.	4	18
Alnus glutinosa (L) Gaertner	1	-
Corylus avellana L. (frags)	+	+
Calluna vulgaris (L) Hull (leaves)	+	-
c.f. Anagallis arvensis L.	-	1
Plantago major L.	1	3
Sambucus nigra L.	2	11
Valerianella dentata (L) Poll.	-	2
Xanthium strumarium L.	1	-
Anthemis cotula L.	14	54
c.f. Cirsium sp.	-	2
Centaurea c.f. cyanus L. (frags)	1	3
Lapsana communis L.	-	5
Sonchus asper (L) Hill	1	-
Compositae indet.	2	1
Juncus sp.	+	+
Typha sp.	1	-
Eleocharis sp.	-	1
cf. Schoenoplectus sp.	-	1
Carex sp.	-	1
Poa annua L.	1	6
Hordeum secalinum Schreber	1	-
Avena sp. (carbonised)	3	-
c.f. Secale cereale L. (rachis frags)	-	+
Gramineae indet. (b)	12	23
Indet. (seeds)	6	-
Prunus sp. (twigs)	-	+
c.f. Prunus spinosa (thorn)	1	-
Corylus sp. (twigs)	-	+
Quercus sp. (mature wood)	-	+
Fraxinus sp. (mature wood)	-	+
Unidentified bark fragments	-	+
Unidentified wood (c)	+	+
Bracythecium rutabulum (Hedw)B.,S+G (e)	-	+
Bracythecium velutinum (Hedw)B.,S+G (e)	+	-
Sample weight (kg)	1	1

Table 1 : Macroscopic plant remains from the basal deposits of the well (1006)

Taxa are represented by fruits or seeds unless otherwise indicated.

Notes

(a) Includes nutlets cf. R.acetosella-type and R. tenuifolius-type

(b) These unidentified caryopses are either poorly preserved (incomplete, distorted or with features obscured by brown deposits) or show combinations of characteristics not included in the key of Körber-Grohne (1964). Grasses from dry situations were deliberately excluded from this key, and it is quite likely that some of the unidentified specimens fall in this group.

(c) These are mainly very hard wood fragments which could not be satisfactorily sectioned.

(d) This sample also produced shells of Helix aspersa and Limacidae (slugs). Insect remains were abundant in both samples.

(e) Mosses kindly identified by Dr Peter Lambley, Natural History Department, Norwich Castle Museum.

(f) See note below

	1114	1115	2156
Quercus sp. (oak-mature wood)	+	+	+
Castanea sp. (chestnut-mature wood)	-	+	-

Table 2 : Charcoal from features associated with the church.

Context		46			46			
		(Soil profile at edge of ditch)			(Soil profile in ditch)			
Depth (cm)		0-10	10-20	20-30	0-10	10-20	20-30	30-35
Hordeum sp	ca	-	-	-	1	-	-	-
Cereal indet.	ca	-	2	1fr	-	-	-	-
Vicia faba var minor		-	1s+1co	2s+2co	-	-	-	-
Chenopodium album L		-	1	29+fr	-	-	-	-
Sambucus nigra L		-	-	-	2	1	-	1
Galium aparine L		-	1	1	-	-	-	-
Corylus avellana L	fr	+	-	-	-	-	-	-
Carex sp		-	-	-	-	-	,1	-
Unidentified		-	-	2	-	-	-	-
Sample Weight (kg)		2	2	2	2	2	2	2

Table 3: Plant remains from soil profiles in, and adjacent to, the defensive ditch.

All specimens apart from seeds of Sambucus nigra were carbonised.
Abbreviations: ca - caryopses; co - cotyledons; fr - fragments; s - seeds.
Cotyledon fragments of Vicia faba were also present.

The plant remains from soil profiles associated with the defensive ditch (46) include charred cereal grains, seeds of the field bean, hazel nut shells and weed seeds together with uncharred seeds of elder. A somewhat similar assemblage of charred cereals with mineralised seeds of fig, elder, blackberry and apple was extracted from the earliest fill of the south bailey ditch of the Castle at Market Avenue, 15ON (Murphy 1979). The precise significance of these assemblages, from contexts into which material from a variety of sources may have become incorporated, is difficult to assess, but presumably a mixture of food refuse with seeds from the local ruderal flora is represented.

References

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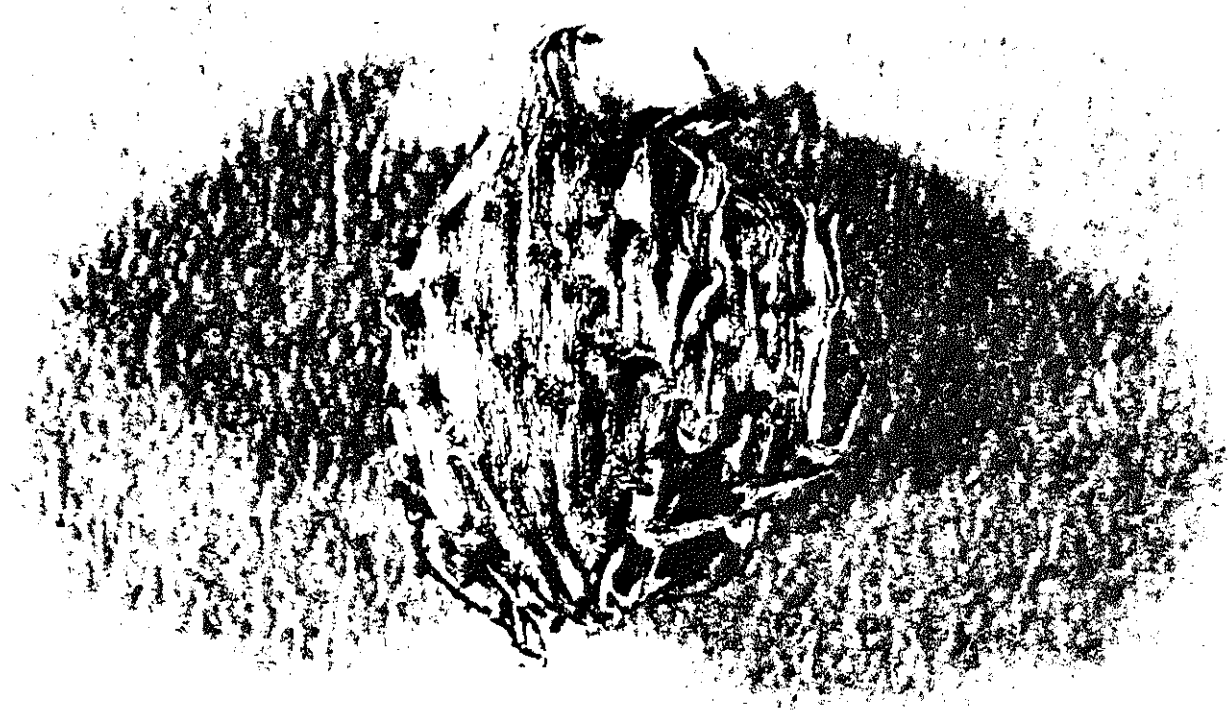

Plate : Fruit of Xanthium strumarium L. from [illegible] (13m). Length 10·1m[illegible]

(Suggest this should be included in archive but not published)

F.M.C.

Land molluscs

Column samples were taken from the soil profiles collectively numbered 46 in the defensive ditch and adjacent to it for the extraction of land molluscs. In view of the uncertain stratigraphy and relative dates of these two profiles detailed analysis has not been undertaken, though brief notes on the general character of the assemblages present in these soils are given here. A further sample from 61, the lowest ditch fill, produced no molluscs. Samples from the profile adjacent to the lip of the ditch contained only very rare shells of Cecilioides acicula, Trichia spp., Vallonia spp. and Zonitidae with valve fragments of Mytilus edulis. The soil within the ditch contained included a much higher concentration of molluscs. These were predominantly of Vallonia costata and, Vallonia excentrica and Trichia spp. Adults of both T. hispida and T. striolata were present, but there was a high proportion of Trichia juveniles which could not be satisfactorily separated into species. Also present at lower frequencies were Cochlicopa spp., Pupilla muscorum., Aegopinella spp. (including A. pura), Oxychilus spp., Limacidae, Cecilioides acicula and Helix aspersa. There was no marked faunal change through the profile. The assemblages include 'open-country' and synanthropic elements with rather few shells of shade-requiring taxa, and. They indicate a disturbed conditions within a generally shade-free habitat. It seems improbable that detailed quantitative analysis would add significantly to this conclusion.

Plant remains extracted from these samples are discussed above/below (p.).