Fruits and seeds from three sites in Ipswich (IAS 4302, 5502 and 7402)

The plant remains from 15-16 Lower Brook Street (5502) and Vernon Street, Stoke (7402) were recovered during the summer of 1975 by Andrew Jones and Nick Balaam, whilst those from Turret Lane (4302) were extracted from samples taken in 1978 by the writer.

Preservation Preservation conditions were similar at all three sites. Moist, but aerobic, soils predominated, containing mainly carbonised material with a few seeds in a mineralised or sub-fossil state. Features 280 and 455 at Brook Street contained anaerobic deposits, as did the bases of several features at 4302. The plant remains from the aerobic soils were generally in poor condition, and many specimens could hot be closely identified. In a few wet features (eg. 0047 at 4302) an active soil fauna (mainly nematode worms) was present probably causing some destruction of plant material.

Recovery During the 1975 season samples from aerobic soils, generally 15 litres in volume, were processed in a flotation machine similar to that described by Williams (1973), collecting the flot in a 1 mm. mesh. Fruits and seeds smaller than 1 mm. were therefore not recovered. Smaller samples of the anaerobic sediments were washed through a rack of sieves, the smallest having a mesh size of 250 microns, and seeds were extracted from the sieved fractions. In addition large samples of the anaerobic soils were processed in the flotation tank, principally in order to recover more fruitstones.

Since the interpretation of carbonised seed assemblages may depend upon the recovery of smaller weed seeds and rachis fragments, slightly different recovery methods were employed in 1978. Seeds were recovered from smaller samples by flotation in the laboratory, using a 250 micron mesh sieve to retain the flot.

Descriptions of crop plants

1. Barley (Hordeum sp.)

The barley caryopses, though rather poorly preserved, are clearly from a hulled variety having an angular cross-section (Fig. , i). There are a few twisted grains from lateral spikelets from all three sites which establish the presence of six-row barley, Hordeum vulgare L., but in 5502 0369 there are twelve straight grains which may be of a two-row variety. Fine morphological features have not survived and the grains are too distorted to make measurements worthwhile.

Small fragments of barley rachis internodes were recovered from 4302. The overall proportions of these internodes cannot be determined, but all specimens have strongly pubescent margins. (Fig. ,k).

2. Wheat (Triticum sp.)

The wheat grains in these samples are of two main forms: a small plump type and more elongate form with maximum width just above the embryo. Both are described as <u>Triticum aestivum sensu lato</u> in Tables and though some of the former may be of club wheat. (Fig. , e,f). The dimensions and indices of six grains from 7402 0281 are as follows:

	Length(mm)	Breadth(mm)	Thickness(mm)	L/Bx100	T/B×100
mln.	2.9	2.5	2.5	116	78
mean	3.98	2.98	2.63	133	89
max.	4.6	3.4	3.0	161	100

3. Rye (Secale cereale L.)

The grains of rye are variable in size and shape, both long curved grains and short straight forms being present (Fig. , a-d). The measurements of seven grains from 5502 0537 give some idea of this variability.

	Length(mm)	Breadth(mm)	Thickness(mm)	L/Bx100	T/B×100
min.	3.4	1.5	1.5	217	83
mean	4.66	1.96	1.8	238	93
max.	6.0	2.5	2.2	276	107

4. Oats (Avena sp.)

Most specimens are of naked grains, and there are no floret bases. However, the large size of these grains (up to 6.3 mm in length) suggests that the cultivated species Avena sativa is represented. (Fig. , g,h).

5. Horsebeans (Vicia faba L. var. minor)

These large-seeded legumes are quite distinctive even though the hila have not survived, the testas are split and the cotyledons puffed. (Fig. ,j). A few seeds were measureable:

	Cotyledon length(mm)	Cotyledon breadth(mm)	Thickness across Cotyledons (mm)
7402 0090	8.0	5.2	5.5
	6.5	5.0	4.7
	6.0	4.6	4.8
5502 0434	7.6	5.2	4.8
4302 0029	7.1	5.3	5.3

Vetches/Peas (Vicia/Pisum sp.)

These spherical seeds and isolated cotyledons, lacking testas and hila, between $3.5-5.2 \, \text{mm}$. In diameter cannot be closely identified.

Flax (Linum usitatissimum)

Feature 0029 x 4302 produced two small flax seeds. The intact specimen measures 3.4 x 2.0 mm. (Fig. , 1).

8 Cherry (Prunus avium)

Mineralised casts of endocarps, probably of this species, come from $5502\ 0434$ and 0455, and a well-preserved carbonised fruitstone, 7.0×5.9 mm. was recovered from $5502\ 0113$ (Fig. , n).

9. Plums and bullaces (Prunus domestica sensu (ato)

Fruitstones came from waterlogged layers at 5502 0455 and 0280 and 4302 0047. They are almost all poorly preserved crushed and badly distorted, but large stones of a cultivated variety are certainly present (Fig. , m), along with smaller stones of the ssp. insititia.

Entire fruits of P. domestica ssp. insititia were recovered from 4302 0047 and 0036. The mesocarp tissue of these fruits is impregnated with mineral salts, but where they are fractured the endocarp is clearly visible.

II. Herbs

Three mericarps from 5502 0455 are tentatively identified as dill, Anethum graveolens (Fig. , o). A well-preserved globose fruit of coriander, Coriandrum sativum, came from 4302 0047 (Fig. , p).

Discussion and conclusions

The cereals consumed at these sites included six-row and probably two-row barley, bread wheat, rye and oats. The Middle Saxon pits at Brook Street produced very similar cereal assemblages to those of the Saxo-Norman pits at Turret Lane, although oats are less well represented in the earlier samples. These crops were apparently widely cultivated around the North Sea coasts in the early medieval period: the material from Ipswich compares closely with that from 8th-9th century deposits at Dorestadt, for example, (Van Zeist 1970, 139) and a similar range of cereals is represented in the Late Saxon samples from Great Yarmouth (Jones 1976, 227). Unfortunately the composition of the assemblages of cereals, chaff and crop weeds from the Ipswich sites does not clearly indicate whether crop processing was taking place in the town. Characteristically the cereal samples are small and mixed, consisting of a few grains with occasional rachis fragments and weed seeds.

Legume crops included horse-beans and vetches or peas. A range of wild and cultivated fruits and nuts including cherries, plums, apples, blackberries, raspberries and hazel nuts was consumed. Elderberries may also have been utilised, although the seeds of this species may reflect the nature of the surrounding vegetation rather than human consumption.

The Flax seeds from 4302 0029 are small specimens, comparable to seeds from Roman contexts at Colchester (Murphy 1977) and Spong Hill (Murphy, forthcoming) which had mean lengths of 3.22 and 3.18 mm. respectively. It seems likely that such small-seeded varieties were intended for fibre rather than oil production (Renfrew 1973, 123). Flax was also identified at Great Yarmouth.

The cultivation of herbs is represented by the tentatively-identified fruits of dill from Lower Brook Street and by the fruit of coriander from Turret Lane. Fruits of celery occur in several features, but the wild species is common in wet habitats near the sea (Petch and Swann 1968, 161) and at a coastal site like Ipswich it cannot be assumed that celery was utilised. Umbelliferous herbs - parsley (Petroselinum crispum) and caraway (Carum carvi - tentatively identified) - are also know from 8th-9th century deposits at Dorestad (Van Zeist 1970, 141). Herb seeds could easily have been widely dispersed by trade between the North Sea ports.

The seeds of wild plants from these sites fall into four main categories:

- 1. Synanthropic weed plants, typical of disturbed nitrogen-rich habitats
- 2. Crop weeds
- 3. Grassland species
- 4. Wetland plants

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The distribution between these groups is by no means clear-cut but the first two groups make up by far the greater proportion. These seeds are derived partly from the vegetation of the immediate area, and some, no doubt, arrived at the site as contaminants of crops.

Caption to Figure: Fig: Plant Remains from Ipswich

- a-d Rye (Secale cereale) caryopses
- e-f Wheat (Triticum aestivum s.l.) caryopses
- g-h Oats (Avena sp.) caryopses
- Barley (Hordeum sp.) caryopses.
- J Horsebean (V. faba varminor) seed
- k Barley (Hordeum sp.) rachis internode
- ! Flax (Linum usitatissimum) seed
- m Plum (Prunus domestica) fruitstone
- n Cherry (Prunus avium) fruitstone
- o Dill? (c.f. Anethum graveolens) meri-carp
- p. Coriander (Coriandrum sativum) fruit
- q. Apple (Malus sylvestris) seed.

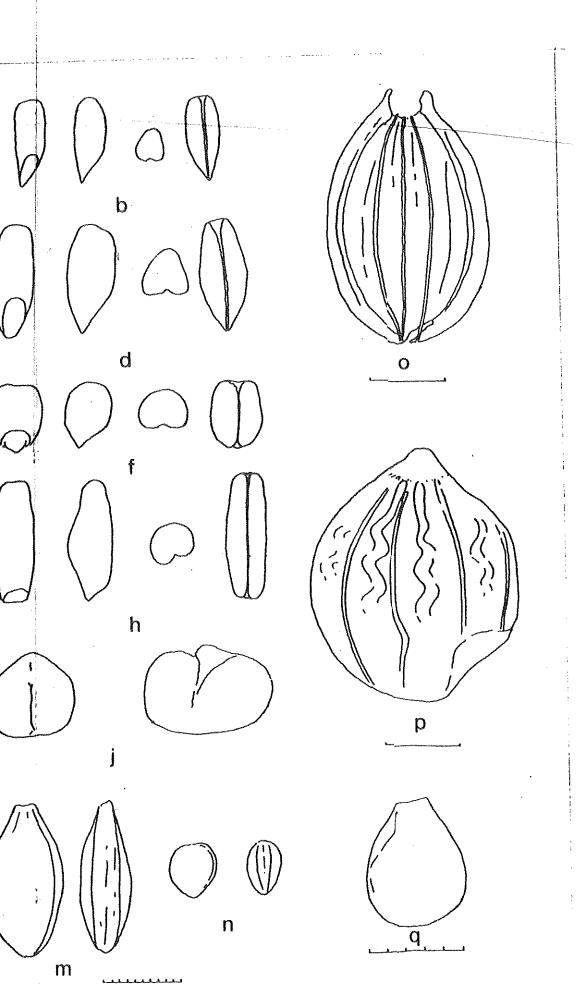
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Table 1 Fruits and seeds from Stoke (1AS 7402)

	Feature		0090.	0237	0281	Total
	Soil volume processed (1	itres)	622	435	475	
	Cereal indet	ca	8	3 .	5	16
ដូន	Hordeum sp.	ca	3	1		4
rea	Hordeum vulgare. L	ca	1		3	4
ig G	Triticum aestivum sl.	ca	2	1	15	18 '
	Secale cereale L.	ca	1		2	3
m	Vicia faba L. var. minor	s	4			4
gumes	Vicia/Pisum sp.	ន	1		1	2
Leg	Vicia sp	s			1	1
	Lathyrus sp.	ន		!	2 .	2
01	Chenopodium album L.	S	. 1			1
	Chenopodium hybridum L.	8		1	2	3
ants	Atriplex patula/hastata	s .	1	1	2	4
P	Chenopodiaceae : indet.	s	1		·	1
11d	Geranium sp.	s	1		3	4
Wi	Sambucus nigra. L.	ទ ់	38	11	12	61
	Indet		2	- 1	3	6
<u> </u>			,	1		

Table 2 Fruit and seeds from Middle Saxon pits at Brook Street (1AS 5502)

† · · ·	Feature		0113	0229	0369	0374	0434	0455	0516	0537	Total
	Soil volume processed (lit		60	65	40	55	60	50*	3	Γ''	
	Cereal indet.	cá	11	12	8	9	6			22	68
	Hordeum sp.	са	3	9	12	2	2			3	31
ι σ	Hordeum vulgare. L.	ca					2			3	5
Cereals	Triticum aestivum sl.	ca	1	2	3	3	3	(1)		9	22
Ce.	Secale cereale L.	CA			5	2	2			10	19
	Avena sp.	ca		2	1					3	6
	Cereal indet	cn		1	1					3	6
	William Caho I was minon	s·			<u> </u>		1		<u> </u>		1
mes	Vicia faba L. var minor					1			,	. 1	2
Legumes	Vicia/Pisum sp	S	1	1		1				2	4
F	Vicia sp.	S		ļ <u> </u>						"	
	Prunus sp.	fs					2	1(+7)			10
	Prunus avium L.	fs	1								1
	Prunus domestica s.1.	fs						1(+23	P		24
	Malus sylvestris. Miller,	S	-]1]		1
ts	Rubus idaeus L.	fs					9				9
Fruits	Rubus fruticosus agg.	fs						135	273	, ,	408
PE4	Rubus sp.	fs					4		ļ	<u> </u>	4
Nut	Corylus avellana L.	n fra	g	1	1		1	i i		1	4
Herb	c.f. Anethum graveolens L.	.mer							3		3
	Papaver rhoeas L.	s				1		5	37		42
	Brassica/Sinapis sp.	s						2	1 .		2
	Agrostemma githago L.	s		1	1					1	13
	Chenopodium album L.	s			1			9	7		17
	Atriplex patula/hastata	s			4			8			12
	Chenopodiaceae indet.	ន						6			6
	Potentilla sp.	a							27		27
	Apium graveolens L.	mer							1		1
nts	Umbelliferae indet	mer		1				3	2		6
Plants	Polygonum aviculare agg.	nu.		1	2			•1'	1		3
Wild]	Polygonum persicaria 4.	nu								1	1
THE	Polygonum lapathifolium L.	.nu			l				1		1
	Polygonum convolvulus L.	nu			4						4
	Rumex acetosella. agg.	nu			1				2		3
	Rumex sp.	nu			2			1	1		4
	Polygonaceae indet.	$\mathbf{n}\mathbf{u}$			1						1
	Urtica dioica L.	fr						4	3	WATER CONTRACTOR	7
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	reature		0113	0229	0369	0374	0434	0455	0516	0537	Total
	Solanaceae indet.	B			1						1
	Galeopsis tetrahit L.	nu						1			1
	Galium aparine L.	8					1				1
	Sambucus nigra. L.	В	5	6	2	1	4	. 1	2		21
	Valerianella dentata(L)Po	11 fr							1		. 1
t t B	Lapsana communis L.	су							4		4
Plants	Compositae indet.	су							1		1
	Carex spp.	nu		1	2						3
Wild	Bromus mollis/secalinus	ca .	1	1						1	3
	Gramineae indet	ca	1		3				1	2	7
	Indet.			1	3	1		5	2		10

^{* 50} litres of soil were processed in the flotation tank, but the figures given here refer to the seeds collected by wet-sieving a 3 litre sample, collecting to 250 microns. Additional specimens recovered in the flotation tank are listed in brackets.

Table 3 Fruits and seeds from Late Saxon well (0280) and twelfth century pit (0364 at Brook Street (1AS 5502).

F	^r eature		0280	0364
s	Soil volume processed (litres)		3*	52.5
_ω (Cereal indet.	Св		. 14
reals	lordeum vulgare L.	ca		, 1
r Ö	friticum aestivum s.1.	ca		1
S	Secale cereale L.	ca		4
ts t	Prunus domestica s.1.	fs	(1)	
Fruits	Malus sylvestris Mill	ន	1	
Dura	Reseda luteola L.	s	14	
F	apaver argemone L.	8	1	
Į <u>E</u>	Brassica/Sinapis sp.	s /	2	
E	dypericum sp	s	3	
s	Stellaria cf. media (L) Vill.	s	17	
S	Silene sp.	s ·	1	
2	Chenopodium album L.	B	9	
A	Atriplex patula/hastata	s	2	
	Chenopodiaceae indet	s	2	
<u> </u>	Conium maculatum L	mer	(1)	
) y	Malva sp.	nu	1	
Ē	Polygonum c.f. lapathifolium L	nu	1	
n I	Polygonum persicaria L	nu		1
ants	Polygonum convolvulus L	nu		1
다 [E	Rumex sp.	nu	3	
Wild	Urtica urens L	fr	11	
¥ <u>u</u>	Urtica dioica L	fr	49	
E	Ballota nigra L.	nu	24	
Ī	Labiatae indet	nu	1	
10	Galium aparine L.	8		1
Į.	Rubiaceae indet	B		1
[5	Sambucus nigra L	s	23	
. <u> </u>	Anthemis cotula L	су	2	• '
	Gramineae indet	ca	4.	
·]	Indet		2	

^{* 15} litres of soil were processed in the flotation tank; but the figures given here refer to the seeds recovered by wet-sieving a 3 litre sample, collecting to 250 microns. Species recovered in the flotation tank, but not by wet-sieving are listed in brackets.

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	Cyperaceae indet.	nu	T-4	3	•=	****	TOAP	ess.	eco	•••	***	•••
	c.f.Bromus mollis/secalinus	са	444	4.77.6	East	•••	-	\$104	POF	e-a	-	***
	Gramineae indet.	са	en>	value	1	645-	ping	E-16	1	₩	e _m	
	Gramineae Indet.	cn	prop	40-	-	lead	\$1000	ł	429		2	***
	Indet.		1	7	1	- Allen	1	gup.	1	1	strea-	tore
	% Flot sorted		100	50	100	100	100	100	100	100	100	100

: Fruits and seeds from Turrett Lane (IAS 4302) Table

Abbreviation:

ca - caryopsis

cn - culm node

cy - cypsela

fr - frult

fs - fruitstone

indet - unidentified

n - nut

nu - nutlet

ri – rachis internode

s - seed

s.l. - sensu lato

+ - fragments

* - entire fruits

Peri	bo			Pre- Middle occup Saxon SAXO - NORMAN ation ?								
Con∂	at No.		0070	0039	0029	0029	0029	0031	0031	0031	0032	003
Dept	h (cms) below top of 0070		tomb	ويس <u>ن</u>	0-20	40-60	80-100	0-20	45-65	80-100	0-20	Bas
Soll	volume processed (litres)		5	I	5	5	5	5	5	1	5	5
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	Hordeum vulgare L.	са	1	gorê		⊷	•••	Ka .	pos-	ed# ·	6	
	Triticum aestivum s.l.	ca	Maq.	42-4		-pun	ı	I	_	4-	2	1
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, ruu.s	Malus sylvestris Miller	5		#/*	****	4.00	- MINM	ma/m	***		tura .	-
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-	Rubus sp.	fs		1.	_	erc#	- Andrew	Water Company	gua.		****	- 4
Nut	Corylus avellana L.	n	+			+	_	-	,	124	+	<u>.</u>
Herb	Corlandrum sativum L.	fr	E.	North Control		yan .	was	V ca*	trub	ma.		
Flax	Linum usitatissimum L.	s		gan.	2	мож	4117*	1000	enu.	***		-]
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	Papaver argemone L.	s	-	1	0 22	çna	••••	and .	es/ds		***	-
	Papaver sp.	S	-	←	•		-	tota		AUR*	w	- 1
	Brassica sp.	S	NOTE:	+	***		***	No Confe	4000	árrár		-
	Silene alba (Miller)	s	400		•4400	Pine	***	444	≜ con	ļ	4400	-]
	Agrostemma githago L.	s	EFOMA	400	8 1.09	4004	****	Éme	·		A wa	-
	Scleranthus cf. anuus L.	fr	ime	•	-	incor.	,	4600	BATCH .	obtine)		-
	Caryophyllaceae Indet.	S	#Link	4	-	MAGN	*50"	40.00.	E)AN-	Michie	 .	-
	Chenopodium album L.	S	41104	7	•••	,	Moste	Down	S	1	* ~	
	Chenopodium c.f. glaucum L.	S	sicer	9	9144	MAG	Andr	# 100	Motor	4/10		
	Chenopodium hybridum L.	S	****	ençe	çum	- Wash	©7≡	*****	Loca	manual de la companya	-tomb	- [
	Atriplex patula/hastata	s	whole	esca»	MATER	yea	Ç.M	MCA.	beta-	- disce	B++0	
	Chenopodiaceae indet.	5	#30 4	4	C //4*	#10%	l	2,	Kink	ı	1	-
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	Medicago lupulina L.	s	emp	March .	Ware	alumb	86/CM	witen	40%	Que	644	
	Conium maculatum L.	fr	4-04	*;=*	know	2008	***	QUAMA	œw	Motors	aco#	***
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	Aethusa cynapium L.	fr	40KeV)	ATT/A	0.426	M-M	4000à	pm	no.e	got-in-	evo.	parss (
	Umbelliferae indet.	Ŧr	E 10	400	None	45.6M	ew	E-MOR	MOSA.	godan	*****	جند
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