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London and Continental Railways
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**The charred plant remains from Eyhorne Street,
Hollingbourne, Kent**

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Figure 1: Cobham Golf Course - Early prehistoric, P1-14

1 INTRODUCTION

Thirty-four environmental samples were taken from the excavations at Eyhorne Street, from features ranging in date from the Neolithic to the Iron Age, and after assessment, 15 were selected for analysis. Four of these came from fills 22, 24, 61 and 62 of late Neolithic/early Bronze Age pits 23 and 60, and a spot find of a crab apple was found in late Neolithic pit fill 18 in pit 19. Ten further samples came from fills of six Iron Age pits, 161, 170, 175, 217, and 226, and one, with uncertain dating, from ditch 100.

2 METHODS

Samples were processed by flotation, using a 0.25 mm mesh, and assessed for plant macrofossils by staff at Oxford Archaeology. The flots were subsequently sorted for charred plant remains, also by OA. The two richest flots, from 172 and 164, each of which contained many thousands of grains, were subsampled before sorting fractions of 1/8 and 1/16 respectively. Recording of the charred plant remains was undertaken by Alys Vaughan-Williams, for MoLAS, before analysis by the author.

Where unidentifiable cereal grains or hazelnut shells could not be quantified accurately because of fragmentation, their abundance was estimated using a scale of + (1-10), ++ (11-50), +++ (51-approx. 250), +++++ (over 250). The plant taxa identified from each sample are shown in Table 1, which can be found at the end of the report.

3 RESULTS

3.1 Late Neolithic

Part of a charred crab apple (*Malus sylvestris*) fruit was recovered as a spot find from fill 18 of pit 19. The fruit was broken 'horizontally', showing several seeds in situ. This could have been deliberately picked for food, or may have arrived on site, and become charred, with apple wood gathered for fuel.

3.2 Late Neolithic/early Bronze Age

Samples from fills 22, 24, 61 and 62, of pits 23 and 60, included moderately abundant wood charcoal and very occasional charred cereal remains. One grain of emmer (*Triticum dicoccum*) and one of indeterminate wheat were found in the fills 22 and 24 of pit 23, as well as two very degraded wheat spikelet bases. Six grains of barley (*Hordeum vulgare*) were recovered from the four samples, of which two, from 24 and 62, were hulled but the remaining four were too poorly preserved to be certain. A further five grains could not be

identified beyond the level of wheat/barley, and six more simply as cereals. Occasional charred seeds of fumitory (*Fumaria* sp.), vetch/vetchling (*Vicia/Lathyrus* sp.) and wild grasses (Poaceae) are probably from weeds associated with the cereals.

Fragments of charred hazelnut (*Corylus avellana*) shell were very abundant in the sample from fill 22, and moderately so in the other three samples.

3.3 Iron Age pits

The range of charred plant remains recovered from the Iron Age pits is discussed in the following section, followed by descriptions of assemblages from individual features.

3.3.1 General description of the plant remains

Pits 175, 170, 161, 217 and 226 all contained moderate to very large assemblages of charred cereals, with the largest quantities in pits 170 and 161. Overall, similar numbers of wheat and barley grains were recorded from the Iron Age pits, although there was some variation between samples, with wheat predominating in the fills of pit 170 and the upper two fills of pit 161, and barley more abundant in pits 175, 217, 226 and fill 164 of pit 161. Emmer and spelt (*Triticum spelta*) wheats were identified, both from grain morphology and glumes, with spelt grains and chaff outnumbering emmer in every sample. Many twisted grains of barley were present, indicating that the six-row variety was in use, and occasional barley rachis fragments were found, although they were greatly outnumbered by wheat chaff. Oat grains were present in most samples, but made up only a very small proportion of each assemblage (less than 5% of identified grains). Several oat florets, found in fill 164 of pit 161, had the characteristic attachment scar of wild oats (*Avena fatua*), which would have grown as a weed with wheat or barley crops.

Charred weed seeds accompanied the cereal remains in all samples, the most widespread being from vetch/tare (*Vicia/Lathyrus* spp.), knotweeds (*Persicaria* spp.), brome grass (*Bromus* sp.) and other grasses (Poaceae), with brome grass seeds, including small fragments, particularly abundant in fills 172 and 173 of pit 170. Seeds of bedstraw (*Galium* sp.), sheep's sorrel (*Rumex acetosella* agg.), goosefoot and orache were also common in the fills of pits 170 and 161. Seeds from these taxa are regular occurrences in charred plant assemblages, and would have come from arable weeds growing with the cereals.

All these assemblages consisted mainly of cereal grain, which constituted 70% or more (80-90% in most samples) of all quantified items, and would actually be considerably more numerous in fills of pits 170 and 161, if the broken grains could be quantified. Chaff fragments ranged from <1 to 12% of all quantified items, and weed seeds from 4 to 24%.

Little evidence was found of food plants other than cereals, although a few fragments of charred hazelnut shell were present in two fills of pits 170 and 175, and poorly preserved pulses (*Vicia/Lathyrus/Pisum* sp.) in pits 170, 175, and 161 are probably from cultivated

species. The sample from pit 175 also contained a single seed of rose (*Rosa* sp.), and hawthorn (*Crataegus* sp.) seeds were recorded from pit 170 at assessment. The first of these could have come from rose hips gathered for food, but it is more likely that both arrived with wood used for fuel. Several seeds from gold-of-pleasure (cf. *Camelina sativa*) were provisionally identified in two fills of pit 170. This plant is known to have been cultivated in the past for its edible oily seeds, and was also a common weed in arable fields (Stace 1991, 325). Seeds of *Brassica* sp. were also found in pit 170 and in fill 178 of pit 175. This genus includes cabbages, turnips etc, and in addition to edible leaves and roots, the plants also have oily seeds, some of which are used as condiments (mustard). Their presence here could result from deliberate cultivation, although wild varieties also grow as weeds of rough ground and waste places (Stace 1991, 337).

3.3.2 Pit 175

A moderate sized assemblage from fill 178 contained slightly more barley than wheat grains, and rather more remains of potential food plants than most samples. These included seeds of *Brassica* and rose and a few hazelnut shell fragments.

3.3.3 Pit 170

Many thousands of cereal grains were present in the lowest, 172, of the three secondary fills, with another large assemblage in 173 and a smaller one in 180. This pit had the highest proportion of wheat (56-74 % of identified grains), although barley was still a significant component. The gold-of-pleasure seeds (see above) were found in fills 172 and 173.

3.3.4 Pit 161

Another very large grain assemblage was recovered from the lowest of the secondary fills 164 of this pit, consisting of 65% barley and 32% wheat. Grains and chaff of emmer wheat were rather more common in this sample than in others, although spelt was still more numerous. The charred assemblages from two upper fills, 165 and 167, were very similar to each other in size and composition, with slightly more wheat grains than barley. These were the cleanest grain samples from the pits, with few chaff fragments or weed seeds.

3.3.5 Pit 217

Fill 222 contained a smaller assemblage than those from pits 170 and 161, and consisted mostly of barley grains.

3.3.6 Pit 226

The fills of this pit contained much less cereal grain than the other pits studied, and as in pit 217, the majority of the grain was barley.

3.4 Undated pit 100

The flot from fill 102 consisted mostly of charcoal, with just five charred cereal grains. Two of these are thought to be from emmer wheat, and two from hulled barley.

4 DISCUSSION

The late Neolithic/early Bronze age finds were sparse, but typical of the period, with wild foods represented by crab apple and hazelnut, and cereals by emmer wheat and hulled barley. Nut shell fragments tend to outnumber cereal grains in late Neolithic/early Bronze Age pits (Robinson 2000, 87), and this was the case here, especially in Pit 23.

Wheat and barley appear to have been equally important on the site during the Iron Age, and the two cereals are mixed in most of the pit fills, although there is a higher preponderance of barley in the relatively small assemblages from neighbouring pits 217 and 226. Spelt was the dominant wheat in all samples, as on most sites of this date, but emmer formed a significant proportion of the wheat recovered. Emmer has been found on a number of Iron Age sites within the CTRL project, and was obviously a consistent, if minor, component of cereal production in Kent in this period.

The cereal assemblages contain little chaff and few weed seeds, and appear to consist of semi-clean grain. This could have been burnt in storage, and discarded in convenient rubbish pits, but the number of grain-rich layers, in five separate pits, suggests that the burnt grain resulted from several different, and perhaps regular, episodes of burning. This could have happened during parching which, in the case of hulled cereals such as these, needs to precede de-husking. Alternatively, cleaned cereals may have been accidentally burnt during oven-drying to harden them before grinding. It is unlikely that these deposits result from deliberate burning to sterilise storage pits, because they were found at all levels within the pits, and because they contained no sign of the sprouted or rotting grain that would be expected around the sides and bottom of grain storage pits.

Most of the seeds from wild plants would have arrived in the sampled deposits as weeds of the wheat and barley crops. The majority of the recorded taxa are common weeds of disturbed ground, including arable fields, but are catholic in their habitat requirements, and give no indication of where the cereals may have been grown. Sheep's sorrel tends to indicate poor arable land on acid and sandy soils, but this was not particularly frequent in the samples. The most abundant weed seeds came from brome grass. These are a similar size to the cereal grains, so would be hard to remove from the crop by sieving, and might even increase the nutritional value of the cereals if retained.

Few food remains, other than the cereals, had been charred and preserved in the Iron Age pits, although there was some evidence for hazelnut and unidentified pulses. A single seed of rose could have come from rose hips gathered for food, but it is more likely, with the hawthorn seeds, to have arrived with wood used for fuel. Seeds of gold-of-pleasure and *Brassica* sp have been discussed above, and could have come from either cultivated or gathered wild plants, but are equally likely to be from weeds growing in the cereal fields.

5 CONCLUSIONS

The early prehistoric samples contain remains of wild food plants and cereals, but in very small quantities, and little can be said about the activities that gave rise to them.

Wheat and barley were stored and/or consumed on this site during the Iron Age, but there is no sign, from the narrow range of features examined, that crop-processing took place here. As with other sites within the CTRL project, emmer wheat was in use as well as spelt, either as a deliberate choice, or as a relic of earlier cultivation.

6 BIBLIOGRAPHY

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Stace, C, 1991 New flora of the British Isles, Cambridge

Table 1: The charred plant remains from Eyhorne Street

	period:	late Neol	LN/ EBA	LN/ EBA	LN /EBA	LN/ EBA	E-M/ LIA	E-M/ LIA	E-M/ LIA	E-M/ LIA	E-M/ LIA	E-M LIA	E-M/ LIA	E-M/ LIA	E-M/ LIA	undated	
	feature:	PH 19	P23	P23	P60	P60	P175	P170	P170	P170	P161	P161	P161	P217	P226	P226	D100
	context:	18	22	24	61	62	178	172	173	180	164	165	167	222	223	225	102
	sample:	5	1	2	3	4	30	24	25	26	27	28	29	31	35	36	12
	% flot sorted:	100	100	100	100	100	100	12.5	100	100	6.25	100	100	100	100	100	100
Latin name	English name																
<i>cereal grains</i>																	
<i>Triticum dicoccum</i> Schubl.	emmer wheat			1				58	30		59	20	20		8		
<i>Triticum</i> cf. <i>dicoccum</i>	emmer wheat						6	11		3	60			1			2
<i>Triticum spelta</i> L.	spelt wheat						15	258	52		74	59	33		3		
<i>Triticum</i> cf. <i>spelta</i>	spelt wheat						8	59		17	71			7			
<i>Triticum dicoccum/spelta</i>	emmer/spelt						6	156	133	20	133	61	62	5	1		1
<i>Triticum</i> spp.	emmer/spelt		1				12	39	204	45	3	164	202	13	5	5	
<i>Hordeum vulgare</i> L.	barley						53	296	142	50	810	276	251	103	49	2	2
cf. <i>Hordeum vulgare</i>	barley			1		1	9	15		9				7	6	2	
<i>Hordeum</i> sp.	barley			2													
cf. <i>Hordeum</i> sp.	barley			1	1												
<i>Hordeum/Triticum</i> sp.	barley/wheat			2		3											
<i>Avena</i> sp.	oat							12	4	5	35	10	13	4			
cf. <i>Avena</i> sp.	oat							4		3	9	6	11	2	1		
Cerealia	indet. Cereal		2		4		35	+++	+++	++	+++	+++	+++	7	12	1	
total grains		0	3	6	5	4	144	>>911	>>568	>152	>>1257	>>599	>>596	149	85	10	5
<i>cereal chaff</i>																	
<i>Triticum dicoccum</i> Schubl.	emmer wheat spikelet fork										6	2	1				
<i>Triticum dicoccum</i> Schubl.	emmer wheat glume base										30						
<i>Triticum</i> cf. <i>dicoccum</i>	emmer wheat glume base						1										
<i>Triticum spelta</i> L.	spelt wheat spikelet fork							1			22	2					
<i>Triticum spelta</i> L.	spelt wheat glume base						2	3	4	3	47	10	2	5	1		
<i>Triticum</i> cf. <i>spelta</i>	spelt wheat spikelet fork										1						

	period:	late Neol	LN/ EBA	LN/ EBA	LN /EBA	LN/ EBA	E-M/ LIA	E-M/ LIA	E-M/ LIA	E-M/ LIA	E-M/ LIA	E-M/ LIA	E-M/ LIA	E-M/ LIA	E-M/ LIA	E-M/ LIA	undated
	feature:	PH 19	P23	P23	P60	P60	P175	P170	P170	P170	P161	P161	P161	P217	P226	P226	D100
	context:	18	22	24	61	62	178	172	173	180	164	165	167	222	223	225	102
	sample:	5	1	2	3	4	30	24	25	26	27	28	29	31	35	36	12
	% flot sorted:	100	100	100	100	100	100	12.5	100	100	6.25	100	100	100	100	100	100
Latin name	English name																
<i>Triticum cf. spelta</i>	spelt wheat spikelet fork						1				5						
<i>Triticum cf. spelta</i>	spelt wheat glume base						2			2	9		2				
<i>Triticum dicoccum/spelta</i>	emmer/spelt spikelet fork										4		2				
<i>Triticum dicoccum/spelta</i>	emmer/spelt glume base									3	8						
<i>Triticum</i> spp.	wheat spikelet fork											1					
<i>Triticum</i> spp.	wheat spikelet base			1	1		4	3	9	1	11	2	9	6		1	
<i>Triticum</i> spp.	wheat glume base						3		5		12	2	3	9			
<i>Hordeum vulgare</i> L.	barley rachis								1		11						
<i>Avena</i> sp.	oat floret							1			6						
<i>Avena</i> sp.	oat awn								+	+	+						
total chaff items (excluding awns)				1	1		13	8	19	9	172	19	17	22	1	1	
<i>other plant remains</i>																	
<i>Fumaria</i> sp.	fumitory		1				1										
<i>Brassica</i> sp.	cabbage/turnip/mustard						8	4		1							
cf. <i>Capsella bursa-pastoris</i>	shepherd's purse						10							2			
cf. <i>Camelina sativa</i>	gold-of-pleasure							1	12								
Brassicaceae indet.	-								2			1	2				
<i>Cerastium</i> sp.	mouse-ear-chickweed						1		1								
<i>Stellaria media</i> (L.) Vill.	chickweeds										1						
<i>Silene/Stellaria</i> sp.	campion/stitchwort								1								
Caryophyllaceae indet.	-								1								
<i>Chenopodium cf. album</i> L.	fat hen							4		1	20						
<i>Chenopodium</i> sp.	goosefoot															2	
<i>Atriplex</i> sp.	orache									2							

	period:	late Neol	LN/ EBA	LN/ EBA	LN /EBA	LN/ EBA	E-M/ LIA	E-M/ LIA	E-M/ LIA	E-M/ LIA	E-M/ LIA	E-M LIA	E-M/ LIA	E-M/ LIA	E-M/ LIA	E-M/ LIA	undated
	feature:	PH 19	P23	P23	P60	P60	P175	P170	P170	P170	P161	P161	P161	P217	P226	P226	D100
	context:	18	22	24	61	62	178	172	173	180	164	165	167	222	223	225	102
	sample:	5	1	2	3	4	30	24	25	26	27	28	29	31	35	36	12
	% flot sorted:	100	100	100	100	100	100	12.5	100	100	6.25	100	100	100	100	100	100
Latin name	English name																
<i>Chenopodium/Atriplex</i> spp.	goosefoots/orache							1		1	6		2				
<i>Malva</i> sp.	mallow								4								
cf. <i>Trifolium</i> sp.	clover						1			1							
<i>Vicia/Lathyrus</i> spp.	vetch/vetchling				1		5	1		3	7	1	2	1		1	
Fabaceae indet.	-				1												
<i>Polygonum aviculare</i> agg.	knotgrass									2							
<i>Polygonum</i> cf. <i>aviculare</i>	knotgrass						1										
<i>Persicaria</i> cf. <i>maculosa</i>	redshank															2	
<i>Persicaria lapathifolia</i> (L.) Gray	pale persicaria													1			
<i>Persicaria</i> cf. <i>lapathifolia</i>	pale persicaria						1								1	1	
<i>Fallopia convolvulus</i> (L.) A. Love	black bindweed										4		2			1	
<i>Persicaria</i> sp.	-								2	2		1		2	2		
<i>Rumex acetosella</i> agg.	sheep's sorrel						2	1				1					
<i>Rumex</i> cf. <i>acetosella</i>	sheep's sorrel								2								
<i>Rumex</i> spp.	docks						6	4	4	5	18	2		2		2	
Polygonaceae indet.	-											1					
<i>Euphrasia/Odontites</i> sp.	euphrasia/red bartsia							1									
<i>Galium</i> cf. <i>aparine</i>	cleavers								1								
<i>Galium</i> sp.	bedstraw									3	2	2	1				
<i>Tripleurospermum</i> cf. <i>inodorum</i> (L.)	scentless mayweed							1			1						
<i>Centaurea</i> sp.	knapweed, thistle													1			
<i>Lapsana communis</i> L.	nipplewort										3						
<i>Carex</i> sp.	sedge						1				1						

	period:	late Neol	LN/EBA	LN/EBA	LN/EBA	LN/EBA	E-M/LIA	E-M/LIA	E-M/LIA	E-M/LIA	E-M/LIA	E-M/LIA	E-M/LIA	E-M/LIA	E-M/LIA	undated	
	feature:	PH 19	P23	P23	P60	P60	P175	P170	P170	P170	P161	P161	P161	P217	P226	P226	D100
	context:	18	22	24	61	62	178	172	173	180	164	165	167	222	223	225	102
	sample:	5	1	2	3	4	30	24	25	26	27	28	29	31	35	36	12
	% flot sorted:	100	100	100	100	100	100	12.5	100	100	6.25	100	100	100	100	100	100
Latin name	English name																
<i>Lolium/Festuca</i> sp.	rye-grass/fescue										2						
<i>Bromus secalinus/mollis</i>	rye-brome/lop-grass						3	70			30				2		
<i>Bromus</i> sp.	brome grass						6	24	37	12	16	17	34	6	1		
<i>Avena/Bromus</i> sp.	oat/brome grass						2		4								
Phleum type	cat's tail								34								
Poaceae indet.	grasses		1				1	4	1	1	5	1	11	3			
Poaceae indet.	grass culm node													1			
indeterminate	-	1			2				1			1	1				
indeterminate	stem								+								
indeterminate	charcoal		++++	++++	++++	++++											++++
total weed seeds		1	2	0	4	0	50	116	109	32	116	28	55	18	8	7	0
<i>food plants</i>																	
<i>Vicia/Lathyrus/Pisum</i> sp.	vetch/vetchling/pea						1		2			1	1				
<i>Rosa</i> sp.	rose						1										
<i>Malus sylvestris</i> (L.) Miller	crab apple fruit	1															
<i>Corylus avellana</i> L.	hazel nutshell		+++	++	++	+	++	+	++	+++	++	++	++	+++	+	++	+++