6a. Carbonised Plant Remains

by David Ingham and Mark Robinson

6a.1 Introduction

During the excavation of Segsbury Iron Age hillfort, soil samples were taken from archaeological contexts in six of the seven trenches. These samples, ranging in size from 1 to 49 litres, were floated onto a 0.25mm mesh and dried, and then submitted for analysis of their carbonised plant remains. The heavy residues were sieved over a 1.0 or 2.0mm mesh and quickly checked for any remains which had not floated.

6a.2 Methodology

All of the 57 flots received (14 without remains) were analysed in full, since the majority of the flots were small. The residue for sample 1.03 was also analysed, because (unlike any other samples) it contained a significant amount of charred material, and the results were combined with those of the flot for this sample. The carbonised plant remains (except charcoal) were viewed under a binocular microscope at x10 to x20 magnification, and the material was then separately stored either as grain, weed seeds, or chaff, before being identified further. In approximating the number of indeterminate cereal grains, only fragments constituting at least half a grain were counted, though a significant number were smaller than this. For purposes of classification, oats were counted as a weed, their usual status in an Iron Age context.

6a.3 Results

Remains were found in 43 samples. The results are listed in Table 6.1. Table 6.2 lists those samples from which remains were absent.

6a.3.1 Cereal Grain

The grain from Segsbury was, in general, poorly preserved. The concentration of grain in the samples was generally low; only one sample contained more than 80 items of grain, with a further four containing 40 to 80. 16 samples contained none, and a further 18 contained no more than five.

The range of cereal grains present was limited, with only *Triticum spelta* (spelt wheat) and *Hordeum vulgare* (six-row hulled barley) clearly distinguishable. Few spelt wheat grains could be confidently identified, with a large number classified as either spelt or emmer. The largest portion of wheat grains could not be classified beyond *Triticum sp.*, though many of these are likely to have been spelt. A few grains suggested the existence of emmer but could not be identified conclusively as such. There was generally little wheat that could be identified in the samples: only 1.03 and 1.28 had at least 30 grains, though several samples had a high proportion of indeterminate cereal grains that were probably wheat. Free-threshing wheat does not seem to have been present.

The barley present was probably all six-row, which was the usual type grown in the Iron Age, though the existence of two-row barley cannot be definitely ruled out, since the ratio of lateral:median grains was only 1.1:1. Only 25% of the grains identified as barley, however, were distinguishable as either lateral or median. The barley was probably all hulled; the grains were not sufficiently well preserved to tell in many cases, but no

obviously naked grains were identified. Only sample 1.14 produced a high volume of barley grains; 151 were identified as such, though the presence of only 3 grains which were clearly wheat suggests that nearly all of the 82 indeterminate cereal grains were also barley.

6a.3.2 Chaff

Chaff was noticeably absent from most of the carbonised assemblages, occurring in only five samples. Nearly all the chaff consisted of wheat glume bases, about two-thirds of which were identified as spelt; the remainder were mainly broken and had to be placed in the emmer/spelt category. Only samples 1.29 and 3.6 contained 10 or more items. A single unidentifiable culm node was also found.

6a.3.3 Weed Seeds

The concentration of weed seeds found was also low. Only 23 of the 57 samples contained any, and of these only 3 samples had 10 or more. Sixteen of these 23 samples containing weed seeds came from Trench 1. The range of weed seeds identified was quite narrow, with the same species tending to recur throughout the samples. It was not possible to identify a number of seeds beyond their genus, and most of the seeds that were classed as indeterminate were small and could not be identified because they had lost their coats.

The seed assemblage is generally consistent with what one would expect to find amongst a cereal crop growing on cultivated land. Black medick (*Medicago lupulina*) can also grow in grassland, and plantain (*Plantago lanceolata* or *media*) tends to prefer grassy places, though only trace amounts of either are present in the samples. The presence of grass tubers, particularly in sample 2.19, suggests that at least some of the crops may have been pulled up by hand.

It seems likely that at least some of the crops were sown in the autumn rather than the spring. Brome grass (*Bromus secalinus*) is associated with a winter crop of wheat, and goosegrass (*Galium aparine*), present in nearly half of the samples, is indicative of an autumn-sown crop.

6a.4 Interpretation

The majority of the samples were either from contexts dated to the early Iron Age or from undated contexts assumed to be Iron Age. There were only two samples from Middle Iron Age contexts. Nine samples contained concentrations of remains greater than one item per litre and only four samples produced more than four items per litre. All were either Early Iron Age or undated. The remains were mostly cereal grains, although some samples contained a significant proportion of weed seeds. Chaff was almost absent. Only half the samples containing grain also contained weed seeds or chaff.

The general paucity of carbonised plant remains and the predominance of grain raises the possibility that cleaned grain was being imported for use on the site. For grain to be stored in pits, it needs to be alive and undamaged, so spelt wheat must be stored in the spikelet. For the contents of a pit to be used, the spikelets would be parched and de-husked, generating glumes as waste. However, chaff and, to a lesser extent, weed seeds, are more vulnerable to differential destruction, both by burning and if they are subjected to

weathering before they are incorporated into an archaeological deposit. It is therefore possible that small-scale storage and processing of grain was occurring on the site, but the main area of processing was not excavated. The poor preservation of remains was consistent with the remains having been weathered.

The largest quantities of grain were recovered from Early Iron Age pit [1175], which had a shape and volume appropriate for a storage pit. Interestingly, one of the layers of the pit, context (1382), mostly contained grain of wheat, including *Triticum spelta* (spelt wheat), whereas the grain from another layer, context (1410), was predominantly barley, including *Hordeum vulgare* (six-row hulled barley). This suggested that deposits could have been derived from different episodes of crop processing. These samples also contained arable weed seeds, including *Galium aparine* (goosegrass).

The highest concentration of chaff was from Context (3008), the upper layer in Early Iron Age Ditch [3007], although wheat glumes, including *T. spelta*, were outnumbered by grain. This feature also contained some of the highest concentrations of weed seeds, particularly *G. aparine*. It is possible that processing was occurring in the vicinity of this ditch.

Too few Middle Iron Age assemblages were available to imply more than that *Triticum dicoccum* or *spelta* (emmer or spelt wheat) and *Hordeum* sp. (barley) were being used. All that was found in the Roman samples was a single unidentified cereal grain, which could easily have been residual from the Iron Age.

6a.5 Discussion

The results suggested that the only cereals used at Segsbury Camp during the Iron Age were spelt wheat and six-row hulled barley. The evidence from the weed seeds suggested that at least some of the crops were autumn-sown. With the exception of Pit 1175 in Trench 1, little grain was found and chaff was extremely sparse. There was clearly no large-scale processing of locally-cultivated grain occurring on the site. However, it is thought likely that at least some grain was stored in the pits at Segsbury and de-husked on site, even if cleaned grain could also have been imported for consumption. The results suggested that the fort generally had a low population, which could be sustained by small-scale agricultural activity, or it was only occupied periodically.

The cereals used at Segsbury were the main crops of the Upper Thames Valley and Central Southern England during the Iron Age. However, the concentration of remains was much lower than would be expected on a settlement on the Second Gravel Terrace of the Thames or on a hillfort on the Hampshire Chalk. Yet relatively similar concentrations of crop-processing remains (likewise with little chaff) were found at another hillfort of the Ridgeway, Uffington Castle (Robinson, 2003a). The much lower concentrations of charred remains from within these two hillforts in comparison, for example, with the interior of the hillfort at Danebury on the Hampshire Chalk (Jones 1984, 483-7), was probably due to different activities occurring in the hillforts, rather than necessarily reflections of less-intensive agricultural exploitation of the surrounding landscape. Cultivation was certainly occurring along the Ridgeway during the Iron Age, as shown by the presence of ploughsoils sealed beneath the ramparts of both Segsbury Camp and

Uffington Castle. There was a substantial settlement within Danebury Hillfort and crops were brought to it from a large catchment for processing.

Bibliography

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Segsbury Featu Cont Samp Samp No. c	ext ble ble volume (litres) of items/litre	MIA Ring ditch 1003 1004 1.01 38 0.2	MIA Pit 1169 1170 1.02 18 0.2	U Posthole 1091 1356 1.03 8 11.0	UIA Posthole 1095 1390 1.04 24 0.1	UIA Posthole 1082 1254 1.06 14 0.9
CEREAL GRAIN Triticum spelta T. dicoccum or spelta Triticum sp. Hordeum vulgare - lateral grain H. vulgare - hulled median grain Hordeum sp median graim Hordeum sp. Hordeum sp. Hordeum sp. Cerealia indet.	spelt wheat emmer or spelt wheat wheat six-row hulled barley six-row barley hulled barley barley hulled barley barley barley	2 1 - - - 1 2	- - - - - - - - - - - - - - - - - - -	28 12 24 - - 1 - - - 23	- - - - - - - - - - - - - - - - - - -	- 1 5 - 1 - 5
CHAFF <i>Triticum spelta</i> - glume <i>T. dicoccum</i> or <i>spelta</i> - glume <u>culm node</u>	spelt wheat emmer or spelt wheat		 - -		2 - - -	<u>1</u> 4
WEED SEEDS Fumaria sp. Brassica rapa ssp. sylvestris Chenopodium album Vicia or Lathyrus sp. Medicago lupulina cf. M. lupulina cf. Trifolium/Melilotus Leguminosae indet. Umbelliferae indet. Polygonum aviculare agg. Fallopia convolvulus Rumex sp. Plantago lanceolata or media Galium aparine Bromus cf. secalinus Avena sp. Gramineae indet. Gramineae indet. weed indet.	turnip fat hen vetch or tare black medick black medick clover, melilot knotgrass black bindweed dock plantain goosegrass brome grass oats grass grass tuber	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -

Segsbury	Feature	UIA Posthole 1023		EIA Pit 1175					EIA Pit 1009			
Charred Plants ctd	Context	1024	1176	1382	1409	1410	1414	1402	1442,144	1389, 1444		
	Sample	1.07	1.08	1.10	1.13	1.14	1.16	1.15	1.17	1.18		
	Sample volume (litres)	23	18	30	31	15	18	25	14	16		
	No. of items/litre	0.3	0.8	1.7	0.4	16.0	0.7	0.2	0.1	0.4		
CEREAL GRAIN												
Triticum spelta	spelt wheat	-	-	4	-	1	-	-	-	-		
T. dicoccum or spelta	emmer or spelt wheat	-	1	4	-	2	2	-	-	-		
Triticum sp.	wheat	1	2	7	3	-	2	1	-	-		
Hordeum vulgare - lateral gr	ain six-row hulled barley	-	1	-	-	11	-	-	-	2		
H. vulgare - hulled median gra	ain six-row barley	-	-	-	-	7	-	-	-	-		
Hordeum sp median graim	hulled barley	-	-	-	-	5	-	-	-	-		
Hordeum sp.	barley	-	-	1	1	6	-	-	-	2		
Hordeum sp.	hulled barley	-	-	-	-	51	-	-	-	-		
Hordeum sp.	barley	-	-	3	2	91	1	- 2	-	1		
Cereana muet.			10		-	82	<u> </u>		-			
Total cereal grain		5	14	47	6	236	8	4	0	5		
CHAEE												
Triticum spelta - glume	spelt wheat	_	-	_	1	_	_	-	_	_		
<i>T. dicoccum</i> or <i>spelta</i> - shur	me emmer or spelt wheat	_	-	_	-	_	-	-	-	-		
culm node	in channel of spen wheat	-	_	_	-	_	-	-	-	-		
WEED SEEDS												
<i>Fumaria</i> sp.		-	-	-	-	-	-	-	-	-		
Brassica rapa ssp. sylvestr	ris turnip	-	-	-	-	-	-	-	-	-		
Chenopodium album	fathen	-	-	-	-	-	-	-	-	-		
Vicia or Lathyrus sp.	vetch or tare	-	-	-	-	-	-	-	-	-		
Medicago lupulina	black medick	-	-	-	-	-	-	-	-	-		
cf. M. iupuuna of Trifolium/Molilotus	olover melilet	-	-	-	-	-	-	-	-	-		
L aguminosao indat	clover, memot	-	-	-	-	-	-	-	-	-		
Umbelliferae indet		-	-	-	-	-	-	-	-	-		
Polygonum aviculare aga	knotorass		-	_	_	_	-	-	_	-		
Fallopia convolvulus	black bindweed	_	_	_	1	_	_	_	_	_		
Rumex sp.	dock	_	-	_	-	_	-	-	-	-		
Plantago lanceolata or me	edia plantain	-	_	-	_	-	-	-	-	_		
Galium aparine	goosegrass	-	-	3	3	2	3	-	-	-		
Bromus cf. secalinus	brome grass	-	-	-	-	-	-	-	-	-		
Avena sp.	oats	-	1	-	-	-	-	-	-	-		
Gramineae indet.	grass	-	-	-	-	-	-	-	-	-		
Gramineae indet.	grass tuber	-	-	-	-	1	-	-	-	-		
weed indet.	-	1		-		1	1	<u>-</u>	1	1		
Total wood soods		1	1	2	1	Л	4	0	1	1		
rotar weed seeds		1	1	3	4	4	4	U	1	1		

Segsbury	Feature	UIA Pit 1308		EIA Pit	UIA Pit1001	U Posthole 1142	UIA Pit 101?3	EIA PH 1339		
Charred Plants ctd	Context Sample Sample volume (litres) No. of items/litre	1476 1.20 32.5 0.8	1494 1.21 19 0.3	1298 1475 1.22 36 0.3	1511 1.23 30 0.8	1557 1.24 10 0.2	1657 1.26 12+? <2.6	1646 1.27 17 1.2	1650 1.28 10 4.6	
CEREAL GRAIN <i>Triticum spelta</i> <i>T. dicoccum</i> or <i>spelta</i> <i>Triticum</i> sp. <i>Hordeum vulgare</i> - lateral gra <i>H. vulgare</i> - hulled median grain <i>Hordeum</i> sp median graim <i>Hordeum</i> sp. <i>Hordeum</i> sp. <i>Hordeum</i> sp. <i>Hordeum</i> sp. <i>Cerealia indet.</i>	spelt wheat emmer or spelt wheat wheat in six-row hulled barley n six-row barley hulled barley barley hulled barley barley	4 2 - 1 - 1 3 9	1 - - 1 - 2	1 1 3 - - - 1 5	1 8 - - - - - - - - - 10	- 1 - - - - - - - - - -	2 2 3 - - 3 7 6	3 1 6 - - 1 - 8	3 14 13 - - 3 5	
Total cereal grain		20	4	<u>11</u>	19	1	23	<u>19</u>	38	
CHAFF <i>Triticum spelta</i> - glume <i>T. dicoccum</i> or <i>spelta</i> - glum <u>culm node</u>	spelt wheat e emmer or spelt wheat	1 2 -	- - 		-	-	- -	- - 	- - 	
WEED SEEDS Fumaria sp. Brassica rapa ssp. sylvestri Chenopodium album Vicia or Lathyrus sp. Medicago lupulina cf. M. lupulina cf. Trifolium/Melilotus Leguminosae indet. Umbelliferae indet. Polygonum aviculare agg. Fallopia convolvulus Rumex sp.	s turnip fat hen vetch or tare black medick black medick clover, melilot knotgrass black bindweed dock		- - - 1 -		- - 1 1 - - 1 -	- - - - - - - - - - - -	3 1 - - - - - - - 2	- - - - - - - - -	- 1 - - - - - - -	
Plantago lanceolata or med Galium aparine Bromus cf. secalinus Avena sp. Gramineae indet. Gramineae indet. weed indet. Total weed seeds	lia plantain goosegrass brome grass oats grass grass tuber	1 1 2		- - - - - - - - - 0	- 1 - - - - 4	- 1 - - - - - -		- - - - - 1	- - - 5 8	

Segsbury	Feature	EIA Pit 1019	UIA Ring ditch	UIA PH	U Posthole 2009	UIA Pit	EIA Pits 2061/71		
Charred Plants ctd	Context Sample Sample volume (litres) No. of items/litre	1728 1.29 36.5 1.7	2003 2006 2.03 49 0.1	2021 2022 2.05 28 0.1	2010 2.06 10 0.7	$2001 \\ 2002 \\ 2.07 \\ 26 \\ 2.3$	2062 2.10 30 0.4	2072 2.13 26 0.3	2074 2.17 1 1.0
CEREAL GRAIN Triticum spelta T. dicoccum or spelta Triticum sp. Hordeum vulgare - lateral g H. vulgare - hulled median gr Hordeum sp median graim Hordeum sp. Hordeum sp. Hordeum sp. Cerealia indet.	spelt wheat emmer or spelt wheat wheat rain six-row hulled barley ain six-row barley hulled barley barley hulled barley barley barley	2 6 4 1 - 2 - 1 6 10	- 1 - - 1 - 2	- 1 - - - - - - 2	- - - - - - - - - - - - - - - - - - -	8 8 1 - 1 - 2 3 23	- 3 - - - - - - - - - - - 6	2 2 - - - 2 2	- 1 - - - - -
<u>Total cereal grain</u>		32	4	33	7	46	12	8	1
CHAFF <i>Triticum spelta</i> - glume <i>T. dicoccum</i> or <i>spelta</i> - glu culm node	spelt wheat me emmer or spelt wheat	7 3	-			3 2 1	- - 	- -	- -
WEED SEEDS Fumaria sp. Brassica rapa ssp. sylvest Chenopodium album Vicia or Lathyrus sp. Medicago lupulina cf. N. lupulina cf. Trifolium/Melilotus Leguminosae indet. Umbelliferae indet. Polygonum aviculare agg Fallopia convolvulus Rumex sp. Plantago lanceolata or mu Galium aparine Bromus cf. secalinus Avena sp. Gramineae indet. Gramineae indet. weed indet.	ris turnip fat hen vetch or tare black medick black medick clover, melilot . knotgrass black bindweed dock edia plantain goosegrass brome grass oats grass grass tuber	- - - - - - - - - - - - - - - - - - -		- - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	- - - - - - - 4 1 1 - - 1			
Total weed seeds		19	0	0	0	7	0	0	0

Segsbury Fe	eature	U Pit 2035	UIA Pit 2081	U Pit 2043	U Pit 2045	U Pit 2093	UIA Posthole
Charred Plants ctd Co Sa Sa No	ontext imple imple volume (litres) o. of items/litre	2082 2.15 8 4.3	2080 2.16 14 0.4	2044 2.19 16 0.6	2046 2.24 15 0.1	2079 2.27 18 0.1	2007 2008 2.28 19? 0.3?
CEREAL GRAIN Triticum spelta T. dicoccum or spelta Triticum sp. Hordeum vulgare - lateral grain H. vulgare - hulled median graim Hordeum sp median graim Hordeum sp. Hordeum sp. Hordeum sp. Cerealia indet.	spelt wheat emmer or spelt wheat wheat six-row hulled barley six-row barley hulled barley barley hulled barley barley	2 2 2 3 - 6 5 14	1 3 - - - 1	- - 1 - - - - - - 1		- - - - - - - - - - - - - - - - - - -	1 - - - 1 - 2
<u>Total cereal grain</u> CHAFF <i>Triticum spelta</i> - glume <i>T. dicoccum</i> or <i>spelta</i> - glume culm node	spelt wheat emmer or spelt wheat	34 	<u>5</u>	2 	0 	1 - -	<u>5</u>
WEED SEEDS Fumaria sp. Brassica rapa ssp. sylvestris Chenopodium album Vicia or Lathyrus sp. Medicago lupulina cf. M. lupulina cf. Trifolium/Melilotus Leguminosae indet. Umbelliferae indet. Umbelliferae indet. Polygonum aviculare agg. Fallopia convolvulus Rumex sp. Plantago lanceolata or media Galium aparine Bromus cf. secalinus Avena sp. Gramineae indet. Gramineae indet. weed indet.	turnip fat hen vetch or tare black medick black medick clover, melilot knotgrass black bindweed dock plantain goosegrass brome grass oats grass grass tuber	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -
weed indet.						<u>I</u>	

Segsbury Charred Plants ctd	Feature Context Sample Sample volume (litres) No. of items/litre	U Pit 3018 3019 3.01 48 0.3	U layer 3002 3.02 32 0.1	EL 3009 3.05 42 0.1	A Ditch 30 3008 3.06 37 2.7	007 3017 3.07 29? 1.7?	EIA Ditch 6002 6017 6.03 28+? <0.04	U Posthole 7362 7354 7.03 16 0.1
CEREAL GRAIN								
Triticum spelta	spelt wheat	2	-	1	4	3	-	-
T. dicoccum or spelta	emmer or spelt wheat	3	-	-	14	6	-	-
Triticum sp.	wheat	1	-	-	8	5	-	-
Hordeum vulgare - lateral	grain six-row hulled barley	1	-	-	2	3	-	1
H. vulgare - hulled median g	grain six-row barley	-	-	-	-	-	-	-
Hordeum sp median grain	n hulled barley	-	-	-	1	2	-	-
Hordeum sp.	barley	-	-	-	-	-	-	-
Hordeum sp.	hulled barley	-	-	-	6	2	-	-
Hordeum sp.	barley	1	-	-	4	2	-	-
Cerealia indet.			2		34		1	-
Total cereal grain		15	2	33	73	34	1	1
CHAFE								
Triticum spalta - glume	spelt wheat	_	_	_	10	_	_	_
T dicoccum or spelta - gl	ume emmer or spelt wheat	_	_	_	8	_	_	
culm node	entities of speak wheat	-	-	-	-	_	-	-
WEED SEEDS								
<i>Fumaria</i> sp.		-	-	-	-	-	_	_
Brassica rapa ssp. sylves	stris turnip	-	-	-	-	-	-	-
Chenopodium album	fat hen	-	-	-	1	-	-	-
Vicia or Lathyrus sp.	vetch or tare	-	-	-	1	-	-	-
Medicago lupulina	black medick	-	-	-	-	-	-	-
cf. M. lupulina	black medick	-	-	-	-	-	-	-
cf. Trifolium/Melilotus	clover, melilot	-	-	-	-	2	-	-
Leguminosae indet.		-	-	-	-	-	-	-
Umbelliferae indet.		-	1	-	-	-	-	-
Polygonum aviculare ag	g. knotgrass	-	-	-	-	-	-	-
Fallopia convolvulus	black bindweed	-	-	-	1	1	-	-
<i>Rumex</i> sp.	dock	-	-	-	-	-	-	-
Plantago lanceolata or n	<i>nedia</i> plantain	-	-	-	-	-	-	-
Galium aparine	goosegrass	-	-	-	1	6	-	-
Bromus cf. secalinus	brome grass	-	-	-	-	1	-	-
Avena sp.	oats	-	-	-	1	3	-	-
Gramineae indet.	grass	-	-	-	1	1	-	-
Gramineae indet.	grass tuber	-	-	-	1	1	-	-
weed indet.		-	-		3		-	-
Total weed seeds		0	1	0	10	15	0	0
i otal weed seeds		0	1	U	10	1.7	U	0

Feature	2041	2039	2037	2027	2019	2023	1114
Context	2042	2040	2038	2028	2020	2024	1253
Sample	2.01	2.02	2.04	2.20	2.22	2.26	1.05
Sample volume (litres)	10	37	16	18	8	18	15
Feature	2017	2047	2013			6002	
Context	2018	2048	2014	3003	3011	6013	3719
Sample	2.29	2.30	2.38	3.03	3.04	6.01	7.06
Sample volume (litres)	4	8	8	24	33	34	11

Table 6.2: Samples from Segsbury from which Charred Remains were Absent