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PLANT REMAINS FROM EWANRIGG, CUMBRIA.

J P Huntley

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Summary

Carbonised plant remains were recovered from excavations of the Bronze Age cemetery and adjacent settlement at Ewanrigg, Cumbria. Three groups of samples were defined. The first had very few remains present and little interpretation may be offered. The second was dominated by barley, some at least 6-row, and chaff in the form of culm nodes and wheat glume bases. These latter were predominantly spelt. One sample has been interpreted as a small, local grain store and the others as indicating possible threshing/ parching of spelt in ther vicinity. The third group of samples was dominated by oats and has been radio-carbon dated to the 8th/10th century A.D., it was probably a drying kiln.
The plant remains demonstrate that settlement at this site has been for a longer period than at first thought and that there have been changes in the cereals used.

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INTRODUCTION

In 1983 the supposed Romano-British settlement at Ewanrigg was excavated and shown to be a Bronze Age cemetery with some settlement of undetermined age. From these pilot excavations samples were analysed for their carbonised plant remains (van der Veen, 1984). Very few results were obtained but, given the lack of environmental knowledge from this period, Bronze Age, in the north of England, further samples were taken during subsequent excavations in 1985, 1986 and 1987.

This material was all floated through 500μ mesh sieves and air-dried. A random sub-sample of 16 samples was analysed from the 57 samples collected. Since such little material was recovered all of the remaining samples were scanned and any that looked at all promising were analysed fully. In total, 23 were fully analysed for both fruits/seeds and wood remains. All of the plant material identified was carbonised. Identification was by comparison with modern reference material held in the Biological Laboratory. Nomenclature follows Clapham, Tutin and Moore, 1987.

RESULTS AND DISCUSSION

Table 1 gives details of all of the samples analysed, and Table 2 the botanical results.

The samples have been divided into three groups based upon their botanical content.

The first group (A) consists of samples from 13 contexts and have few plant remains which are identifiable.

Oak charcoal was the most abundant item and birch/hazel/alder charcoal was also common. In small fragments, as here, these three species are difficult to distinguish. Hazelnut fragments occurred in four of the samples and single cereal grains or seeds of cultivation weeds in four other samples. Little may be inferred from these contexts other than that a hexaploid wheat was being used. The oak charcoal is interesting because, today, oak is relatively rare in the area. Its presence suggests a more wooded landscape than now.

The samples are from a variety of contexts particularly cremation pits and their associated features. The volume of material

floated varies considerably from only 1 litre to 57 litres. There is little difference in the total number of seeds between these samples. It is therefore considered that the deposits really do contain low concentrations of seeds and that sample size is not a factor in this particular case.

The second group (B) of samples are from three contexts in trench SEWR, separate from the main area of excavation. Context 340 was a dark, patchy area within a tumble and considered to be probably part of the rampart. This was demolished at some stage and context 342 was from a possible destruction layer. Underlying these layers was a shallow, oval pit full of burnt material (context 349), and capped by flat stones.

Context 349 was dominated by barley grains. They were not well preserved and most were broken or showed considerable 'puffing' of the endosperm. Many had lost their embryos but there was no evidence of them having sprouted; they are unlikely, therefore to represent grain that was being malted. Where it was possible to distinguish the grains were of the hulled variety. Several showed the twisted embryos characteristic of the lateral grains of *Hordeum vulgare*, the 6-row barley. Not enough were distinguishable to calculate the proportion of straight to twisted embryos. It cannot, therefore, be determined whether or not 2-row barley, *H. distichon*, was also present.

Culm nodes were the next most abundant plant remain. They were present in a ratio of approximately 1 culm node to 4 barley grains. From measurements of modern, 6-row barley, one stalk yields c. 5 culm nodes and c. 50 grains (a ratio of 1:10). Context 349 would seem to yield more culm nodes than expected if just cut stooks were being stored. Barley rachis internodes were absent from this context. The grain is unlikely to have been kept in such a small pit if it was unthreshed and internodes would also be expected. We therefore have straw (culm nodes) and cleaned grain. It is suggested that the pit was used to store grain and was possibly lined with straw. The large numbers of culm nodes suggests that cereals were being cultivated in the area, (Hillman, 1983) and that Ewanrigg was, at least in part, a producer-site.

Polygonaceae (lenticular type) were also abundant. These are from plants characteristic of cultivated ground and could well have been introduced with the barley. They, too, were puffed and could not be further identified with any certainty.

Other taxa present are either cereal grains and chaff (wheat or oats) or weeds of cultivation. None are abundant.

The few wheat grains were from a hexaploid. The wheat glume-bases were all measured across their bases (Figure 1). By comparison with figures from Helbaek (1952) they all fall within the range of spelt (*Triticum spelta*). Morphologically, most of them showed well-developed tertiary venation, also characteristic of spelt. This is in accordance with material from other areas in the north of England of this date (Thorpe Thewles, van der Veen in Heslop, 1987;), and reinforces the idea that emmer did not remain the staple wheat of the north during the Iron Age (cf. Jones, 1981).

Although oats were recorded, no chaff was found in this context, and we could be looking at either wild or cultivated oats.

The other two contexts from this group of samples have far fewer seeds present. Barley is, again, the most common cereal grain but wheat glume bases are the most abundant component. They were measured and would seem to fall predominantly within the spelt range (Figure 1). Morphologically some were clearly of spelt. Others. however, had the very well developed keel and primary vein of emmer, *Triticum dicoccon*, and it is suggested that we may have a mixture of wheat in these contexts.

The barley was of the hulled variety and rachis internodes clearly attributable to 6-row were recorded although no grains showed the twisted embryo. The other taxa were principally weeds of cultivation.

The plant remains from these two contexts demonstrate that at least 3 types of cereal were in use at this time but that the remains are not abundant enough to suggest storage. The material probably represents activities being carried out on the site but not specific uses of these two contexts. Given the relatively large proportion of chaff in both of these contexts the material could represent blow-in from nearby processing areas. Spelt is a brittle rachis wheat, breaking into spikelets upon threshing, but the glumes are extremely tough and remain attached to the grain during this process. These spikelets are therefore parched and then pounded to remove the glumes. These fine fragments of chaff would blow around easily and gather amongst nooks and crannies in the vicinity. Perhaps the demolition area was not general throughout the site at that time but just an area of rubble/re-building etc..

The third group (C) of samples consists of material from 3 contexts, most of which had small volumes of material processed. All four samples were, however, rich in plant remains. Oats (*Avena*)

predominated with seeds of *Spergula arvensis* (corn spurrey). Three floret bases of wild oat (*A. fatua*) were recorded in two samples but the abundance of oat grains and virtual absence of other cereal types strongly indicates that we are looking at the cultivated oat (*A. sativa* or *A. strigosa*). Two floret bases of the cultivated *A. sativa* were in context 59. Seeds of weedy taxa are constant but sparsely represented except for corn spurrey. This plant is characteristic of light, sandy soils and is very common amongst oat crops in the extreme north of Scotland today. It has been cultivated in the Low Countries for its seeds which are rich in carbohydrate. They have been used as famine food at times, and in the Shetlands it is known as the meale plant, from a gruel-like food prepared from the seeds.

These samples are all from a circular stone-feature and the material has now been dated to between 790-900 A.D.. It has been concluded that the feature is, in fact, a corn drier.

The differences between these contexts is emphasised in Figure 2 where the proportion of cereal grain, chaff and weeds are plotted. Group C samples are predominantly grain and weed seeds perhaps to be expected with the feature being a corn drier, chaff would not be loosened at this stage. Group B samples have proportionally more chaff except for 349 which is considered to be a storage pit lined with straw. It is suggested that they may be residues from processing areas that has been redistributed around the site.

Although seeds were not abundant in most of these samples they do give new insight into changes occurring in the first millenium A.D.. Barley is the most important cereal in group B samples, 4th Century tentatively, whereas by the 8th Century oats were apparently important. The results suggest that the site of Ewanrigg, although a Bronze Age cemetery, also had associated settlement which continued well into Saxon times and must be an important site for this fact alone.

Figure 1: Phase 1 % ecological groupings

1 - wet ground: 2 - grassland: 3 - nitrophilous:
4 - cultivated/disturbed: 5 - cereal grain:
6 - cereal chaff: 7 - heathland: 8 - economic:
9 - unclassified

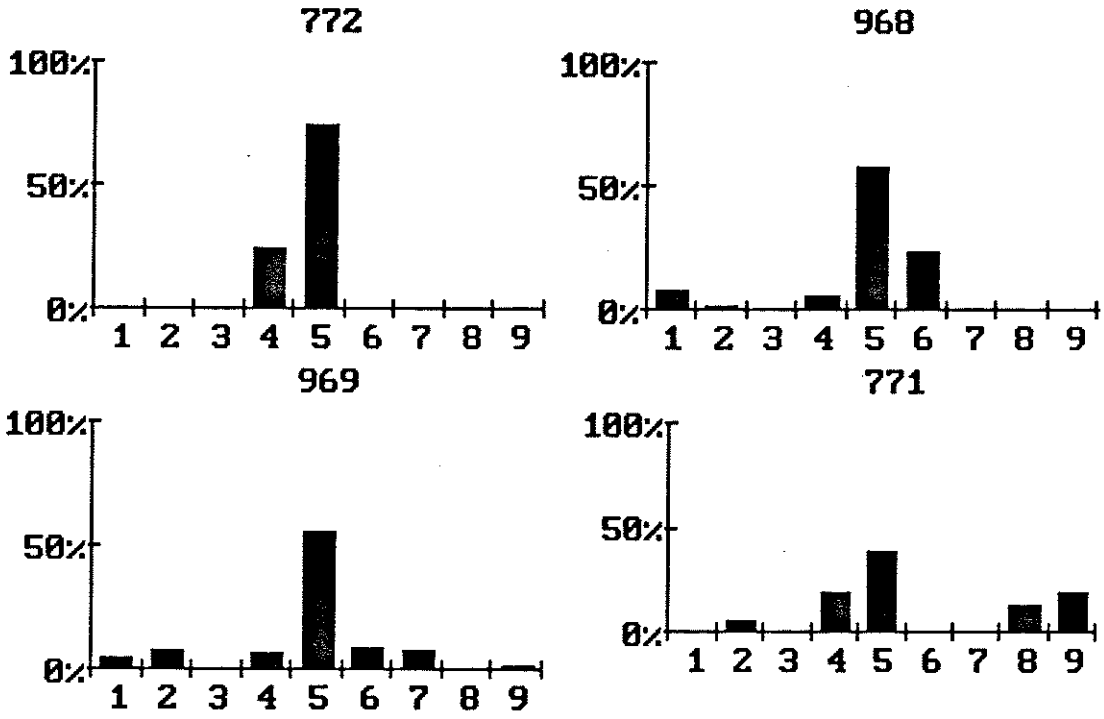

Figure 2: Phase 2 % ecological groupings

1 - wet ground: 2 - grassland: 3 - nitrophilous:
4 - cultivated/disturbed: 5 - cereal grain:
6 - cereal chaff: 7 - heathland: 8 - economic:
9 - unclassified

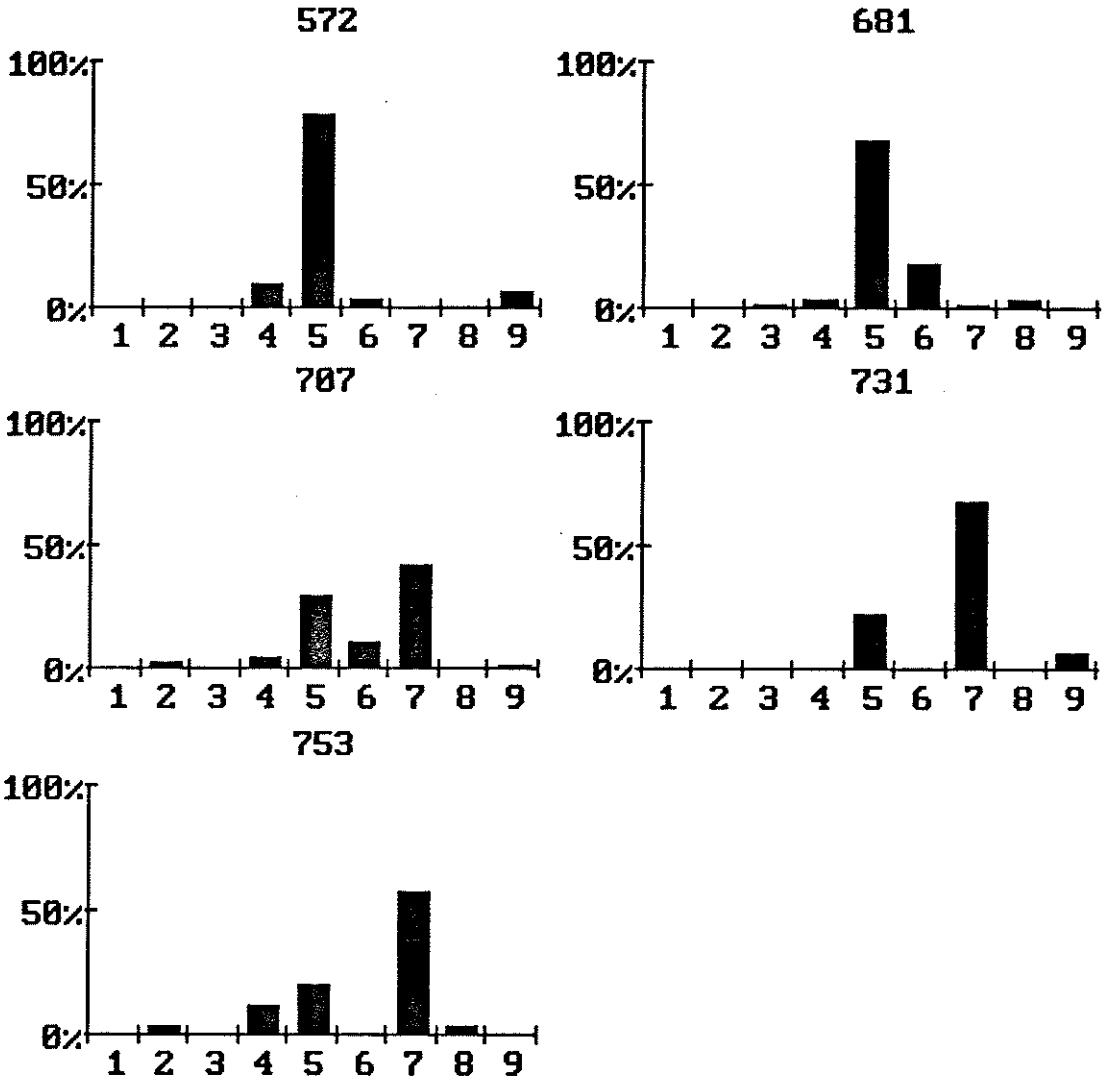

Figure 3: Phase 3 % ecological groupings

1 - wet ground: 2 - grassland: 3 - nitrophilous:
4 - cultivated/disturbed: 5 - cereal grain:
6 - cereal chaff: 7 - heathland: 8 - economic:
9 - unclassified

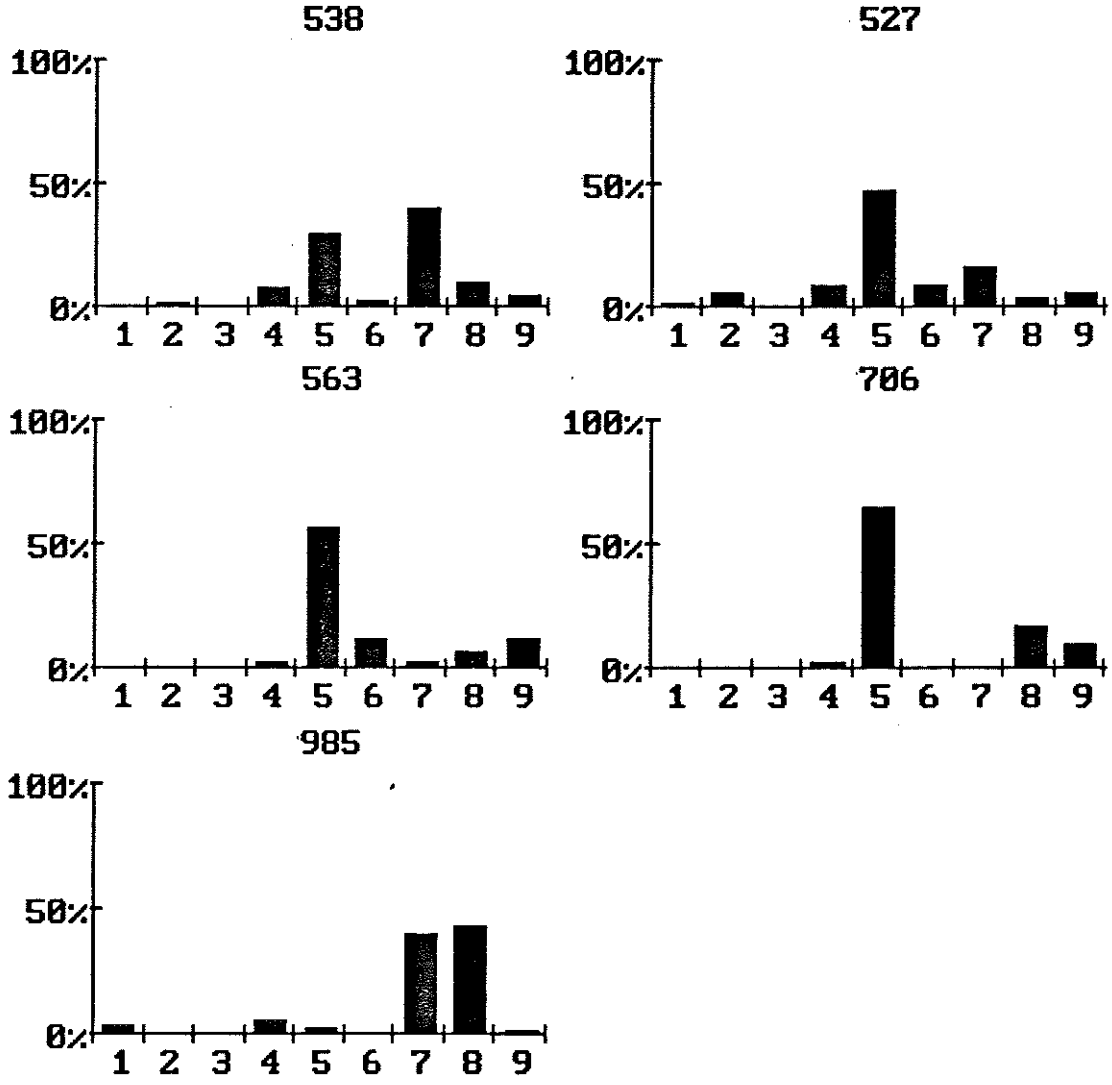

Figure 4: Phase 4 % ecological groupings

1 - wet ground: 2 - grassland: 3 - nitrophilous:
4 - cultivated/disturbed: 5 - cereal grain:
6 - cereal chaff: 7 - heathland: 8 - economic:
9 - unclassified

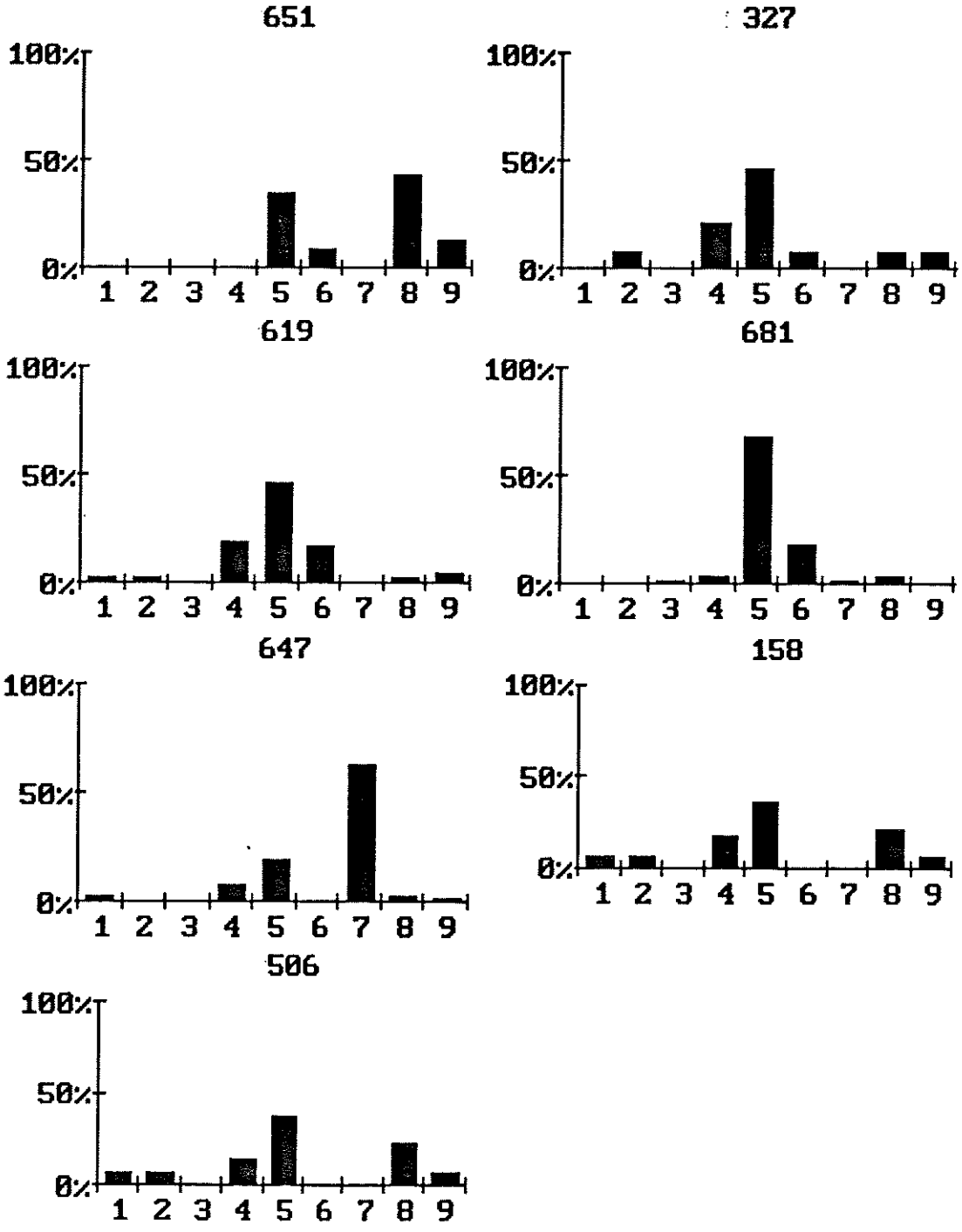

Figure 4 contin.: Phase 4 % ecological groupings

1 - wet ground: 2 - grassland: 3 - nitrophilous:
4 - cultivated/disturbed: 5 - cereal grain:
6 - cereal chaff: 7 - heathland: 8 - economic:
9 - unclassified

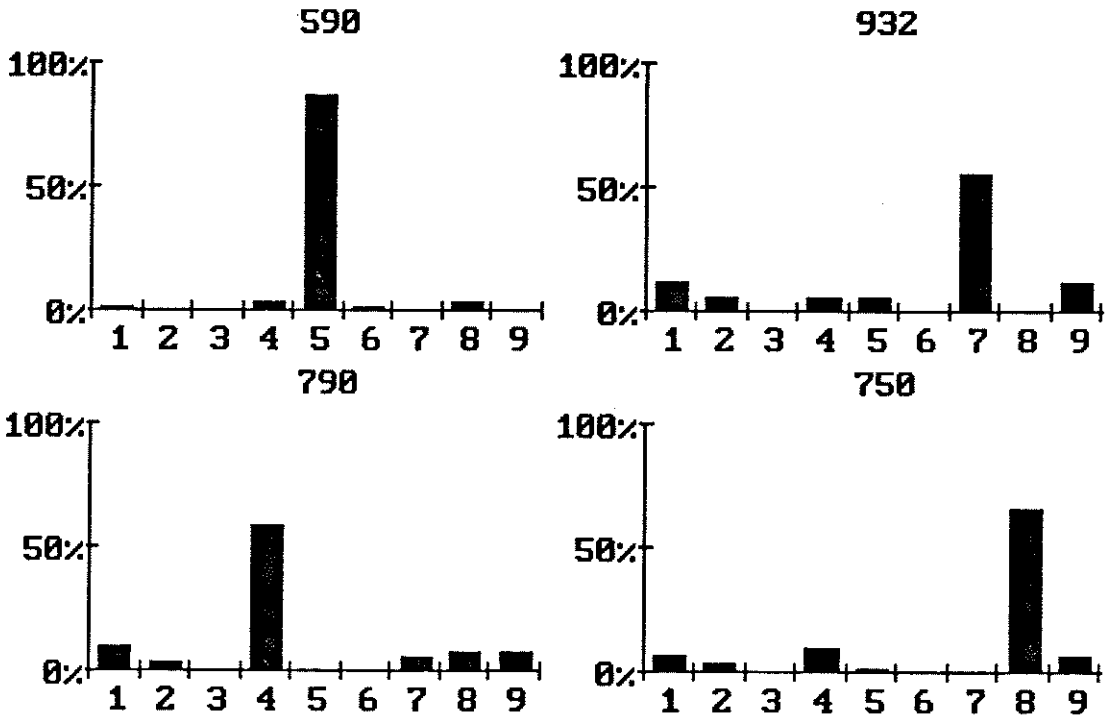

Figure 5: Phase 6 % ecological groupings

1 - wet ground: 2 - grassland: 3 - nitrophilous:
4 - cultivated/disturbed: 5 - cereal grain:
6 - cereal chaff: 7 - heathland: 8 - economic:
9 - unclassified

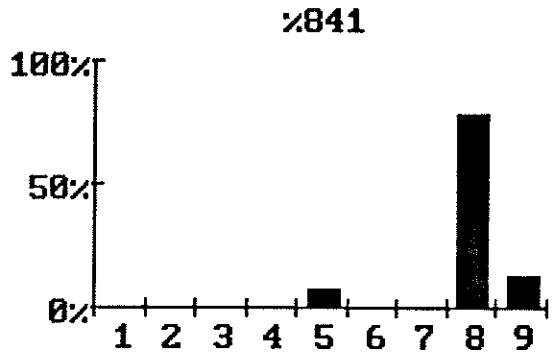

Figure 6: Summary of phases

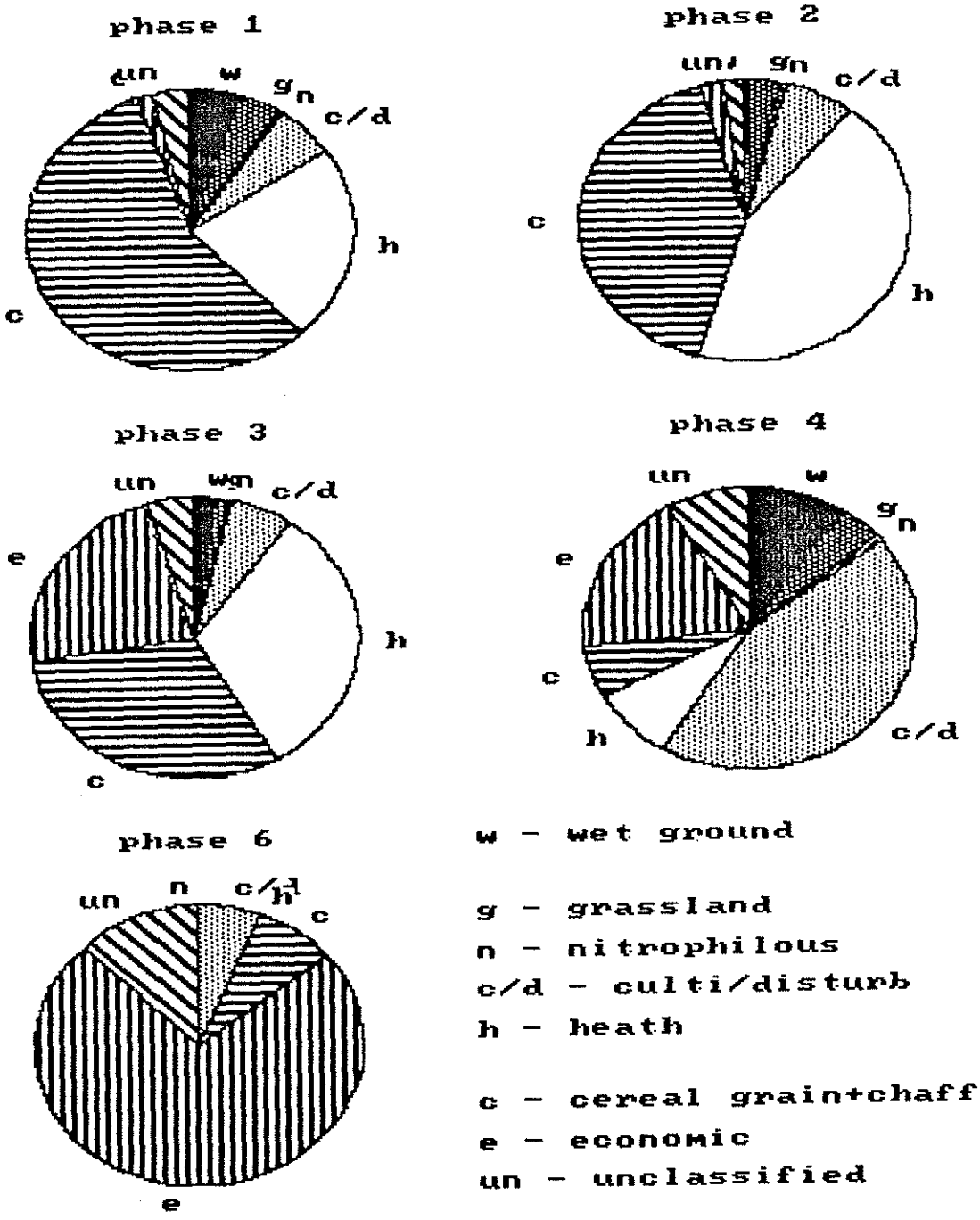

Figure 7: Plot of ordination axes 1 and 2

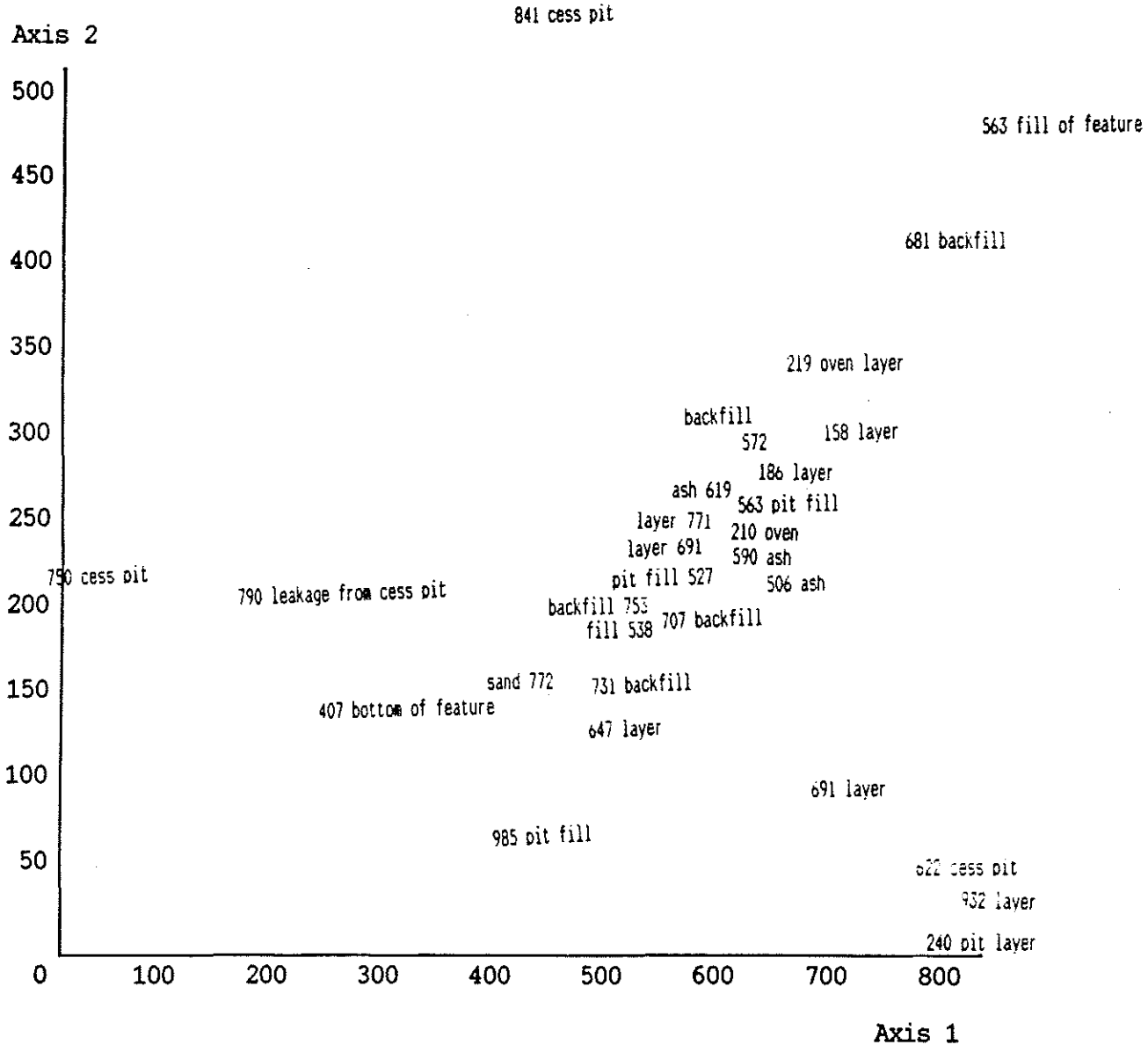

Table 1: Contextual information for samples analysed

Context	Trench	Vol. floated	Feature
27	III	3.0	Small find 30, soil outside pot
28	II	0.5	soil around bones
29	III	0.7	soil around bones
34	III	32.0	sub-circ.cremation conn. to 42
35	III	35.5	soil in sub-circ. cremation pit
37	III	57.0	soil in pit ?animal disturbance
41		3.0	small find 30, pit 27,soil outside pot
42	III	20.0	cremation pit
51	IV	1.1	
55	V	1.9	small find 55, interior of urn 67
59	IV	0.2	east quad.
64	III	26.0	sub-circular pit
66	V	1.0	
67	IV	3.2	
68/2	IV	0.2	fill of stone feature 46
68/3	IV	0.2	fill of stone feature 46
71	IV	10.0	soil under base of cremation pit 55
74	IV	16.0	primary silting layer of stone feature 46
84/2	(301)	30.0	
340			dark patch in tumble
342			?destruction
349			shallow pit

Table 2: Carbonised plant remains from Ewanrigg

	C				B			A												
Bio.Lab. code number	805	801	811	802	822	821	823	803	815	804	808	809	810	818	819	812	820	814	816	817
Context number	59	68/3	74	68/2	342	340	349	34	66	37	35	64	301	67	51	49	71	55	41	42
Volume floated (litres)	0.2	0.2	16	0.2				32	1	57	35	26		3	1	11	10	1	3	20
Corylus avellana nut frag.										2		5			1				3	
Quercus charcoal			++						+		++		++	+	++	+	++	++		++
Betula/Corylus/Alnus charcoal									++			++			+					+
Cerealia undiff.	6	7		4	1	10		1	1											
Spergula arvensis	11	10	85	48			4	3	1								1			
Avena grain	35	45	160	38	1		8													
Carex (trigonous)	1	1	1	1	9															
Avena awn	1	1	8	3																
Chenopodiaceae undiff.	2	7	5	9																
Lapsana communis	2	2	6	4																
Polygonum periscaria	2	3	13	6																
Triticum spelta		1	6	1																
Triticum sp(p). grain		3	2	4	1			1												
Plantago lanceolata		1	1	1	5															
Fallopia convolvulus		1	1																	
Stellaria media		1	7																	
Eleocharis palustris		4	2				4													
Avena fatua floret base			1	2																
Polygonum hydropiper	2			5																
Triticum diccocon		2		5																
Bromus sp(p). grain	1		1		5	3														
Hordeum indet.			2	1	4	18	999													
Galeopsis tetrahit			4	1	1															
Rumex acetosella				1	1	2				1										
Hordeum rachis internode				1	8	1														
Triticum floret base				2	8		3													
Anthemis cotula				1	1															
Triticum glume base		1			39	16														
Hordeum 6-row rachis internode					3	1														
Triticum dicoccon glume base					1	8														
Triticum spelta glume					3	5	11													
Gramineae undiff.					4	2	4													
Culm nodes					1		260													
Polygonaceae undiff.					3		208													
Polygonum lapth./persicaria					2		56													
Sieglingia decumbens	1					1	4													
Rumex obtusifolius-type					4	1	20		1		1									
Triticum (hexaploid)			2		2	5	7		1											
Chenopodium album			30		1		12													
Agrostemma githago			5		1															

/contin.

Table 2:/contin Single occurrences

	C			B				A											
Bio.Lab. code number	805	801	811	802	822	821	823	803	815	804	808	809	810	818	819	812	820	814	816	817
Context number	59	683	74	683	342	340	349	34	66	37	35	64	301	67	51	49	71	55	41	42
Avena sativa floret base	2																			
Triticum brittle rachis inter			2																	
Brassica sp(p).			1																	
Veronica hederaefolia			1						1											
Rosa thorn			1																	
Plantago major				1																
Calluna vulgaris twigs					+															
Carex (lenticular)					3															
Caryophyllaceae undiff					1															
Galium aparine					1															
Isolepis setaceus					1															
Ranunculus repens-type					1															
Sambucus nigra					4															
Scirpus lacustris					2															
Rubus fruticosus					1															
Valerianella dentata					12															
Triticum aestivum grain						3														
Raphanus raphanistrum pod frag							1													
Urtica dioica							4													
Montia font. chond.								2												
Pinus - charcoal									+											+
Euphorbia helioscopia										1										
Legume <4mm																			1	
Betula tree catkin scale																			1	
Alnus charcoal																				+

Figure 1

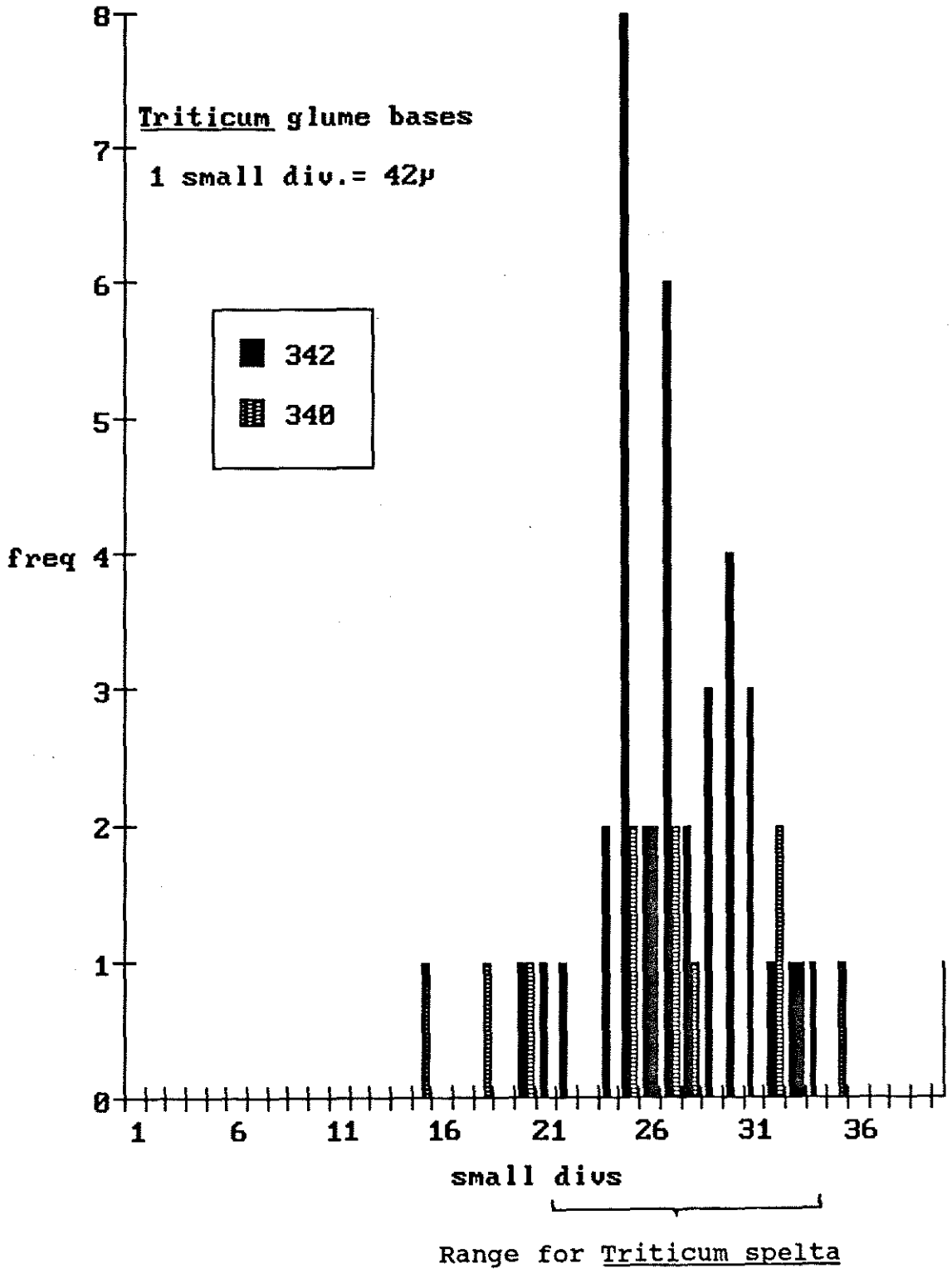
Triticum glume bases
1 small div.= 42μ
342
340
freq
0
1
2
3
4
5
6
7
8
1
6
11
16
21
26
31
36
small divs
Range for Triticum spelta

Figure 2

g = cereal grains: c = cereal chaff:
w = weeds of cultivation