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Summary

The identification of the charcoals and other charred plant remains from the Neolithic rubbish pit and Bronze Age barrow and ditch at Roughridge Hill, Wiltshire produced several interesting finds in the form of beech and ash charcoal. This is an early record for beech and ash charcoal may represent the regeneration of secondary woodland.

Other finds include barley caryopses, Hazel nutshells and onion couch grass tubers.

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THE CHARRED MACROSCOPIC PLANT REMAINS FROM A NEOLITHIC PIT AND BRONZE AGE BARROW AND DITCH AT ROUGHRIDGE HILL, WILTSHIRE.

BY

ALAN J. CLAPHAM

INTRODUCTION

Roughridge Hill, Wiltshire (Ordnance Survey Sheet No. 157811, grid reference 0593 6597) is the site of a Neolithic rubbish pit and a Bronze Age barrow with a surrounding ditch. The site was excavated in 1964 by E.V.W. Proudfoot of University of St. Andrews, St. Andrews, Fife.

This report concerns the identification of the charcoal, seeds and nutshells associated with the pit and the barrow and ditch.

METHODOLOGY

The samples had already been preliminarily sorted by the excavation team in 1964. Analysis of the seeds and charcoal was carried out using a Wild M8 low-powered stereomicroscope (magnification x6 - x50). Additionally, an epi-illuminating microscope was used for the charcoal identifications. Schweingruber (1982) was used as a guide to the identification of the charcoal.

Taxonomy follows that of Clapham, Tutin and Warburg (1962).

RESULTS (Table 1 & 2)

The charred plant remains were, in general, well preserved. Although, in some cases the charcoal was very fragmented. It was, however, possible to identify most of the fragments. All of the charcoal was of large twigs and small branches, 3-6 centimetres in diameter. There was no trunk wood present.

The pre-barrow Neolithic rubbish pit contained the following types of charcoal:- apple type (Malus sp./Pomoideae type), hazel (Corylus avellana L.), oak (Quercus sp.), beech (Fagus sylvatica L.) and buckthorn (Rhamnus catharticus L.). The pit also contained an abundance of hazel nutshells.

The ditch surrounding the barrow contained beech, apple type, ash (Fraxinus excelsior L.), alder (Alnus sp.) and oak charcoal.

The burial mound contained ash and hazel throughout and onion couch grass tubers (Arrhenatherum elatius var. bulbosus (willd. Spenn.) were found from the undisturbed grave edge of Thurnam's pit (which is situated within the barrow). Hazel nutshells were found at the base of the mound near the centre.

Site C, pit 2 produced forty-three seeds of hulled barley (Hordeum sativum).

DISCUSSION

a) The charcoals (Table 1)

Most of the species identified can be found in woodland, scrubland or hedgebank habitats. Alder is the one species that is usually found growing in the proximity of water or where there is a locally high water table.

One interesting find was that of buckthorn, which is usually found growing in woodlands and scrub on calcareous (base rich) soils. Buckthorn has been previously been found by Salisbury and Jane (1940) at Neolithic Maiden Castle. Other taxa that can be found growing on base rich soils include beech and ash. Hazel and apple type can be expected to be found in scrubland or in the less shaded areas of woodland e.g. in clearings and woodland edges.

The finds of beech charcoal in the Neolithic pre-barrow pit and of ash and beech in the Bronze Age barrow are of particular interest.

The native status of beech has for a long time been called into question (Godwin, 1975). According to Erdtman (1932), pollen analyses have shown that beech was present in Central France, South Germany and Austria in the early post Glacial Period. Beech, with the amelioration of the climate migrated rapidly towards the east and north and more slowly towards the northwest and west. Erdtman (1932) also suggested that in the past, beech exceeded its present range in the east and north of Europe while westward e.g. Britain, it is still a thriving tree and has yet to reach the westward limit of its range, although the tree has been recently planted outside its present range and has survived.

Linquist (1931) suggested that the slow migration of beech in northwest Europe is due to late spring frosts which are unfavorable to the formation of seed and to the growth of seedlings. The northwest limit of beech might also be influenced in part by a summer temperature which is too low to encourage flowering. Therefore, the slow migration of beech, north and westwards during the Atlantic period may well be due to the destructive influence of these spring frosts. Although Erdtman (1932) does not think that there is enough substantial evidence to support this theory. In Britain, by the end of the Bronze Age, beech is assumed to have reached its apparent natural limit, south and east of a line drawn from Weymouth to Swansea to Kings Lynn (Rackham 1980). As Wiltshire is within this area it may be assumed that the beech charcoal found in the Neolithic and Bronze Age levels at Roughridge Hill represents the expansion of beech into South west England, although the tree may only be locally frequent especially in the Neolithic. Salisbury and Jane (1940) suggested as there were no beech finds in Neolithic levels at Maiden Castle that the tree had not reached the Dorset chalklands by the first century A.D., although there have now been other scattered finds of beechwood and charcoal of Neolithic to Roman date (Godwin, 1975, Rackham, 1980) throughout the south east of England. The finds of beech charcoal may possibly represent a species of tree that is still expanding westwards during the Neolithic period.

Ash pollen was first extensively recorded in Godwin's Zone VI and by the end of the Atlantic period, ash occurred throughout Britain especially in Northern Britain (Rackham 1980). During this period, it rarely formed as much as 5% of the total tree pollen. The reason for this may be because ash is a poor producer of pollen being entomophilous (insect pollinated) and plants of this type tend to be poorly represented in the pollen spectra.

At the Elm decline, widely dated at approximately 5000-5500 b.p. (Scaife, in press) there was a dramatic change in the amount of ash pollen recorded in the pollen diagrams for Britain. The Elm decline is generally accompanied or immediately followed by a rapid and systematic increase in ash pollen which often reaches ten percent of the total tree pollen in zones VII b (sub-boveal) and VIII (sub-Atlantic) (Rackham, 1980). A possible explanation for this phenomenon may be that ash is acting as the main component in the regeneration of secondary woodland (Rackham 1980) therefore leading to an increase in the amount of ash pollen recorded.

Scaife (1980) suggested that changes in woodland structure on the Isle of Wight were initiated with early Neolithic disturbance which was subsequently maintained and enhanced in the Bronze Age. Following various lines of evidence but largely that produced by pollen analysis, various authors have suggested that the forest clearance of Downland areas was not a synchronous event and had taken place early on in the Neolithic in Wiltshire and Sussex and in the early Bronze Age on the Isle of Wight (Bell, 1977, Evans 1972, Scaife 1980, 1987).

Thus it appears that the ash found at the Roughridge Hill barrow is perhaps representative of the development of secondary woodland in Wiltshire during the Bronze Age.

b) The other charred plant remains (Table 2)

Most of the other charred plant remains found at Roughridge Hill were of hazel nutshell, although sample 379C contained tubers of the onion couch grass. Onion couch grass tubers have also been found in a late Bronze Age ditch on Rockley Down, Wiltshire (Allison and Godwin, 1949). The tubers found at Roughridge Hill

compare favourably with those of Rockley Down with both samples having a sharp abscission scar at the top of each tuber with scars of adventitious roots below. The tuber itself has a ribbed surface with the interior consisting of a homogeneous parenchymatous cellular structure. The finds of Allison and Godwin (1949) are thought to be the earliest record of onion couch grass tubers, although this type tuber has now been found in other Bronze Age sites in Britain, including two from Oxfordshire, one site being the cremation pits at Abingdon (Jones, 1978) and also from a middle Bronze Age context at Mount Farm (Jones pers. comm. in Heslop, 1987). Onion couch grass tubers have also been found in cremation pots found in the Bronze Age barrows at Irthlingborough, Northamptonshire (Robinson, pers. comm.). Van der Veen (in Heslop, 1987) has also found them at Iron Age Thorpe Thewles.

Onion couch grass can be a serious weed of cultivation (Allison and Godwin, 1949, Van der Veen, 1987) as it propagates easily in arable fields where ploughing disperses the tubers. The tubers found at Roughridge Hill and at the Rockley Down site were associated with barley and were probably a wild food source rather than a representative of the cornfield weed flora. Harvesting of this wild food source may have been by uprooting using a blunt sickle (Hillman, pers. comm. in Wan der Veen, 1987) although unlike those tubers found at Thorpe Thewles, the Roughridge tubers were not associated with any culm bases or other waste fractions of crop processing.

Sample 452 from site C produced 43 grains of hulled barley (Hordeum sativum). It was not possible to determine whether the grains were of the two row or six row variety, although some of the grains did nave a slight 'twist' suggesting the latter cultivar. However, it is thought that this feature is a product of charring rather than being a diagnostic characteristic.

All of the barley grains still had the floral parts attached to the proximal end of the caryopsis. No rachis fragments were found, therefore again preventing any further identification of the type of barley grown.

One interesting feature of the grains, is the incomplete charring which has resulted in the endosperm of the grains not being solid as is normal for charred cereals. The endosperm was only present in pockets and was dark brown in colour.

Incomplete charring can occur in many ways and two possible methods are suggested here.

1. The grains were thrown onto a dying fire which was not hot enough to char the seeds completely, or,

2. The grains were buried under a pile of ash and therefore protected from the full heat of the fire, allowing only the outer layers of the caryopsis to be charred. Evidence for the gentle heat being responsible for the preservation of the grains may be provided by the fact that the floral parts are still attached. This incomplete charring would result in the caramellisation of the endosperm with the charred outer layers protecting it from decay. If this layer is broken, decomposition would result and therefore only remnants of the endosperm would be present. (Hillman, pers. comm.)

According to Jessen and Helbaek (1944) and Helbaek (1952) the crops grown in southern Britain in the Bronze Age consisted of Emmer wheat (Triticum dicoccum) as the main wheat species along with both hulled and naked barley. The ratio between the two types of barley varying throughout the Bronze Age. In the Early Bronze Age 70% of the Barley grown was of the naked variety, in the middle of the

Bronze Age 68% was of the naked type while in the Late Bronze Age 65% of the barley under cultivation was of the hulled variety. It must be noted that most of the evidence for the above percentages was derived mainly from plant impressions in pottery and therefore may be misleading. Helbaek (1952) stated that barley definitely predominated with Emmer wheat while Einkorn (Triticum monococcum) and Bread wheat (Triticum aestivum S.L.) occurring sporadically. The switch over from naked to hulled barley in the Late Bronze Age coinciding with the new intrusions of continental peoples at the beginning of the Early Iron Age (Helbaek, 1952). There is now evidence for Spelt wheat (Triticum spelta) being found in the Bronze Age in Britain, for example at Runnymede (Greig, pers. comm.), at Black Patch, Sussex (Hinton in Drewett, 1982) and at Springfield, Chelmsford, Essex and Lofts Farm, Heybridge, Essex (P. Murphy, pers. comm.). Although none of the wheats mentioned above were found at Roughridge Hill or Rockley Down.

As previously stated Allison and Godwin (1949) also found Onion Couch Grass tubers along with barley at Rockley Down although the 25 seeds of barley discovered were of the 6 row naked type while at Roughridge the barley was most likely of the 6 row hulled variety.

Conclusions

The wood species, apple type (Malus sp./Pomoideae type), beech (Fagus sylvatica), ash (Fraxinus excelsior), alder (Alnus sp.), hazel (Corylus avellana), buckthorn (Rhamnus catharticus) and oak (Quercus sp.) represented by charcoal of twigs and small branches at Roughridge Hill, could have grown in woods and thickets in the surrounding area. The presence of ash may indicate the regeneration of secondary

woodland. One species, buckthorn, is an indicator of base rich soils and is not often found on archaeological sites.

From the large number of hazel nutshells found at Roughridge Hill, it can be suggested that the nuts were gathered as a source of wild food and that the shells discarded into the pre - barrow rubbish pit and were either burnt before or after being discarded. The onion couch grass tubers (Arrhenatherum elatius var. bulbosus) may have been gathered for a similar purpose, as suggested by Allison and Godwin (1949).

The barley (Hordeum sativum) present on the site may represent one of the crops that were growing nearby, although without the presence of chaff remains this cannot be certain. The importance of the barley as a cultivated food resource cannot be deduced due to the absence of any other species of cereal crop finds.

Allison, J. and Godwin, M. 1949. Bronze Age plant remains from Wiltshire. Data for the Study of Post Glacial History XII The New Phytologist Vol. 48, No. 2.

Bell, M., 1977. Excavations at Bishopstone. Sussex Archaeol. Collect. 115 1-291.

Clapham A.R., Tutin, T.G. and Warburg, E.F. 1962. Flora of the British Isles. 2nd Edition. Cambridge.

Erdtman G., 1932. The northern distribution limit of Fagus silvatica L. Svensk Botanisk Tidschrift BD26 HT-2.

Evans, J.G., 1972. Land Snails in Archaeology Seminar Press: London.

Godwin, H., 1975. The History of the British Flora 2nd Edition. Cambridge.

Helbaek, H., 1952. Early crops in Southern England. Proceedings of the Prehistoric Society 18 194-233.

Hinton, P., 1982. Carbonised Seeds. In: Drewett, P.L., Later Bronze Age Downland economy and excavations at Black Patch, East Sussex. Proceedings of the Prehistoric Society 48 382-390.

Heslop, D.H., 1987. Thorpe Thewles Excavation C.B.A. Research Report 65.

Jessen, K. and Helbaek, H., 1944. Cereals in Great Britain and Ireland in Prehistoric and early Historic times. Det. Kgl. Danske Videnskabernes Selskab Bilogische skrifter BdIII No. 2. Kbenhava.

Jones, M., 1978. The plant remains, In: Parrington M. (ed.) The excavation of an Iron Age Settlement, Bronze Age ring ditches and Roman features at Ashville Trading Estate, Abingdon (Oxon). 1974-76 93-101.

Linquist, B., 1931. The ecology of Scandinavian beech-woods Journ. Swed. Forestry Soc.

Rackham, O., 1980. Ancient Woodlands - its history, vegetation and uses in England. Edward Arnold; London.

Scaife, R.G., 1980. Late Devensian & Flandrian Palaeoecological Studies in the Isle of Wight. Unpublished PhD. Thesis, Kings College; University of London.

Scaife, R.G., 1987. A review of Later Quaternary Plant microfossil and macrofossil research in Southern England; with special reference to Environmental Archaeological Evidence in Keeley, H.C., (ed.) Environmental Archaeology: A Regional Review Vol. II. HBMCE occasional paper No. 1.

Scaife, R.G., (in Press). The Ulmus decline in the Pollen record of South Eastern England and its relationship to early Agriculture. In Jones. M., (ed.) Symposia of Association for Environmental Archaeology and Botanical Society of the British Isle Conference. Oxford 1984.

Schweingruber, F.M., 1982. Microscopic Wood Anatomy 2nd Edition F. Fluk-with. Switzerland.

Van der Veen, M., 1987. The plant remains in Heslop, D.H. Thorpe Thewles Excavation CBA. Research Report 65.

SITE. ROUGHRIDGE HILL, WILTSHIRE. (SITE A).
PERIOD. NEOLITHIC/BRONZE AGE.
A.M. LAB No. 791613 (LIST 17).

DITCH.

FIND NO.	DESCRIPTION.	SPECIES.
20 Q1 T1	Ditch fill.	Fagus sylvatica.
519 Q2 T8	Dark chalky brown fill.	Malus sp./Pomoideae type.
29 Q2 T3	Edge of ditch.	Fraxinus excelsior.
54 Q3 T3	Yellow/grey rainwash.	Quercus sp.
117 Q4 T9	Brown earth & chalky rainwash.	Alnus sp., Malus sp./ Pomoideae type.
95 Q4 T10	Chalky brown fill.	Fraxinus excelsior, Malus sp./Pomoideae type.
520 Q4 T10	Top of fill.	Fagus sylvatica.

MOUND.

a) From earth mound.

68 Q4 T10	Earth mound.	Fraxinus excelsior.
217 Q3 T13	Mound.	Corylus avellana.
14 Q1 T1	Mound, near centre.	Fraxinus excelsior.
62B Q2 T5	Base of mound, near Thurnam's pit.	Fraxinus excelsior.

b) From chalk capping.

517 T3	Chalk lumps in mound.	Corylus avellana.

c) From undisturbed edge of centre grave.

176B	Thurnam's pit/undisturbed grave edge.	Fraxinus excelsior.

d) From Thurnam's pit.

55 Q1 T1	Thurnam's disturbance in centre.	Fraxinus excelsior.
56 Q2 T5	As above.	Fraxinus excelsior.
53 Q2 T5	As above.	Fraxinus excelsior.

TABLE 1. Charcoal from Roughridge Hill.

d) From Thurnam's pit. (cont.)

168 Q2 T8	Thurnam's disturbance in centre.	Fraxinus excelsior.
200A Q2 T5	As above.	Fraxinus excelsior.
379A	Undisturbed edge of grave in Thurnam's pit.	Fraxinus excelsior.

PRE-BARROW RUBBISH PIT (NEOLITHIC).

FIND NO.	DESCRIPTION.	SPECIES.
108 Q2 T7	Dark soil from north side of ditch to 1' 10".	Malus sp./Pomoideae type.
112B Q2 T8	Feature, north of ditch, dark soil.	Malus sp./Pomoideae type.
263A Q2 T7	Fill of pit, below worm layer.	Malus sp./Pomoideae type, Corylus avellana.
157A Q2 T8	From immediately above clay/ chalk sludge sample at 2' 3".	Malus sp./Pomoideae type.
165A Q2 T8	Dark soil at 2' 3".	Malus sp./Pomoideae type.
149A Q2 T8	Dark soil at 2' 3" - 2' 6".	Malus sp./Pomoideae type, Quercus sp., Corylus avellana.
289A Q2 T7	Dark fill.	Fagus sylvatica.
184A Q2 T8	Charcoal adhering to pot find 182, near bottom, depth 3'.	Quercus sp.
188 Q2 T2	Dark soil at bottom, depth 3'.	Malus sp./Pomoideae type.
192A Q2 T8	Dark soil at bottom.	Fagus sylvatica.
211 Q2 T8	Dark soil at bottom.	Fagus sylvatica.
215 Q2 T8	Dark soil associated with 212.	Malus sp./Pomoideae type.
308A Q2 T7	On chalk at base of dark fill.	Malus sp./Pomoideae type, Fagus sylvatica.
458A Q2 T7	From chalky rainwash, S end of pit.	Malus sp./Pomoideae type, Quercus sp.

TABLE 1. (continued)

PRE-BARROW RUBBISH PIT. (cont.)

456A Q2 T7	From grey ash in SW corner.	Rhamnus catharticus.
361B Q2 7	4" - 7" from base, in grey ashy soil.	Malus sp./Pomoideae type, Fagus sylvatica.
371B Q2 T7	From side, in grey pebbly material.	Malus sp./Pomoideae type, Quercus sp.
224B Q2 T8	Found in section cleaning.	Corylus avellana.
283B Q2 T7	Below worm layer.	Malus sp./Pomoideae type, Corylus avellana, Quercus sp., Rhamnus catharticus.
207A Q2 T8	?	Malus sp./Pomoideae type, Quercus sp., Fagus sylvatica.

TABLE 1. (continued)

SITE.	ROUGHRIDGE HILL, WILTSHIRE. (SITE A)	
PERIOD.	NEOLITHIC/BRONZE AGE.	
A.M. LAB NO.	791617 (LIST 19)	
FIND NO.	DESCRIPTION.	SPECIES.
379C	From undisturbed grave edge, Thurnam's pit.	Arrhenatherum elatius var. bulbosus tubers (5).
PRE-BARROW PIT.		
107 Q2 T7	From extension N of ditch (top of pit) to 1' 10".	Corylus avellana shell (5f).
149B Q2 T8	2' 3" - 2' 6" near edge.	Corylus avellana shell (25f).
112A Q2 T8	Dark soil, near top of pit.	Corylus avellana shell (41f).
165B Q2 T8	Dark soil in pit, 2' 3" +.	Corylus avellana shell (12f).
256 Q2 T7	From wormlayer.	Corylus avellana shell (17f).
262 Q2 T7	From just below wormlayer.	Corylus avellana shell (137f).
263B Q2 T7	From just below wormlayer.	Corylus avellana shell (12f).
283A Q2 T7	From dark filling from below wormlayer.	Corylus avellana shell (44f).
SITE B. LIST 22 A.M. LAB. NO. 791617.		
248B Q1 T2	From Thurnam's disturbance, at centre.	Cerealia indeterminate (3f).
396B Q4 T12	From base of mound, near centre.	Corylus avellana shell (1f).
389B Q4 T12	From pit 10/11.	Parenchymatous tissue.
SITE C. LIST 25 A.M. LAB. NO. 791617.		
452 Q4 T10	From pit 2.	Hordeum sativum hulled (43), Hordeum sp. indet. (21f), Culm nodes (1).

TABLE 2. The seeds from Roughridge Hill.
(the figures in brackets represent number of seeds, fragments etc.)