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An Iron Age Harvest

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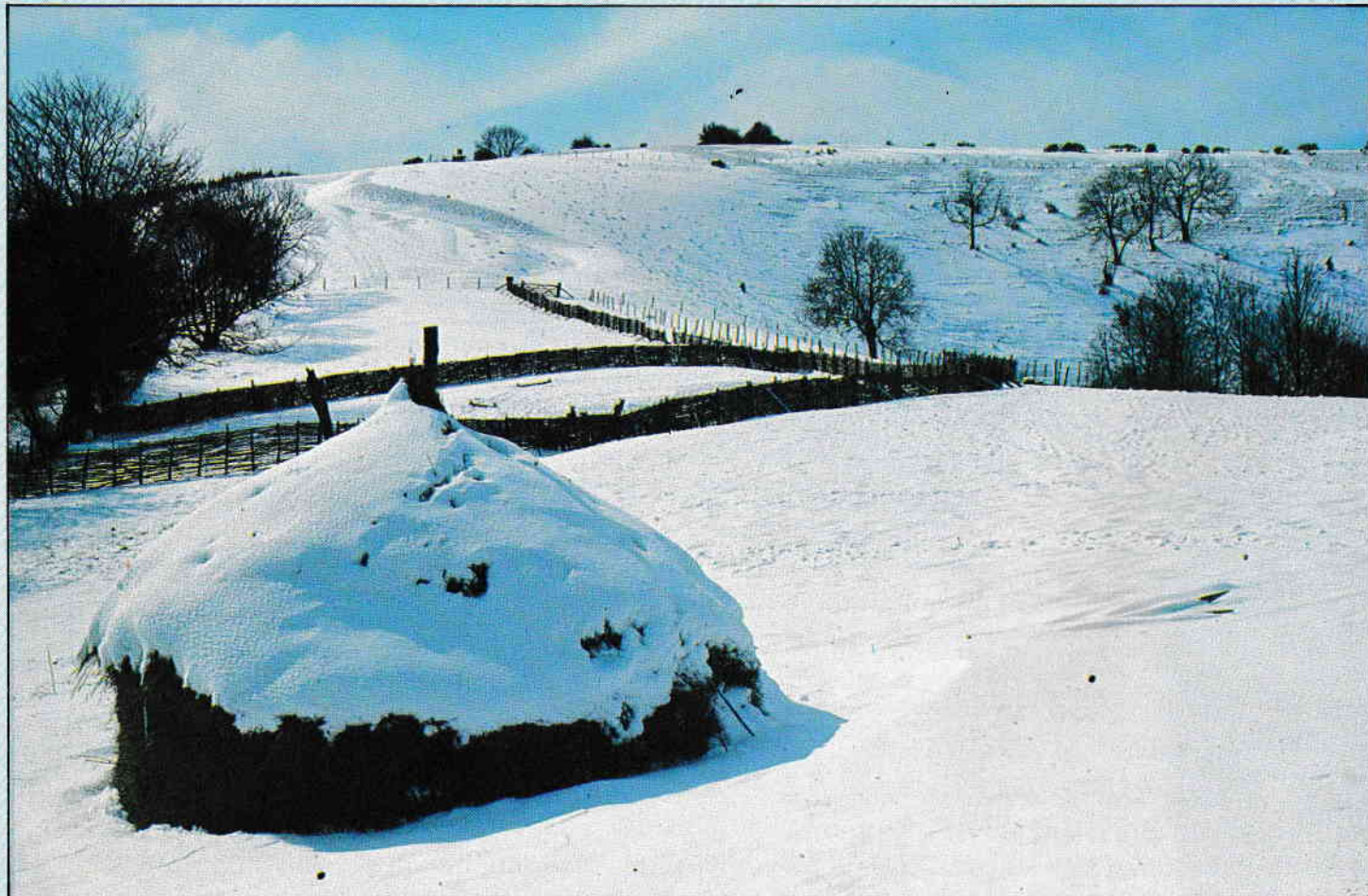
Experiment in archaeology can be divided into several broad categories. Initially there is the basic replication of a tool or artefact and its testing in terms of its proposed function. In this category we can include the construction of buildings and structures based upon ground plans of post-holes and stake-holes. Secondly there are trials which explore probability factors. For example, evidence of agricultural plants and processes survives in sufficient details to explore the potential of the agricultural system by actually growing the crops and measuring the yields against constants of soil type and microclimate. Thirdly there is the simulation experiment which seeks to create a developmental sequence from new. The obvious example is the building of an

earthwork and observing the stages of erosion on the one hand, on the other the recolonisation of the structure by vegetation. The classic example in Britain are the linear earthworks at Overton and Wareham Downs. In total contrast, but similarly within this broad category, is the study of the movement of artefacts in ploughsoil. In both cases the purpose is to provide comparative standards against which the archaeological evidence can be measured and analysed.

The research programme at Butser Ancient Farm which seeks to explore the harvests of the Iron Age in southern England necessarily spans all of the above categories of experiment. The primary aim is to provide some understanding of what the crop yields of Emmer and Spelt wheats

might have been in the later Iron Age. Inevitably such a programme has to be an extremely long term one because the significant factors are soil and weather. The weather pattern year to year can quite easily be averaged out into typical and non-typical seasons but in reality each year, or more particularly each growing season, is unique unto itself. A three week period of hostile conditions at the wrong moment can dramatically affect the yield of a crop from bumper proportions to complete disaster. An example of the affect of the climate occurred in January of 1987. The autumn sown cereals had flourished after planting, germination was excellent and by the late December the growth was strong and all the auguries pointed to an excellent crop. During January a ten day period of sub zero

BELOW: Simple round haystack with conical thatched roof. A critical fodder supply in these conditions.





ABOVE: A simple interpretation of a pair of post-holes. The drying rack, laden here with ash leaves, is extremely efficient. Any traditional farmer from Scandinavia would instantly recognise the structure and its purpose.

temperatures without any snow cover froze the soil to a depth of ten centimetres. The crop was totally destroyed. Similarly this year the spring sown crops failed to germinate properly because of the hot dry weather in April, May and June and consequently another complete failure is recorded. Both of these instances are taken from the Ancient Farm site on Little Butser which offers perhaps the most hostile of locations for this research programme. With a soil cover of just ten centimetres directly on top of middle chalk, water transpiration is at best minimal and soil desiccation can take place within the space of a few days. The value of this site is, of course, that it offers such extremes and regularly provides the worst option.

Through time, however, the harvests on this site and the public area of the Ancient Farm have provided a long sequence of remarkable results. A range of treatments have been studied including a complete non-manuring regime to annual and biennial measuring patterns on two different soil types with autumn and spring sowing at fixed rates of sowing. The results naturally vary quite considerably but averaging these out over a decade or more a simple manuring regime at a fixed rate yields c. one and a half tons per acre, a non-manuring regime averages between ten and twelve hundredweights per acre. Both sets of results are surprising, the former because it exceeds all expectations and compares satisfactorily with yields of the modern period, the latter because soil exhaustion has not occurred and the yields are

adequately higher returning a ratio of seed sown to seed gained of 20 : 1.

The harvest itself is physically quite fascinating. The prehistoric wheats grow to prodigious heights in modern terms regularly reaching an average height of 1.20m. The fruiting canopy shrouds the myriad of arable weeds which infest the crop and which, during the season, make such a colourful display. Analysis has shown an average ratio of three stalks of wheat to two of arable weeds despite the spaces between the seed drills being thoroughly hoed. The weeds that survive through to harvest actually grow within the seed drills themselves.

While the cereal harvest is of tantamount importance, when faced by the plethora of other plants one wonders about the potential of a harvest within a harvest. Many of the arable weeds, for example, are, in fact, edible, others can have medicinal or herbal uses. It is not beyond the bounds of possibility that the crops were rogued or picked over before the cereal itself was harvested. Even today farm workers rogue out wild oats (*Avena sativa*) from a cereal crop before the combining takes place. Carbonised seed evidence includes wild oats which may have been rogued or alternatively were specifically grown as a crop. Other plants, so called real arable weeds, which could well have been collected as supplementary food, are the vetches, while the opium poppy is a clear candidate for medicinal purposes at least.

The process of harvesting the crops has posed many problems over the years.

Initially a number of replica sickles were made modelled upon originals recovered from excavations. Harvesters were assembled and each given a sickle plus copies of the ubiquitous illustration showing a hand grasping a group of stalks of wheat, the sickle poised to cut through the stems. Invariably after half an hour one found a neat pile of sickles laid over the illustrations at the edge of the field, the harvesters happily picking off the ears of wheat at high speed. The prehistoric cereals when ripe have a peculiar characteristic. Where the ear joins the stem, the straw is extremely brittle and breaks very easily indeed. In addition the fruiting heads of any one plant ripen at greatly varying heights between as low as thirty centimetres to as high as 1.80m. To collect them all with a sickle is difficult and time consuming, while picking them by hand is quick easy and most efficient. One of the classical writers refers to the peculiar Celtic practice of harvesting the ears. Certainly this leads to a virtually pure harvest with typically one contaminant, the black bindweed. The straw left in the field would form a secondary important harvest where the sickle is, in fact, useful. The principle of harvesting the ears alone is reinforced by another Celtic invention of the second century A.D. described by Palladius. This is the reaping machine which comprises a set of tines on a carriage which are pushed into the crop nipping off the ears between the tines and collecting them in a box. The implications of this machine, bearing in mind that invention is the product of man's idleness, further support

the successful nature of agricultural production in the Iron Age.

Harvest, however, isn't just related to cereal production. The whole purpose of farming, especially in the temperate zone, is to ensure a reliable food supply for man and animal alike during the months of the year when it grows. Harvest necessarily includes the provision of hay for livestock maintenance. Evidence for this is very slight but for one feature which is commonly found. This feature comprises a solitary post-hole, occasionally set in a circular dished area about 2 metres in diameter or in a circular area encompassed by a narrow ditch. One working hypothesis for this feature is the round haystack with a thatched conical roof traditionally seen in Yorkshire in this century and commonly seen in north-west Spain. Trials with haystacks like this at the Ancient Farm have even shown how the dished depression occurs. The foundations for the haystacks are made by a raft of brushwood to keep the hay off the ground and away from moisture. Through time, because the raft as well as the haystack cause the breakdown of the plants and root structures in the soil beneath it, the ground surface sinks. The raft is raised further and the process continues leading to

a physical depression. Ironically, given the average diameter and the practical stable height of such a stake of hay set around a solitary pole, the quantity of hay is c. one and a half tons - enough to keep one cow in good order throughout the winter.

Livestock fodder may not have been limited to hay and straw alone. Wheat, oats and beans may well have been used as supplementary feed as well. There is, however, one other traditional fodder of north-west Europe which may reach back into the Iron Age, that being tree leaf fodder. Ash and elm leaves collected in high summer and dried on racks provide an excellent and, indeed, preferred fodder to hay. Perhaps the pair of post-holes so commonly recovered, but for which there are so few explanations, may indeed be indicative of such drying racks. Having carried out trials with ash leaves, elm is virtually non-existent in Britain today thanks to the Dutch elm disease, over the past two summers, the process works well and leaves a significant waste product, the twigs, which are left by animals. These have been collected up and used to light and rekindle fires. Given that charcoal is an ubiquitous survival in archaeological layers, one wonders if analysis of the

fragments found was to indicate a predominance of elm and ash twigs and if this evidence could be used as a supportive argument for leaf foddering.

In understanding an Iron Age harvest the empirical approach has afforded certain boundaries of probability for the formal harvests of the prehistoric cereal types on the one hand, on the other, because the Ancient Farm is a complex interrelated working unit, experiment has raised a range of questions which need further examination, especially with reference to the provision of livestock fodder. Haystacks and leaf drying racks are perfectly reasonable hypotheses in themselves but they need more confirmatory evidence before they can be validated.

Butser Ancient Farm now publishes annual Data Books. Those for 1986 and 1987 are currently available at £6.00 per volume plus £1.50 p. & p. ■

BELOW: Vertical post with circular floor of timber to keep the hay off the ground. The end result is a dished depression with a single centrally placed post-hole.

