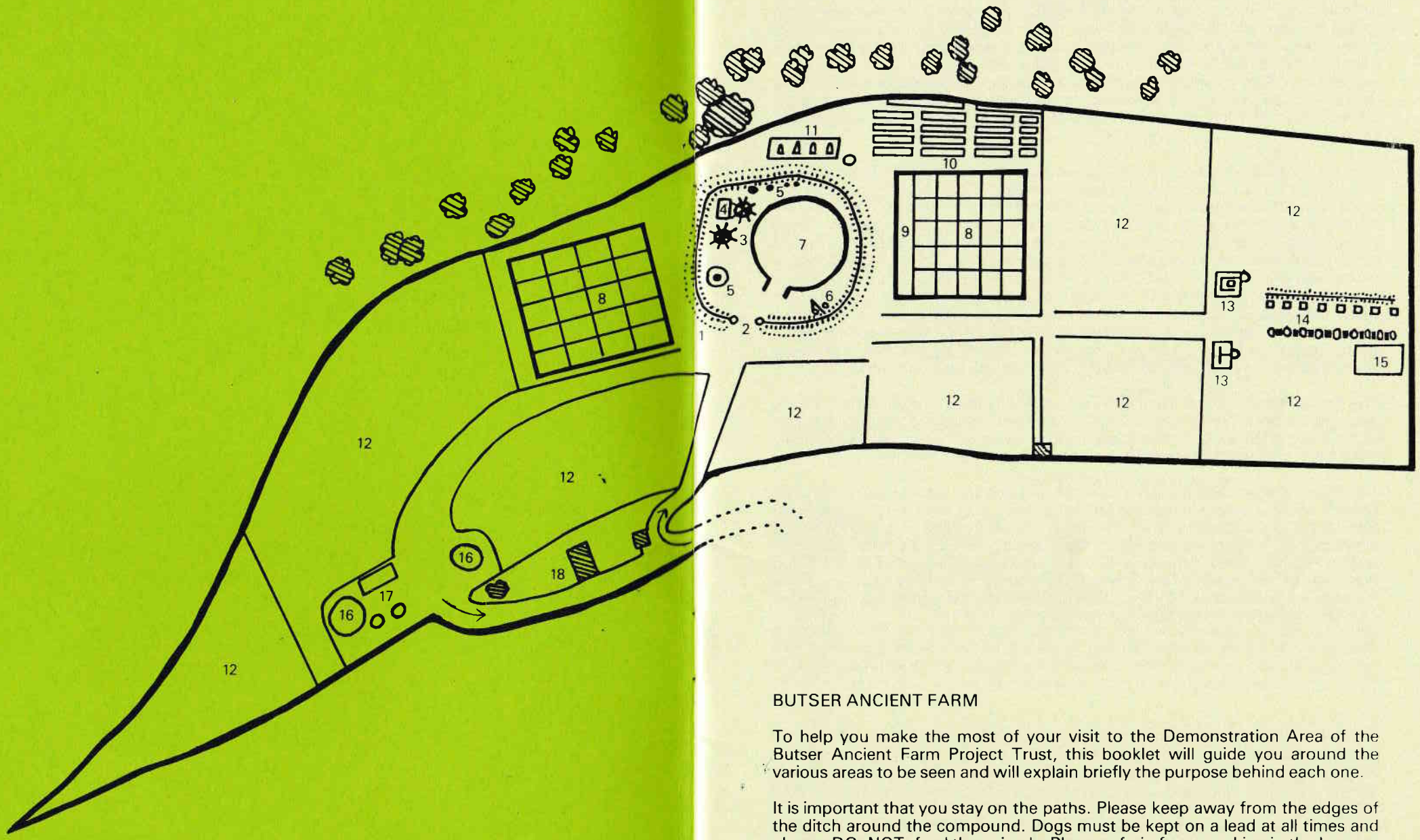
The Butser Ancient Farm Demonstration Area



BUTSER ANCIENT FARM

To help you make the most of your visit to the Demonstration Area of the Butser Ancient Farm Project Trust, this booklet will guide you around the various areas to be seen and will explain briefly the purpose behind each one.

It is important that you stay on the paths. Please keep away from the edges of the ditch around the compound. Dogs must be kept on a lead at all times and please DO NOT feed the animals. Please refrain from smoking in the houses.

Postcards, information packs and further literature are available from the museum shop located on the site and from the Queen Elizabeth Park Centre.

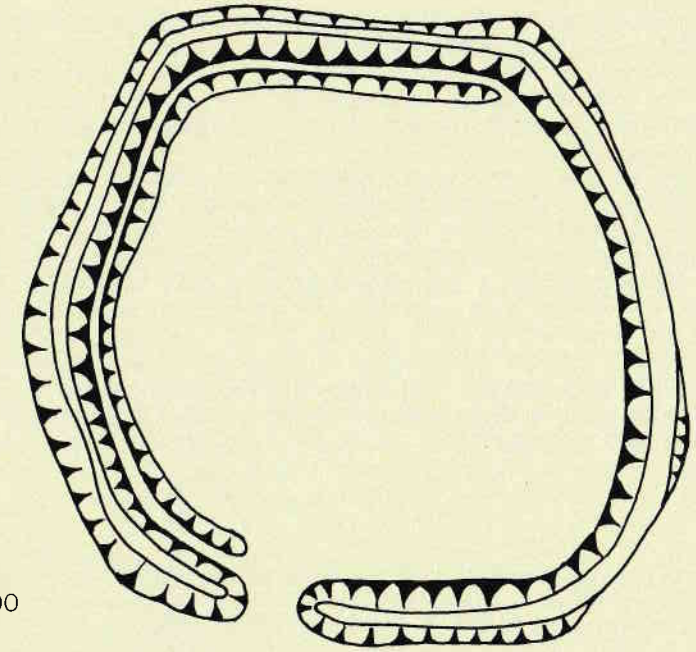
Introduction

The Butser Ancient Farm Project Trust is unique in British and World Archaeology in that it sets out to reconstruct and operate an Iron Age Farm dating to approximately 300 B.C. By using evidence from archaeological excavations, field work, documentary sources, the writings of the Greek and Roman authors about Britain and the Celts, the purpose is to recreate a working unit. In this way it is possible to test the explanations and theories raised upon archaeological evidence. In reality the Ancient Farm is a huge open-air scientific laboratory for research into prehistoric archaeology and agriculture.

This demonstration area has been developed by the Butser Ancient Farm Project Trust in association with Queen Elizabeth Country Park, so that the work of the Ancient Farm can be seen and explained to a wider audience. All research projects have a responsibility to the public and especially those projects which seek to understand our heritage. All the aspects of the work of the Ancient Farm are represented in this demonstration area. Indeed, nearly every individual item is itself an extension of a research experiment. For example, the crops growing in the two fields are giving vital information on yields per acre for prehistoric cereals and the weather station is one of a network recording the micro-climate on Butser Hill. The house reconstruction, on the other hand, is a unique experiment. Never before has a physical interpretation of such a large prehistoric round-house been attempted.

The Butser Ancient Farm Project Trust is an independent organisation relying upon grants from Trusts and Charities, Voluntary Donations and a proportion of the income from the Demonstration Area. Every visitor to the site actually helps the research programmes.

The Butser Ancient Farm Project is deeply indebted to the Hampshire County Council without whose direct aid and generosity very little would have been achieved. The Leverhulme Trust, the Robert Kiln Trust, the Ernest Cook Trust, the Radcliffe Foundation and others have all now and in the past made this project feasible. Their support is here acknowledged and deep appreciation expressed. The project is now a registered charity. Inevitably because it is a research project and not a commercial enterprise regular support is required to maintain and advance this unique undertaking.



Plan of Earthworks East Castle, Steeple Langford
(after RCHM by permission)

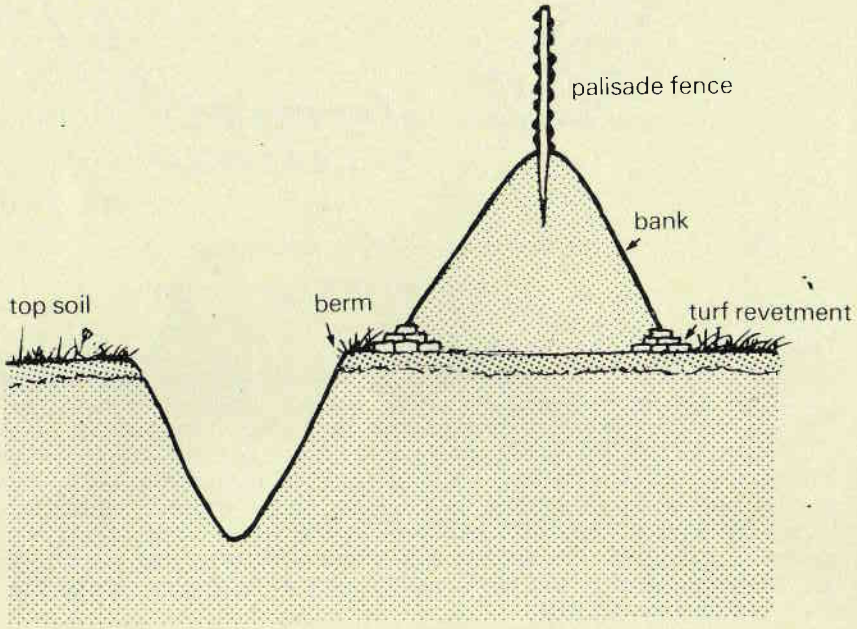
THE BANK AND DITCH (1)

The bank and ditch which surrounds the compound area is modelled upon an earthwork known as East Castle near Steeple Langford in Wiltshire. East Castle which has not yet been excavated was selected because its prominent position on a chalk ridge is a typical one for Southern England. However, the internal area of the reconstructed earthwork has been scaled down from the ground area of the East Castle site except for the entrance which faithfully copies the original. The actual earthwork itself is at the original scale. Yet even its scaled down area corresponds with many other sites and one can gain an accurate impression of the space within such an enclosure despite the huge house which is built inside.

Earthworks are common field monuments throughout the country but we must remember when we look at them that they have withstood the passage of at least two thousand years and that they can hardly give a clear picture of their original appearance. The banks have been steadily worn away by the wind and rain, the plough and often deliberate levelling. Indeed, almost as soon as the ditches were dug long ago in the Iron Age, earth from the upcast bank began to tumble back into the ditch and silt it up. By building this ditch and bank we are not only showing what it may once have looked like, but also we are measuring how quickly the ditch becomes silted up. By maintaining accurate records we have been able to establish the sequence of silting

patterns and the speed with which the bank and ditch have been recolonised by plants and thus stabilised by their roots. Regular sections are cut across the ditch to examine in detail the layers of silted material with some remarkable results. The most interesting is the absence of eroded material from the bank because it was held in check first by the berm and then by the plant cover.

Why Iron Age man built a ditch and bank around such a house is not quite clear. It could be a defensive structure but it would not withstand a determined attack, especially if fire were used as a weapon. The distance between the thatched roof of the house and the outer edge of the ditch is within easy spear throw. More probably it was designed principally to keep out animals, domestic or wild. The ditch, originally 1.50 metres wide and 1.50 metres deep, is backed by a bank with a palisade fence on top. Clearly it would be adequate against most livestock. One possible improvement, although we don't have evidence for it, is instead of a palisade fence the bank could have been surmounted by a thick thorn hedge. Even foxes retreat from such an obstacle. The entrance would have had a gate across it to complete the compound.



Cross-section of Ditch and Bank

THE ENTRANCE (2)
Although we have little clear evidence of the nature of entrances or gateways we can be sure that an impressive structure would have graced an enclosure containing such an important house. Occasionally massive post-holes are found at such entrances and the huge timbers thus implied are thought to have been used to carry a superstructure across the entrance. This reconstruction is conjectural and is designed to convey only the principles suggested by the archaeology. The practice of building impressive gateways and gatehouses is, of course, a common one throughout history and can often be seen today.

WITHIN THE ENCLOSURE
Besides the great house, there are a number of other structures within the earthwork. Each one is either an experiment itself or the result of one carried out at the research farm. The major problem which faces the excavator of an Iron Age site is the explanation of the maze of post-holes usually discovered. We have attempted here to give examples of the kind of structures which may commonly have been found within an enclosure of this kind where the basic economy is agriculture.

THE HAYSTACKS (3)
These offer an explanation of a solitary post-hole. Hay was a vital winter food supply for the livestock and its storage has never been precisely located. Here a single post is set up and around it a platform of timbers is laid. The effect of this construction is the creation of a dished depression beneath the stack where the plant rootstock is destroyed causing simple erosion.

THE BYRE (4)
Regularly patterns of four post-holes in rectangular arrangements are found which defy precise interpretation. Clearly there are many functions which they could fulfil. This example has a simple framework which supports the thatched roof. The walls are made of a mixture of puddled clay, earth, animal dung and straw. They were built in layers and well beaten down. Each layer had to dry before the next could be added. Part of the walls have a flint plinth, part of them rest directly on the ground surface. On destruction these walls would just melt away and become almost impossible to detect. The projecting eaves of the roof protect the upper part of the walls from the worst of the weather.

PITS (5)
One of the most common discoveries on excavations of Iron Age sites is the pit. They vary considerably in size ranging from a few centimetres to several metres in depth. Their shapes too are widely divergent, straight sided cylinders, barrel shaped, beehive or bottle shaped, bath shaped, oval, square and rectangular in plan. Because they are so commonly found, it is of great importance for us to understand their function. Their wide variety of size and shape clearly argues for a wide variety of different functions and purposes. Most often the archaeologist finds them filled with rubble with no clear clues as to their original purpose.

Research into the problems of pits is a major programme at the Ancient Farm. Some were undoubtedly used specifically for the storage of grain. The results so far achieved prove that it is possible to store grain in an underground pit successfully even in the British climate. After storage the grain has been fit for human and animal food but more importantly it can be used as seed. Both the cylinder and beehive shaped pits are thought to be those used for grain storage. They are approximately 1.50 metres in depth with a diameter of over 1.50 metres. The average capacity of these pits is enough to store just over one tonne of grain.

The principles of storing grain in sealed underground pits are relatively straightforward. The grains adjacent to the clay seal and rock walls begin to grow, using up the available oxygen and giving off carbon dioxide. This gas being heavier than the atmosphere inside the pit sinks down amongst the bulk of the grain and stops it from germinating. Soon the oxygen is used up and germination stops. Provided the seal is unbroken and water does not penetrate the grain will store successfully during the cold winter period. Germination tests carried out on grain stored in this way have given remarkably good results.

This pit, three metres deep and flask shaped, is a replication of a typical type of pit thought to be used for storage of grain. Surmounting it, the upright posts set only in the rubble upcast material from the excavation of the pit, is a simple thatched roof. Research programmes have shown that it is possible to store grain successfully year after year in a pit protected in this way. The evidence drawn upon for this structure comes from recent excavations at Danebury Hill Fort in Hampshire.

It is likely that other foodstuffs like beans and meat were also stored in pits. Some pits seem to have access steps and may be simple larders. Other pits probably had certain specialist purposes like water collection, arsenals for sling stones and maturing pits for potters' clay. Several pits at the rear of the compound are, in fact, used for this very purpose. Others may have been used for the production of silage and even as ice pits for the storage of perishable foods like meat. The experimental approach is fundamental to our learning more about Iron Age pit technology.

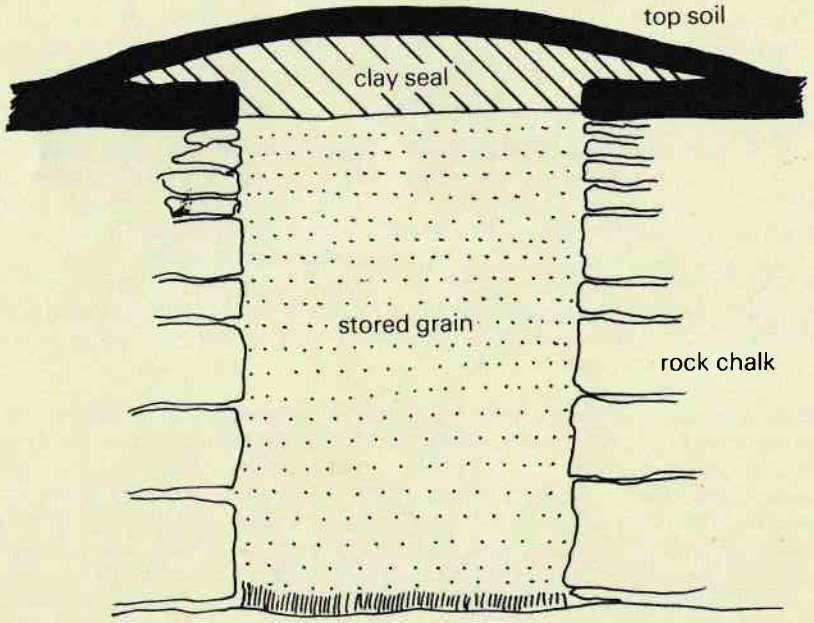
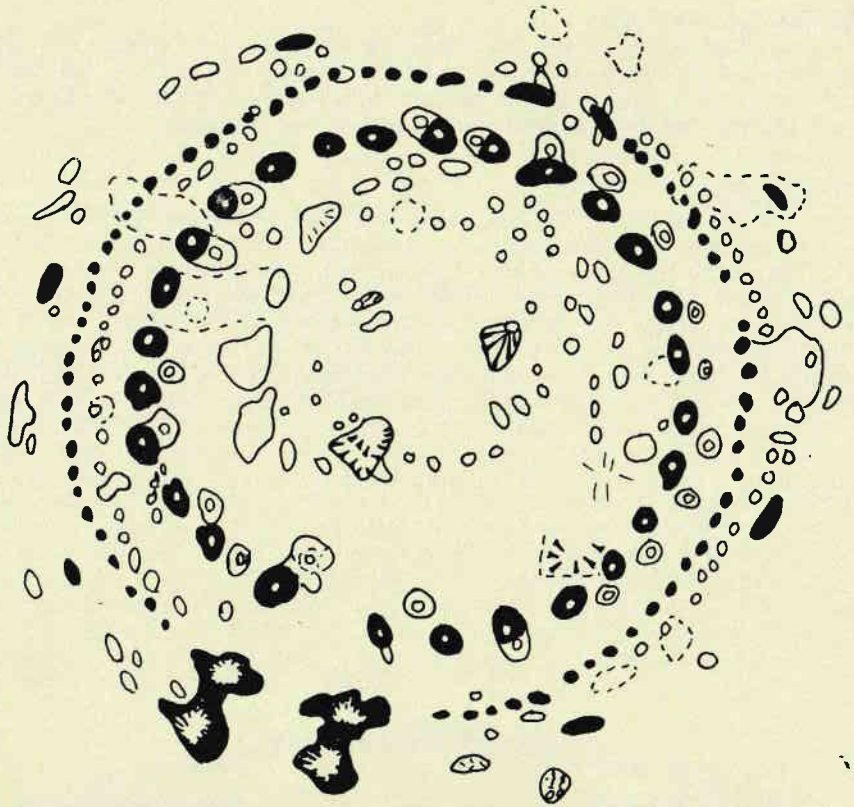


Diagram of Experimental Storage Pit

THE POLE LATHE (6)
The Iron Age people were accomplished craftsmen in wood, the tiny fragments which have survived attest to their great skill. A full scale carpenter's tool kit was in existence then including a centre bit drill. There is little doubt too that the pole lathe formed part of their equipment.

THE FENCES
All the main fences in the demonstration farmstead are of the same construction. Upright stakes have been set about a metre apart with hazel and ash poles interwoven between them. Evidence for these fences is drawn from excavations of field boundaries where similar post-hole patterns have been discovered. However, in the Iron Age and, indeed, in the earlier periods of prehistory wattle hurdles are known. Some exactly the same as those used in recent years have been recovered from waterlogged sites. It is also believed that thorn hedges were used to surround the small 'celtic fields'. Interestingly the life expectancy of such fences is only some six to seven years after which time they need to be totally renewed. The timber requirements argue very strongly for a coppicing tradition which is believed to have started in the Neolithic period.

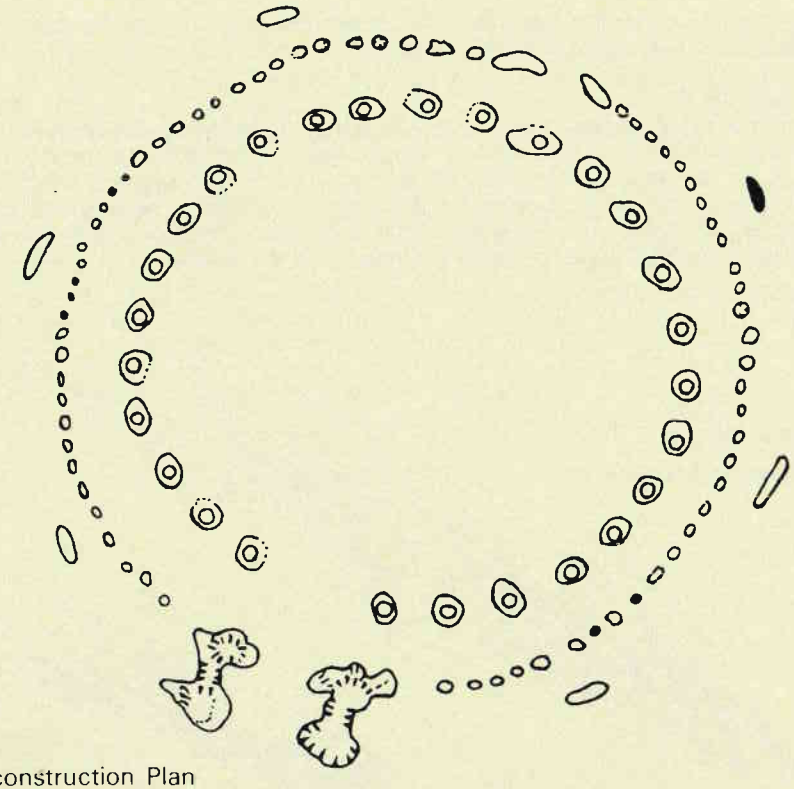


Plan of excavated site from Pimperne in Dorset with the post holes used in this reconstruction shown in black (after Harding and Blake).

THE PIMPERNE HOUSE (7)

All the archaeologist usually finds are traces of buildings, perhaps a few holes in the ground, a shallow gully, maybe a burned area of ground with fragments of pottery and bone. From these traces he has to try to reconstruct the buildings that once stood there. This house, based upon evidence discovered during the excavations of an Iron Age site at Pimperne in Dorset is such a construction. In fact, it is the largest reconstruction of its kind to be built. It is representative of the largest Iron Age houses and is perhaps best understood as a prehistoric manor house.

The outer wall is made of oak stakes with hazel rods interwoven between them producing a huge and extremely strong 'basket-work' wall. This outer wall is daubed with a mixture of clay, earth, chalk, animal hair and straw. The inner ring of upright posts is surmounted by a continuous circle of horizontal timbers fastened in place with mortice and tenon joints and pegged scarf joints. The outer wall and inner ring support the rafters, six of which support the ring beam in the roof. In order to withstand the stress exerted by the roof this hexagonal ring beam is positioned a third of the way down the rafters from the apex. All the other rafters are lashed to the outside of the ring beam and form



Reconstruction Plan

the apex of the roof. Finally the purlins are attached to the rafters to provide anchorage for the straw thatch cover. Although it is common to find hearths in such houses there is no need for a hole in the roof because the smoke from the fire gradually works its way through the thatch. The smoke, therefore, not only keeps the straw clear of insects, but also cures any meat, hides or timber that may be hung in the open roof space. Besides, a hole in the roof would not only allow all the heat to escape and the rain to come in but also, in case of an accident, would convert the house into a simple blast furnace.

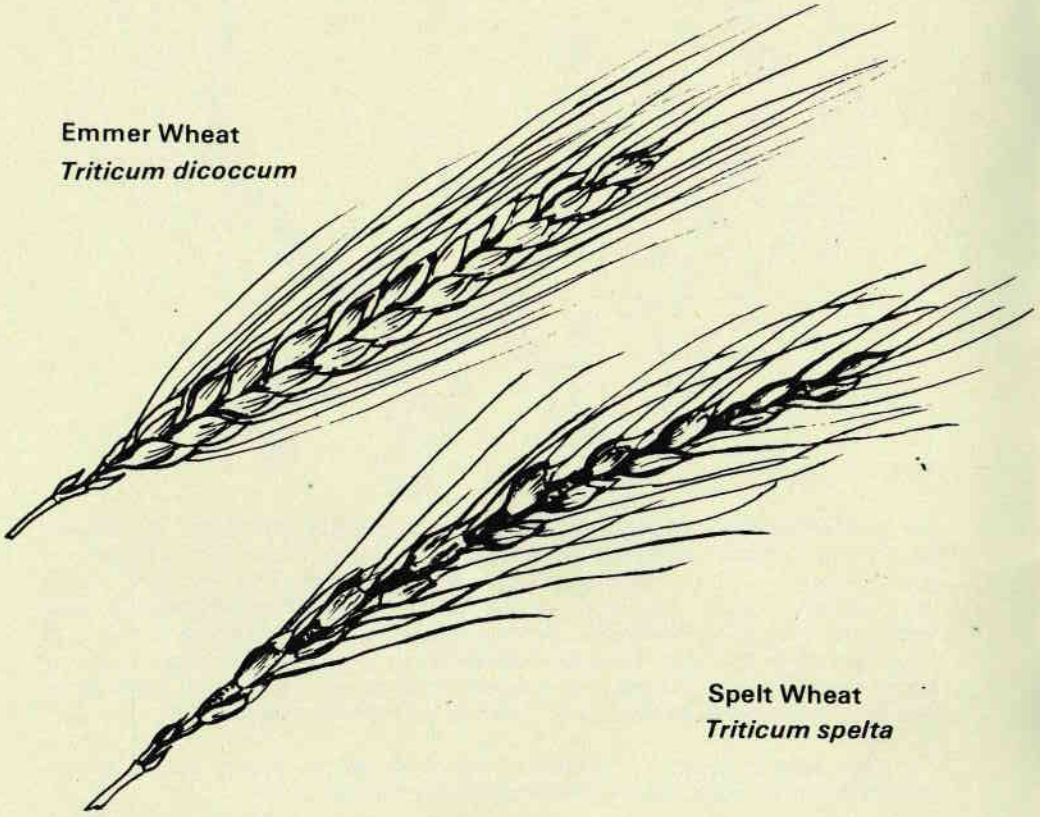
The clay oven is based on remains of those sometimes found. It has proved very efficient for both cooking and heating the house.

The details of this house are remarkable. Over two hundred trees were used in the construction. All the upright timbers are oak, the major rafters are elm and the subsidiary rafters are ash. Five tonnes of wheat straw were used for the thatch. Ten tonnes of daub were plastered onto the walls. The ground area of the house is 150 square metres, an area considerably larger than the majority of modern houses. Indeed, many a modern house would fit inside this structure.

To date archaeologists are unsure of how many people would live in such a house or what activities may have taken place inside it. Certainly it is large

enough for all domestic purposes. It is probable that such large houses were owned by the aristocracy of the Iron Age.

THE FIELDS (8)
In many places on sloping areas traces of prehistoric fields can be seen. In fact an extensive prehistoric field system can be seen immediately to the north of this site on the slopes of Butser Hill. All that usually remains are the better marked boundaries of the terraced edges called 'lynchets'. These lynchets are caused by soil moving gradually down hill under the effects of cultivation and erosion and banking up at the lower boundaries of the fields.



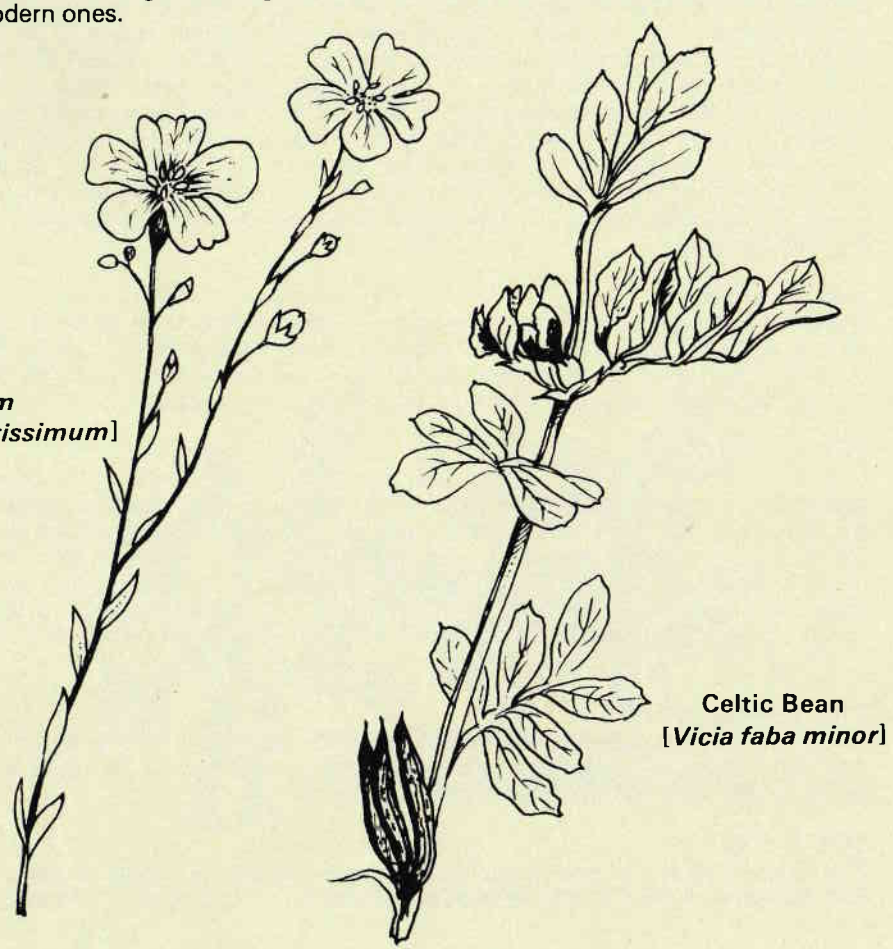
Emmer Wheat
Triticum dicoccum

Spelt Wheat
Triticum spelta

THE CROPS
From modern excavations carbonised grains, seeds which have been accidentally burned and turned into charcoal, are regularly found. Sometimes the impressions of seeds are also found fired into the surface of clay pots. It is from these carbonised seeds, seed impressions and pollen found on excavations that we are able to identify the plants that were grown in this period of prehistory. Many of these plants have been grown in remote parts of the world ever since and small quantities of these rare cereals have been obtained and propagated at the Ancient Farm.

The principal cereals of the Iron Age were Emmer *(Triticum dicoccum)* and Spelt *(Triticum spelta)*, two species of primitive wheat. Both are bearded varieties, looking like modern barley, having long brittle hairs or awns on the husks. Although both species are extremely difficult to thresh, the protein level or food value is approximately twice that of modern bread wheat.

The study of crop yields from these wheat types can be observed in the two fields, roughly of typical Iron Age size, on either side of the enclosure. Each year all the prehistoric varieties and examples of modern varieties for comparison purposes are grown in these field areas. The normal layout of the crops is in a standard, statistically valid, chequerboard design where each plot represents an area of the field without any particular favour. The crops are subjected to intensive measurements and monitoring programmes typical of any agricultural research station. The treatment of each field, however, is different. Field VI (Fields I — V are on the research site on Little Butser) is manured triennially, Field VII is divided into two areas, one manured annually, the other completely unmanured. The results from these growing trials are quite fascinating indicating that the prehistoric varieties yield almost as well as modern ones.



Flax
[*Linum usitatissimum*]

Celtic Bean
[*Vicia faba minor*]

In addition to the cereals which are grown without any herbicides or pesticides whatsoever, are a full range of arable weeds including a large number of extremely rare types. These are extremely important to validate the yield results. At harvest time the fields are a riot of different colours bringing to mind the impressionist paintings of harvests at the turn of the century. Further, many rare arable weeds can be seen growing in special propagation plots beside Field VI. (9)

Although the research has concentrated upon wheat cereals, there existed in the Iron Age a full range of cereals and legumes. Barley, rye, oats, beans, peas, flax and a range of other food plants. Many of these can be seen growing in small plots around the fields. (9)

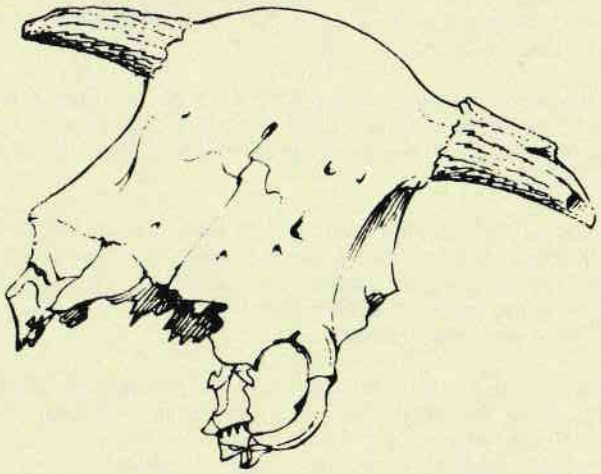
THE HERB GARDEN (10)
This is the most formal element in the Demonstration Area. From the studies of pollens, carbonised seed and seed impressions we have been able to build up a picture of the range of plants which were naturally indigenous to Britain and of those plants which were imported by the Romans. This herb garden is designed to show these ranges of plants which have, through the millennia, proved useful to man in various ways and have thus become known as herbs. Of course, we cannot be certain that they were all exploited or, indeed, that we have all the plants which were exploited. This garden demonstrates the probabilities and the possibilities. It is laid out in a series of terraced beds devoted to the particular uses of the plants. There are over one hundred and sixty species being grown and studied. In addition the northern end of the garden is given over to a demonstration vineyard showing the different ways in which the Romans cultivated their vines. Specialist literature is available for the herb garden.

THE KILNS (11)
Behind the enclosure a series of kilns have been constructed to show the various ways in which pottery was fired in the prehistoric and Romano-British periods. Each kiln is based upon a specific type. The pit clamp is probably the method used for firing pots in the Iron Age period in this country.

THE LIVESTOCK
We learn about farm animals of the Iron Age by identifying the bones recovered by excavation. Unfortunately, the fragments which have survived in the ground for the last two thousand years are not enough evidence for us to estimate how many animals may have been kept on an individual farm. It is possible to identify different animals and to determine fairly accurately what they may have looked like. Part of the work of the Ancient Farm is to keep certain breeds of animals to ascertain the husbandry problems and the contributions made by them to the economy of a farm.

THE PADDOCKS (12)
All around the site are fenced paddock areas set aside for the grazing of the animals. In addition some are used each year for a hay crop, the harvest of which is used in building the haystacks in the enclosure.

THE CATTLE
The Celtic Shorthorn (Bos taurus) is now unfortunately no longer exstant. It had, however, a most important role in farming since it provided traction. We have obtained the nearest equivalent to the Celtic Shorthorn in body weight, shoulder height and general shape. These are the black, long legged, Dexter cattle originally bred from the Kerry Cattle of Ireland. Two of the cows have been trained as draught animals. They pull the carts and sledges and, of course, the ards used for cultivating the fields. The Highland cattle, especially the smaller variety from the West of Scotland, are also similar to the Celtic Shorthorn.



Skull of Bos Taurus

Rock Carving

THE SHEEP

The sheep bones from excavations are exactly similar to the bones of the Soay sheep. This breed has survived on the remote St. Kilda Islands off the north west coast of Scotland virtually untouched for the last two thousand years. They may not only be the closest relatives of the prehistoric sheep but also they may be their direct descendants.

They would have provided meat, perhaps milk and most importantly wool. The wool of the Soay is fine and soft and is plucked rather than sheared each summer. Each animal provides about one kilo of wool per year. After the wool has been spun into yarn using a spindle weighted with a spindle whorl, it was woven into cloth on a simple loom.

The archaeological evidence of pairs of vertically cut post-holes and large, pear shaped loom weights of baked clay suggests that the loom was an upright, warp weighted loom. An example of this type of loom has been set up inside the Pimperne House.

The Soays today are usually fawn or dark brown in colour. Originally there was probably a white soay as well but this colour was bred out in the wild. The Celts loved bright, primary colours and undoubtedly dyed their clothes with natural dyes made from plants like woad and weld. The white soay would have been vital for this to have happened.

Towards the end of the Iron Age a different breed of sheep seems to have been introduced. Possibly it was like the Shetland Sheep in appearance and character. Sheep shears are found from this time too suggesting that this variety can be sheared. Both Soay and Shetland sheep are grazed in the paddocks on the site. Their wool is used for the manufacture of yarn and cloth and for dyeing with the natural plant dyes available in prehistory.

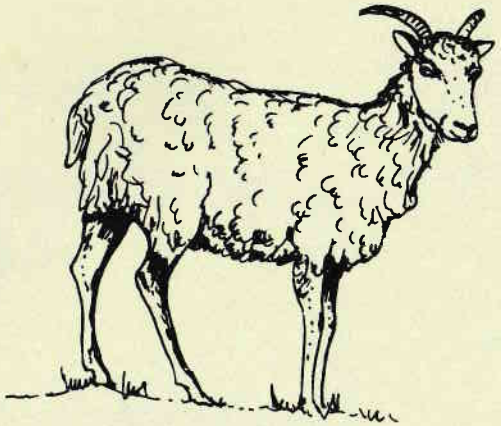
Sheep and goat bones are notoriously difficult to distinguish. The Old English Goat, now virtually extinct, is the most probable descendant of those kept in the Iron Age. They provided meat, milk, leather and hair.

THE POULTRY

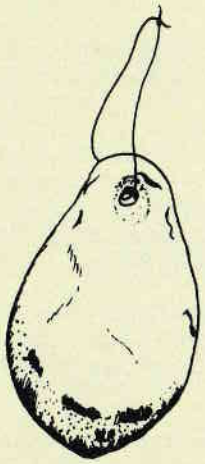
We learn from the classical writers that geese and chickens were also kept by Iron Age farmers. The geese were probably the domesticated Grey Leg. Unfortunately bird bones seldom survive in the archaeological record. From the very few bones that have been recovered it is believed that the Indian Red Jungle Fowl and its descendant the Old English Game Fowl were the prehistoric domestic chickens. Brought via the Classical world from the Indian Subcontinent there is little doubt that one of the purposes they fulfilled was cock fighting.

ROMANO-BRITISH GRAIN DRIERS (13)

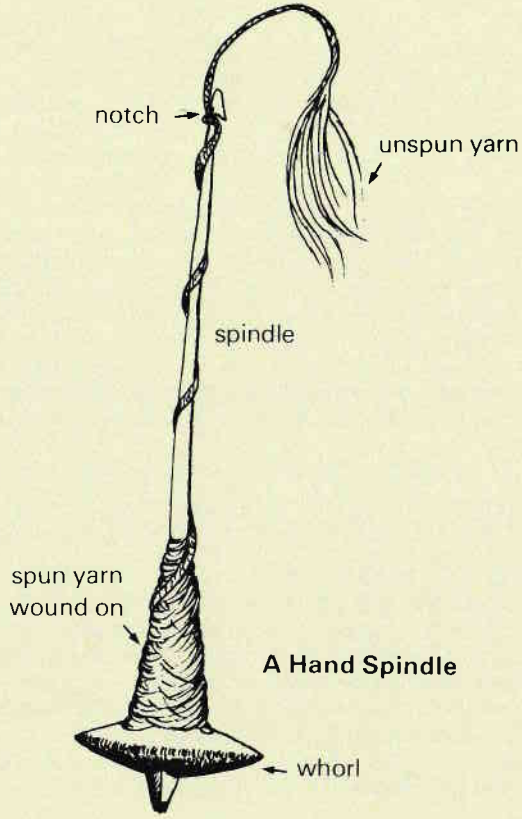
The work of the Ancient Farm is not confined exclusively to the Iron Age. As a research project its purpose is to investigate problem areas in prehistoric and Romano-British agriculture. For example, in the third and fourth centuries A.D. during the Roman occupation of Britain a new agricultural structure makes its appearance. Inevitably only the lowest elements are discovered by excavation. The evidence usually comprises of a wall lined channel cut in a 'T' plan with marks of burning at the end of the main channel. Often carbonised cereal



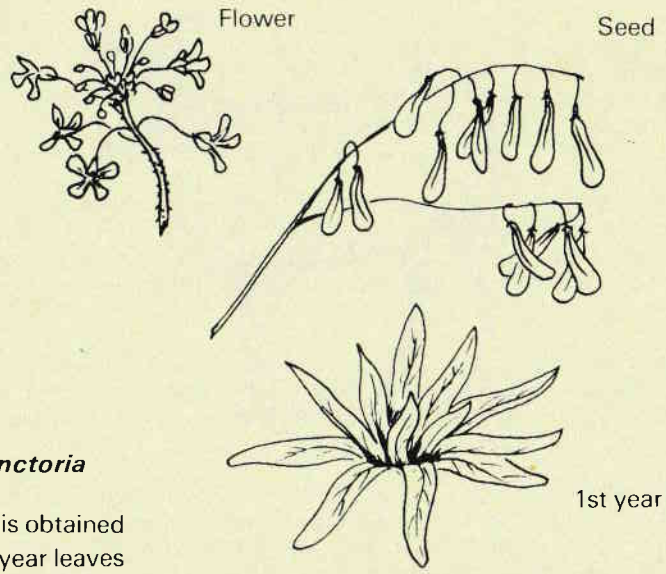
Soay Ewe



Clay Loom Weight



A Hand Spindle



Woad
Isatis tinctoria

Blue dye is obtained from 1st year leaves

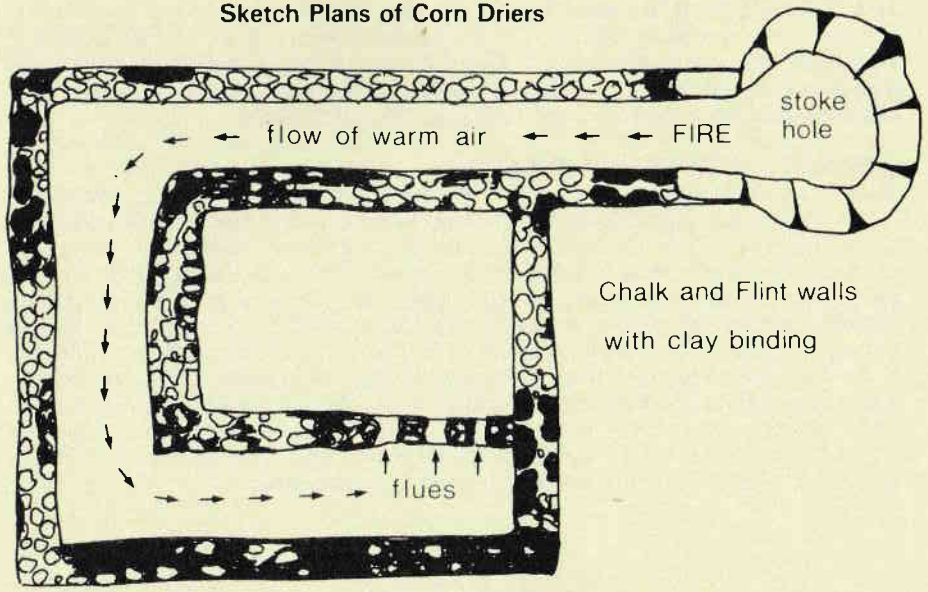
seeds have been found in this area. They are thought to be the foundations of grain drying structures. Above the system of flues probably stood a simple thatched rectangular structure with a wooden floor. The subterranean flue system provided a warm air flow through the floor to dry grain spread on it. During the drying period the grain was probably turned to avoid overheating.

The two reconstructed 'driers' created at the Demonstration Area seek to test this hypothesis. Each one is based upon an actual excavated example. The simple 'T' plan drier comes from an excavation in Oxfordshire, the other more complex in design, comes from Hertfordshire. Because so little of the wall evidence is found, one of the structures is built with puddled chalk walls, the other is made of flint and chalk blocks rendered with a mixture of puddled clay and chalk. Both roofs have extended eaves to protect the walls which otherwise would weather quickly. Experiments with these structures are carried out after each harvest time and during the following winter.

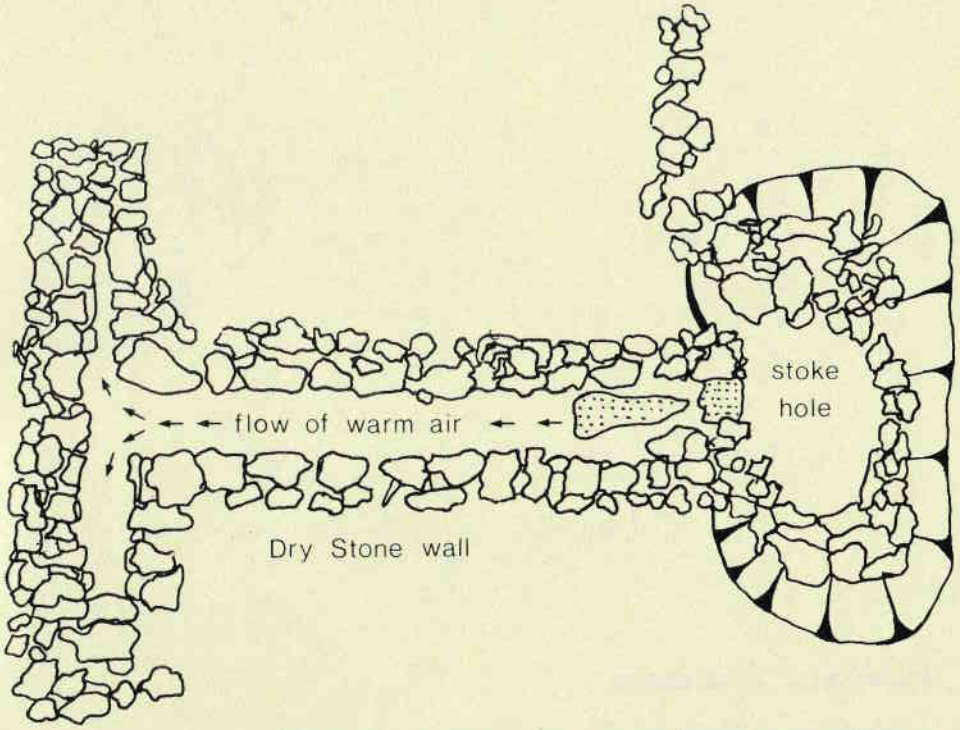
The results from extensive trials suggest that these structures were, in fact, not grain driers at all. One probable function for which they are well suited is as malting floors. Alternatively they could have been used as smoke houses.

THE PIT ALIGNMENT (14)
Beyond the grain driers flanking the trackway to the end of the site are two short pit alignments. These are built essentially to study both their function as animal fences and the erosion patterns within them. Throughout England and Scotland such pit alignments have been found, usually of Iron Age date, which seem to be boundaries either of field allotments or land areas. The two basic types are shown here, one with a continuous bank with surmounting fence beside the line of pits, the other with the upcast material forming a mound between the pits.

Sketch Plans of Corn Driers



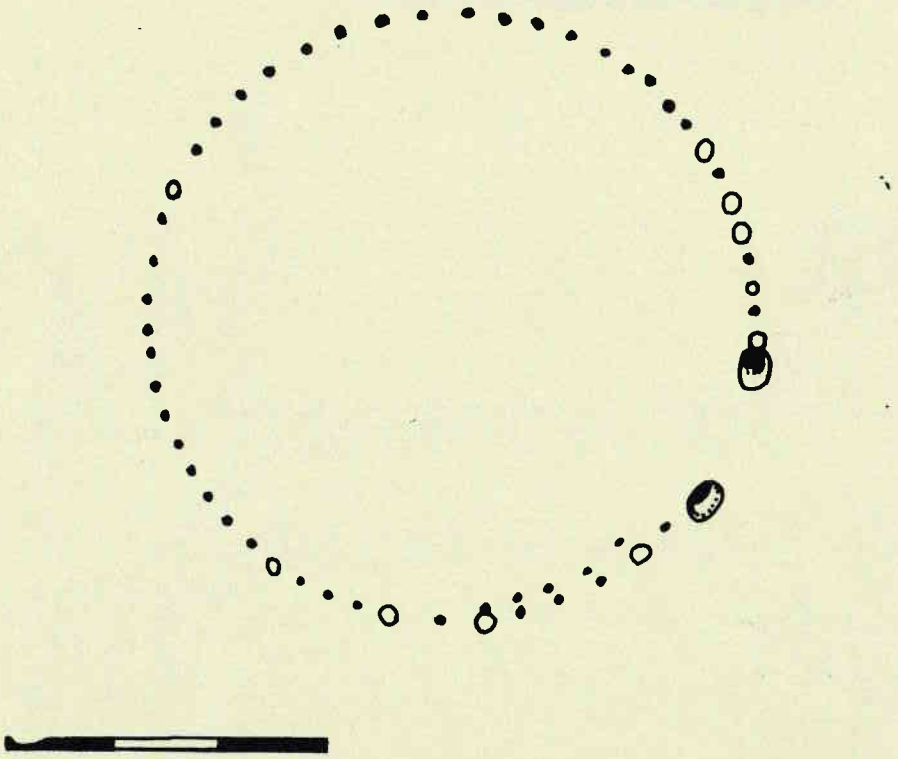
Original site FOXHOLES FARM, Hertfordshire



Original site BARTON COURT FARM, Oxfordshire

THE WEATHER STATION (15)
On both the research site and this Demonstration Area are situated full standard meteorological stations. The data are used for the crop and erosion research programmes as well as a study of the microclimate of Butser Hill. Also the data are fed into the national grid of such stations.

THE MOEL Y GAER HOUSES (16)
These two houses are based upon excavations carried out at an Iron Age Hillfort or town in North Wales. The construction technique is totally different to that of the Pimperne House. The walls are built of very thin stakes averaging no more than eight centimetres in diameter and then wattled and daubed. The roof structure similarly is of very light materials. Perhaps such constructions indicate an overuse of timber resources and a need to use significantly less strong timbers. The smaller of the two houses is used for overwintering the cattle and the collection of animal manure for subsequent spreading on the fields. In addition the floor area is tested each year for build up of phosphate concentration since this is one way of isolating function of such buildings. The larger house, in fact the largest so far found of this type of construction, is used as a museum area for the smelting and melting area.



Scale in metres

Moel Y Gaer House Plan.

SMELTING, MELTING, FORGING, CASTING AND CHARCOAL PRODUCTION (17)
This complex at the southern end of the site is devoted to metal working and allied industries. The mounds of earth covered timbers are built for the manufacture of charcoal. Each year two of these are fired during the summer to manufacture the charcoal necessary for creating high enough temperatures for metal working. The log cabin, a typical European Iron Age construction technique, houses the bowl furnaces and shaft furnaces used for the melting and alloying of different metals and the smelting of ores.

THE MUSEUM SHOP (18)
Along the exit track we have located a small museum shop where postcards, further information and literature can be purchased. The shop itself is provided through the generosity of Mr. Graham Thomas of Carphones Limited. Because the Ancient Farm Project Trust is an independent registered charity, your purchases actually support the research programmes and preserve their future.

This Demonstration Area has been specifically designed to show the work being carried out at the Butser Farm Research Project. Should you feel it worthy of your further support perhaps you would like to be directly involved by becoming a Friend of the Ancient Farm. If so, please contact The Friends of Butser Ancient Farm, Rookham Lodge, East Meon, Hampshire. The minimum annual subscription to the Friends Organisation is £2.50. If you feel that this project is worthwhile and you do not wish to be involved with a Friends Organisation, your donation for the furtherance of the research will be much appreciated.

Written by Peter J. Reynolds, Director, Butser Ancient Farm Project Trust, Rookham Lodge, East Meon, Hampshire.

Illustrated by Anne Robertson and Peter J. Reynolds.

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