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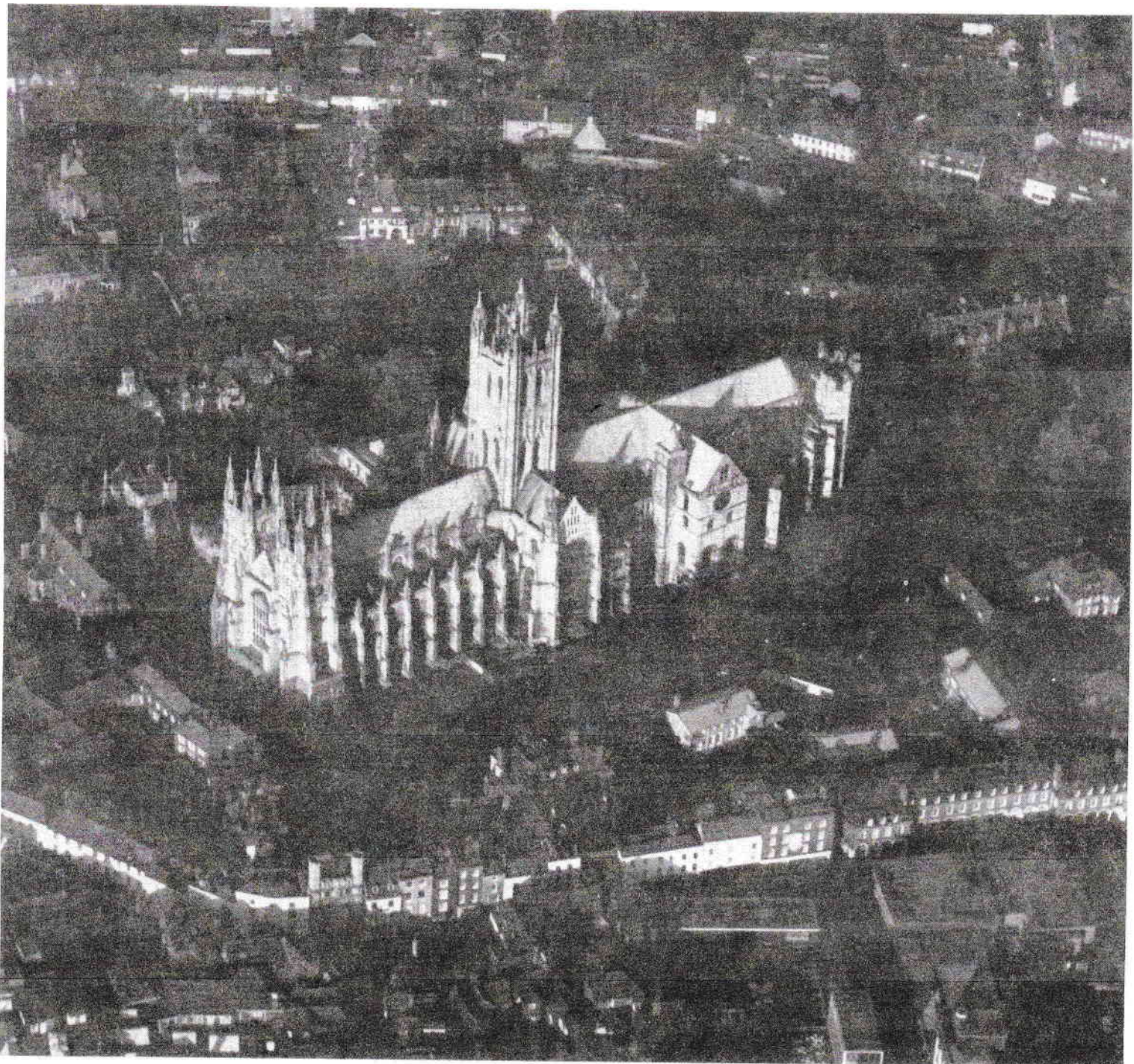
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Archaeological
Group

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BUTSER ANCIENT FARM

RESEARCH PROJECT

On Saturday 16th June the Group will visit Butser.
As a foretaste, Peter Reynolds, the Project Director
writes about the project.

The Butser Ancient Farm Research Project is unique in British and World Archaeology in that its purpose is to reconstruct and operate a farm dating to approximately 300 BC. In reality it is a vast open-air scientific research laboratory devoted to prehistoric agriculture and archaeology. The reason for its being brought into creation as a research tool is directly related to the immense problems of understanding posed by the prehistoric period. The distinction between history and prehistory is largely understood by the presence or absence of documentary materials. History, dependant in many instances upon very doubtful source material, is concerned via the written word, chronicles, registers and other documents, with specific individuals, places and events. Prehistory, on the other hand, is concerned with culture periods, landscapes and settlements. Archaeology, is in effect the handmaiden of prehistory. The archaeologist conducts excavations into the physical remains of the remote past and provides the basic evidence. This evidence comprises on the one hand structural remains like post-holes, pits, gulleys, banks, ditches and hearths, on the other artifactual remains like potsherds, brooches, pins, fragments of tools and implements and within this category one also includes ecological evidence like that provided by bone fragments, carbonised or waterlogged seeds and timber, pollen grains, mollusca and beetle wings.

This evidence is the data base upon which general theories are mounted, explanations posed, peoples isolated, trade routes plotted, landscapes reconstructed and agricultural economies postulated. It is important to realise that, however grand a theory may be, however plausible the arguments which support it, nonetheless it is founded in the crude simple data recovered from excavation. The direct analysis of this data base for whatever period of prehistory one may choose does not inspire great confidence in the theories which are mounted upon it. Indeed as excavation techniques improve, as methods of data recovery are refined, so the majority of those data which have been previously acquired become progressively less satisfactory and the theories mounted upon them become increasingly incredible.

It is in this context that the concept of the Butser Ancient Farm Research Project is to be understood. Naturally, of the three broad eras of prehistory, the most recent, the Iron Age or Celtic period, is the one which is evidenced by the most data. There is such a wealth of data available, in fact, that quite detailed analyses and interpretations of the period, the landscape, settlement patterns and economy are regularly made. However, since the material evidence by its very nature is selective and hardly representational, there is inevitable conflict to be found among the interpretations of the period. There is an undeniable need to re-examine much of the data, not so much from the point of view of the broad implications but rather the immediate implications. For example, the carbonised seed recovered from excavations indicate the kind of crops which were probably grown but this information is not enough. One needs to know how it was grown, the problems posed by this or that process, the yield factors - in brief one needs to discover the implications and range of potential of each piece of evidence. Only when this kind of information is available can the broader implications, the overview have any kind of credibility. It may prove that some generalisations should be substantiated as far as possible by real data rather than assumptions.

Even so there is little doubt that the basic economy of the Iron Age in Southern England and indeed in large areas of France was based upon agriculture. Therefore, in order to examine the data upon which that economy is based, the most logical approach to adopt is the empirical one. This approach led to the construction of a farm dating to the main-

stream period of the Iron Age where not only the data but also the processes implied by those data can be physically tested.

The farm, started in 1972, is located on a spur to the north of Butser Hill some 24 kilometres north of Portsmouth in the County of Hampshire. The land area selected is ideal for the purpose since it is fairly inaccessible consequently interference by the public is minimised. In addition it was actually occupied in the prehistoric period. Excavations and field work on the site have yielded evidence of occupation dating to the Late Bronze Age and throughout the Iron Age period. The most significant features are an unfinished ditch and bank and a dished platform subsequently interpreted as the foundations of a house. The purpose, to construct a farm with farmstead and ancillary buildings, paddocks and fields, appropriate livestock and crops, is necessarily one which is long term. Indeed any activity or process directly concerned with agriculture gains greater validity the more seasons through which it is conducted.

The major single factor which dominates the agricultural process is the weather. All the available evidence points to a marked similarity between the weather pattern of today, including all its violent eccentricities, to that which obtained in the Iron Age period. Not only does the British weather, because of its variability, dominate most Englishman's conversation, it also moved Tacitus, the Roman historian and political commentator, to describe it as 'foedum', the most polite translation of which is foul. This basic factor, the similarity of weather pattern, validates the project and provides a 'constant' element against which the results of the farming process can be measured.

At the outset I described the project as a vast open-air scientific research laboratory since this is a much more accurate description. It consists of a large number of specific research experiments which ultimately may be integrated together in such a way that simulates an actual farm. Given the concept of such a research laboratory it has been of prime importance to establish a basic philosophy of procedure. Since the experiments themselves are diverse, ranging from crop yield experiments to the reconstruction of buildings, from mycology to thermodynamics, the requirements of each individual scientific discipline which a specific experiment employs must be satisfied. One seeks to not simply persuade an archaeologist or prehistorian, one seeks to fulfil the demands of the scientist.

That philosophy is best presented as a cyclical model where a hypothesis is created, and tested to ascertain its validity. It is essential that the test itself is validated and that the results are beyond question within the context of the experiment.

One immediate effect of the experimental approach is the recognition of the number of variables regularly involved within any hypothesis. Close scrutiny of the minutiae inevitably raises alternative approaches and the execution of an experiment further throws up variables which had previously escaped recognition. Consequently experiment regularly involves the necessity for the 'multiplicity of hypothesis formation', an uncomfortable but accurate phrase. Several hypotheses can be proved to be valid, though none are necessarily true, and in any attempt to understand an excavation of a site, all such hypotheses should be initially integral to the thinking stage and subsequently in terms of their relationship with other material evidence the most unlikely should be rejected. It is an error of judgement to accept without due consideration the hypotheses raised from other excavations on the basis of tenuous similarity.

The greatest contribution of experiment in archaeology is the establishment of the boundaries of probability. Indeed this is the contribution of experiment in any field. It is of value here to present an analysis of experiments as recognised in the scientific world. The process of accumulating scientific knowledge involves the formulation of rational, logical, deductive theories, the establishment of 'rules of correspondence' between the theories and the real world and testing whether the observations of the real world confirm or disprove a theory. In the most rigorous sense, no theory can be proven true or validated. It can, however, through proper experimentation be invalidated. A theory can be considered valid only after repeated conduct of experiments which by their

design appear capable of proving the theory invalid. If such invalidation constantly fails to occur, then the theory may be tentatively accepted as valid.

When most people think of experimental archaeology their immediate reaction is to think of the reconstruction of buildings. Although this area of research is important and has by far the greatest visual impact, nonetheless it represents less than ten per cent of the projects undertaken. Farming of any period is necessarily about fields, fences, crops and stock. Buildings are to a large extent ancillary features and generally the nature of the archaeological evidence is so ephemeral that it is extremely difficult to hypothesise a real three-dimensional structure. This is particularly the case with regard to rectangular structures since the number of variables is very large.

For circular structures, on the other hand, it is possible to make an attempt. The largest reconstruction of a prehistoric house ever undertaken has been built at the Demonstration Area of the Butser Ancient Farm. The ground plan is taken from a first class excavation at Pimperne Down in Dorset. It comprises an outer ring of stake holes, an inner ring of post-holes with a series of massive post-holes for the porch. Beyond the outer ring of stake holes a series of six regularly spaced shallow slots were recovered. The excavation indicated one rebuilding of this structure utilising the same porch post-holes. The time span of the site is some 450 years. That fact alone argues for the construction of houses not only for the present generation but for a large number of generations.

The reconstruction process moves through specific stages. The first stage involves the exact simulation of the ground plan, the construction and recording the stake and post-holes and the insertion of stakes and posts. The initial conjecture is the specific height of the stakes and posts. Because the roof is to be thatched the pitch must be at 45° . At first the wall height was postulated at 1.50 m but during the roof construction it became probable that this height was actually correct.

Round-houses depend upon the strength properties of the circle. For this construction the outer ring of stakes interwoven with hazel rods make up the first circle. The inner ring of posts, however, absorb much more of the weight thrust of the roof. Consequently a full ring of timber is set onto these posts with mortice and tenon joints and pegged scarf joints. Its appearance and indeed the method of jointing is remarkably similar to that of Stonehenge. The major problem with the outer wall is posed by the break in the circle at the porch. The massive post-holes argue for major timbers. These provide a weight counterthrust to the break in the circle.

The positioning of the first rafter, each one had to be raised individually because of the weight involved, some 120 kilos per rafter, caused considerable difficulties. Although the house had been carefully designed the weight distribution of each rafter had been overlooked. The length of rafter beyond the inner ring proved heavier than the outer length. Re-examination of the excavation plan isolated the shallow curved slots set at regular intervals around the structure. By extending the 45° angle from the inner ring to the top of the outer wall and on to the ground surface these curving slots fitted exactly into place as the positions for the base of the major rafters. The wall height of 1.50 m, therefore, initially conjecture, now was supported by physical evidence. Six slots indicated six major rafters. These were duly positioned, jointed to the outer wall and pegged with oak pegs to the inner ring. The ring beam in the roof was attached to these major rafters a third down the slant height. All the other rafters were subsequently positioned as in other reconstructions. In this case the majority actually formed the apex of the roof. Finally the purlins, split hazel rods, were attached to the outside of the rafters, and the structure was thatched. The last stage of the construction was the daubing of the walls.

The statistical details of the structure are fascinating and have considerable implications for the Iron Age. Over two hundred trees, primarily oak for the upright timbers and ash and elm for the rafters as well as twenty hazel trees for the rods, were used in the structure. Some 15 tonnes of daub were applied to the walls. Approximately five tonnes of straw were used to thatch the roof. The roof weighs over 12 tonnes and has a free span of over 9.00 metres.

The trees needed for the structure were straight and close grained, the kind of trees normally found in managed woodland. The hazel rods are the product of coppicing, itself a seven year programme. Such a house clearly implies the careful management of woodland. The straw similarly implies a considerable number of arable hectares and careful harvesting and storage.

The construction of houses despite their fascination and undeniable visual impact, represent only a minor element within the overall research project. One point must be made, however, concerning the reconstruction of structures is that it would be quite wrong to consider these to be Iron Age houses. They are specifically and only reconstructions based upon archaeological evidence. The fabric of the structure may be accurate, indeed the space it confines may also be accurate but the detailed manufacture may be quite inaccurate.

In this brief article I have attempted to outline the purpose of the Butser Ancient Farm Research Project, its operating philosophy and to give a specific example of an experiment. In this case a structure, the Pimperne House, has been briefly described. It is extremely difficult to provide an overall review of the work of the project simply because of the complexity and interacting variables of the experiments, each one of which forms part of an integrated whole. The selection of a house is perhaps less than ideal since such structures represent a very minor element in the undertaking. It is nonetheless much easier to appreciate a structure, its intricacies of construction and design, all of which are deduced from the archaeological evidence. It is sufficient to underline the fact that in comparison with the agricultural experiments, the main work of the project, and the variables posed by them that the construction of the Pimperne House is relatively simple.

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Book Reviews

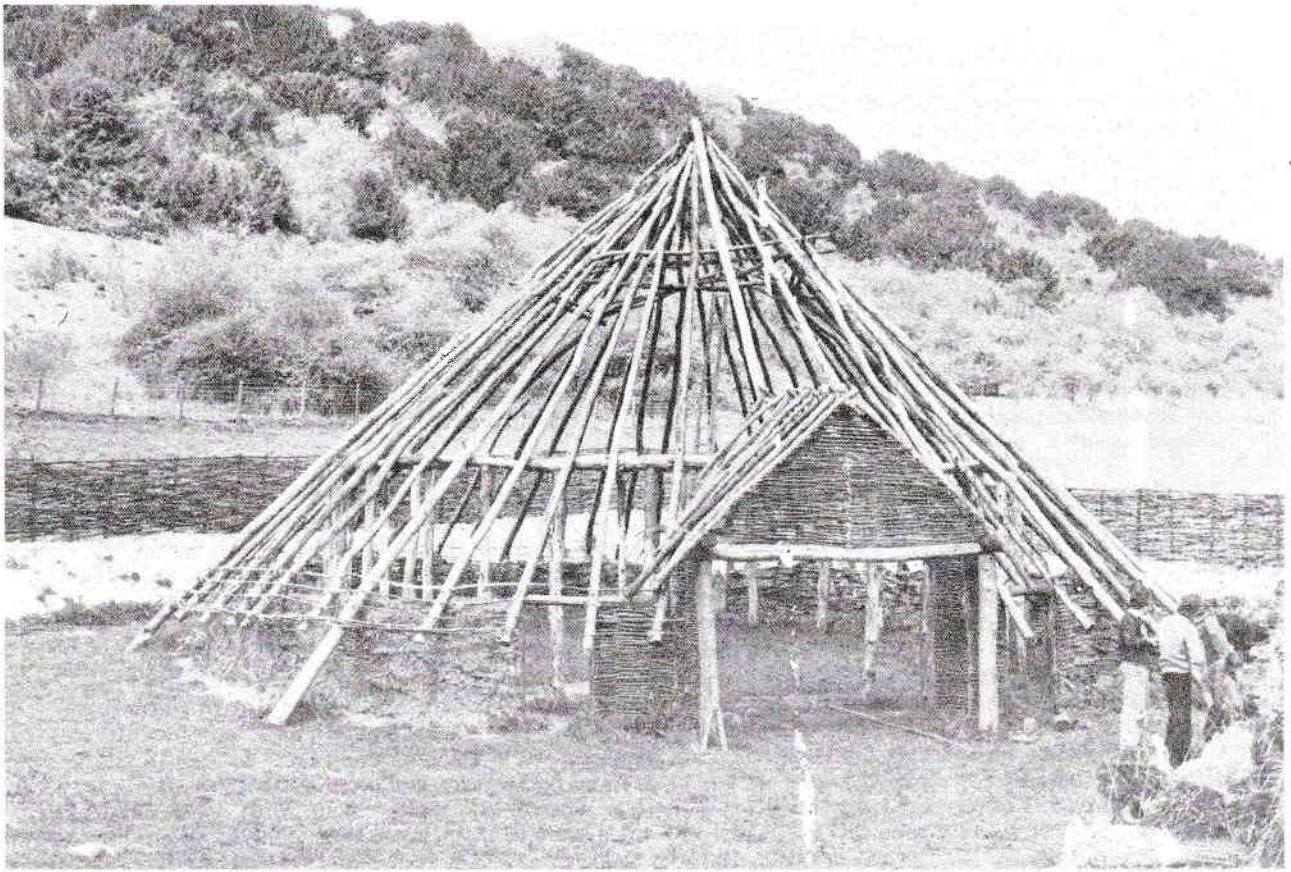
THE PAST ALL AROUND US Published this March by Reader's Digest -

This excellent book unlocks a door into national history which you can see and touch at more than 1,500 places and where the past comes to life.

It shows how the past survives in the wealth of clues that our ancestors have left us: the things they made, the buildings they lived in, the tools they used, the very pattern of the landscape that they shaped. These islands are rich in history that you can see and touch. Celt and Saxon, Roman invader and Norman conqueror, the innovators of Elizabethan times, Victorian developers and industrialists - all have left rich evidence about the life of ordinary people of their day. THE PAST ALL AROUND US helps you to pick up and interpret the clues, to understand how a commonplace grass mound could conceal a prehistoric burial chamber or a series of stone sleepers could be a forerunner of the modern railway system. From flint axe to flying machine, from Skara Brae in the Orkneys to Syon House on the banks of the Thames, almost every man-made object tells something about our past.

For those who would like some preliminary reading on Ironbridge may I suggest the following:

THE ARCHAEOLOGY OF THE INDUSTRIAL REVOLUTION edited by our guide and lecturer, Dr. Brian Bracegirdle FRPS (Heinemann £7.50) - An excellent publication both visually and in terms of information on the industrial sites of Britain. Most of the photographs are by Dr. Bracegirdle and the text written by authorities on particular fields. There are numerous references to Ironbridge sites.



The Pimperne House at Butser Ancient Farm Research Project under construction and completed. (see page 12)

by Peter J. Reynolds