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FOREWORD *By Ian Munro, Managing Director of the Kenneth Wilson Group*

We do not have a specific theme for each issue of Countrywide — choosing instead to bring you a wide selection of topics each time. However, in this issue, we come close to breaking our rule. An underlying theme — and cause for concern — runs through all our main articles. This is the worry about increasing surpluses in production and increasing deficits in cash to deal with these surpluses. Sir Richard Body proposes a radical and far reaching rethink, whilst Edward Long gazes into the future at some possible alternative crops. Our endpiece, from Graham Meadows of the European Commission, gives us a European perspective on the problem. Even David Richardson, with one of his typically humorous pieces, vividly underlines the public image problems from which all of us in agriculture suffer. However, there are lighter moments within the magazine — Sue Arnold, who is becoming a regular contributor, turns her attention to the problems of rural bridges and Thomas Cressey, our young explorer on Operation Raleigh, reports from Papua New Guinea. Finally, if all else fails, you can always turn to the excellent and varied wines featured in this issue's Countrywide Wine Club, and drown your sorrows!

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COVER ILLUSTRATION A detail from 'Norwich Cathedral' by Rowland Hilder, by permission of Royle Publications Limited.

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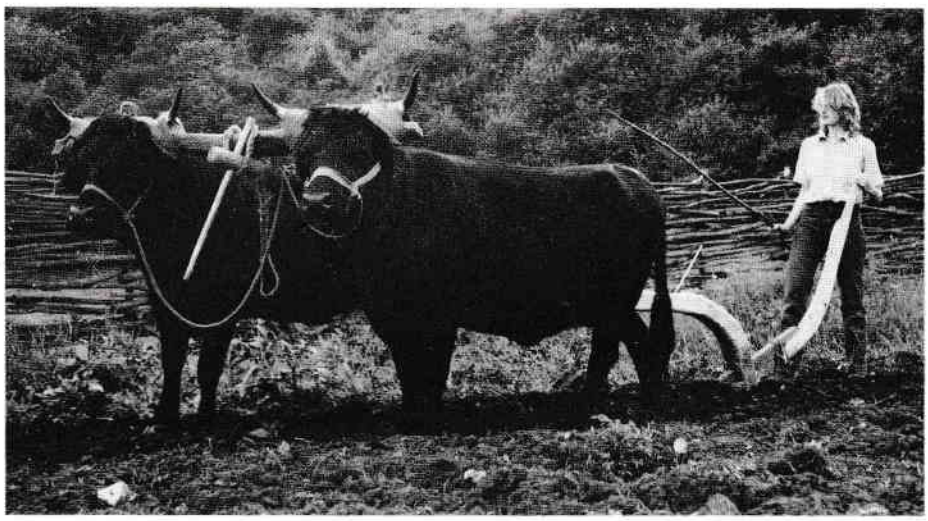
Celtic Gold

The conventional view of the Iron Age is that it was a subsistence society, eking out a basic existence until the arrival of civilising Romans. As Dr Peter Reynolds of the Butser Ancient Farm reveals, nothing could be further from the truth. Britain was the bread basket of Western Europe and a major supplier of grain to the Roman Empire.

'They export grain, leather, hunting dogs and slaves from Britain to the continent'. This is one of the few documentary sources from the classical authors referring directly to pre-Roman Britain. Putting aside the issue of slaves, the implications of this reference are remarkable. The normal view of the past, is that civilisation reached these shores with the arrival of the Romans in 43 A.D.

The source, however, describes the export of grain, leather and hunting dogs. If these are put into modern terminology the exports comprised staple products on the one hand, luxury goods on the other. British hunting dogs were renowned and much sought after throughout the classical world. The production of such animals for an export market rather beggars the imagination. In contrast the staple products in effect describe the prime nature of the British agricultural landscape through time, the south-east for cereal growing, the north and west for livestock production. More importantly, export itself indicates an annual regular surplus to the requirements of the native population. It also indicates a stable organised society with production and service industries. Yet, the popular view is that the pre-Roman Iron Age was a subsistence society struggling to survive with people living in round mud huts scratching a living from the soil. The problem, of course, is how to find out what was, in fact, happening in this country some two thousand years ago.

Our knowledge is derived primarily from archaeological excavations where the data comprise post-holes, gullys, banks, ditches, fragments of pottery and tools, carbonised wood and seeds, snail shells and pollen grains and, in exceptional conditions like waterlogging, the preservation of timber and vegetative material. This type of material is the basic stuff of archaeology. There are also the treasures. In the case of the Iron Age, gold bracelets, beautifully manufactured bronze ornaments and horse harness often inlaid with brilliantly coloured enamels. The treasures have their own message but they are not typical of the bulk of the data. It is the patterns of post-holes, the function of pits, the role of ditches and banks, the inter-relationships of sites which particularly occupy the archaeologist in his task of interpretation. However, there are clear limitations as to what may be said. The evidence itself is so partial in that it has survived for two thousand years prior to being recovered. Well over ninety per cent of the material will have disappeared.



Trials have shown Iron Age ploughs to be extremely efficient in tilth production

It was to expand the basis of our understanding of the archaeological evidence that the Butser Ancient Farm was created. Its brief is to reconstruct and operate a farm dating to about 300 B.C., the mainstream of the Iron Age. In real terms, since the reconstruction of a working farm is impossible. The Ancient farm is, really a unique open air research laboratory. The objective is to explore the agricultural and domestic economy of the Iron Age by direct experimentation. Work began in 1972 on Little Butser, a northern spur of Butser Hill, the highest of the downs in Hampshire, three miles south of Petersfield and twelve miles north of Portsmouth. The spur is extremely difficult of access and, consequently, has not been subjected to modern agricultural improvement. In fact, it has provided rough grazing as far as records go back and probably since the Iron Age. The sward is typical chalk grassland, rich in plant species but slow growing. The soil is a dark puffy friable redzina, a mere four inches deep, directly on top of middle chalk. A poor soil with a high alkalinity, it dries out very quickly in sustained dry or hot weather. Although there are remains of an Iron Age settlement on the spur, probably a small farm, the spur itself was not cultivated even then. The Iron Age fields, traces of which can still be seen, spread down the eastern slopes and, most likely, on into the valley bottom. None the less, the soil type on the spur is one which was exploited then. The second critical variable which affects all agricultural activities is the weather. It is argued that the weather today is directly parallel to that of the end of the first millennium. Thus the major external variables could be regarded as constants.

In setting up a farm, it is vital that it should be based upon the archaeological evidence. It is important to stress the fact that it is impossible for modern man to step back in time. There is no place for 'living in the past'. Such imaginative exercises are best left to film makers and novelists. The way in which our prehistoric ancestors responded to different conditions and circumstances are completely denied to us. The focus, therefore, has to be upon structures, functions and processes which need to be examined in scientific detail. The core elements of a farm identified for the research programmes are the domestic unit, the houses and structures which make up a farmstead, the arable economy and the pastoral economy.

Iron Age cereal varieties still grow in remote parts of Asia Minor and were imported for the research programmes

The post-hole patterns from the Iron Age show the roundhouse to have been the typical dwelling. Some were quite small, a mere fifteen feet in diameter, others were extremely large, in excess of fifty feet in diameter. In such a house it would be easily possible to put a standard modern house. Thus the nucleus of the farm comprised the construction of roundhouses based upon specific excavations. In particular, the Maiden Castle roundhouse, based on evidence from the famous Iron Age hilltown near Dorchester in Dorset excavated by the late Sir Mortimer Wheeler, was built in 1972. This house still stands today on the spur and has yielded remarkable information including a basic error in construction technique which only emerged some ten years after building. The rafters were lashed with rawhide to the side of the wall posts and, slowly, the ties lost their power, ultimately leading to the gradual downward movement of the roof. The building is still 'habitable' and sound but now the wall posts are protruding through the thatch. The remedy is simply to fix the rafter on top of the wall post. This discovery, however, shows the need for such long term research since initially and for some years afterwards there was no indication of constructional error at all!

The arable research programmes were intended to reproduce ground cultivation and cereal production. From prehistoric rock carvings in Scandinavia and northern Italy, and from waterlogged deposits in Denmark and Britain, we have both agricultural scenes and actual implements. The basic plough is called an ard. It is not fitted with a mouldboard, which inverts the soil. Rather it stirs the soil in the horizontal plane much the same as the modern chisel plough. Trials with full scale replicas drawn by cattle have shown this ard to be extremely efficient in tilth production with easy penetration of up to a foot in depth. The Iron Age farmer also possessed a sod buster, a great wooden hook fitted with a metal share, and a seed furrow ard.

A detailed view of Butser Ancient Farm

There still survive in our landscape today traces of Iron Age fields. These traces principally comprise long low banks called lynchets caused by downhill soil creep over many years of cultivation. The fields range in size from as little as a quarter of an acre to over an acre. In effect, these are man-day fields, broadly the area a man and a pair of cattle can cultivate within a working day.

Our knowledge of crops comes from the recovery and identification of carbonised seeds, which were accidentally turned into charcoal, probably in bonfires disposing rubbish within the settlements. The farmer of the Iron Age had a wide range of choice of cereal crops as well as legumes and other crop plants. Barley, four types, wheat also four types, oats, possibly rye, beans and peas, flax and possibly hemp make up an impressive list.

Of all these cereals the major research focus has been upon two particular wheats, Emmer (*Tr. dicoccum*) and Spelt (*Tr. spelta*). These cereals are still grown in remote parts of Asia Minor and small quantities of seed were imported for the research programmes. In addition to the carbonised seeds of crops, large quantities of weed seeds have been recovered from excavations giving a partial picture of what the fields may have looked like under cultivation. There is no doubt that prehistoric fields just like historic fields were heavily infested with arable weeds! This agriculturally frustrating but beautiful scene has been brilliantly captured by the impressionist painters at the turn of the twentieth century. Our research fields similarly glow with many colours during the season. Just growing the cereals to see what happens is not, however, the purpose. Certain field areas are manured with cattle dung at specific weight/area applications annually and triennally, other fields are not manured at all. The possibility of crop rotation is examined by growing beans, a nitrogen fixer, followed by wheat, a nitrogen user. All the fields are planted at a controlled rate of seed per acre and, since the presence of a seed furrow ard is known, the seed is set in drills. The fields are all pervaded with a large variety of arable weeds, some of which are today extremely rare in Britain. Modern agriculture, dependant upon its agrochemicals, has been so successful in creating monocultures that arable weeds are generally under severe threat. In fact, one important subsidiary programme at the Ancient Farm is devoted to the study of arable weeds, both for conservation purposes and to examine their particular effects which may not necessarily be pernicious. Finally, all the research fields are the subject of micro-climate recording.

The results of all these trials to date are quite remarkable. In poor soil in a hostile aspect, a north facing spur, non-manured areas average a production level approaching fifteen hundredweights per acre, a manured regime doubles this figure. Part of the reason for such high yields, the national for Britain around the last world war was just about a ton to the acre, lies first in the labour intensive management and in the fact that the wheats are stable rather than hybrid plants. In addition the system of cultivation which permits extremely high fibre contents of soil leads to the establishment of a nitrogen reserve. The release of this nitrogen reserve is entirely dependant upon weather conditions, demanding adequate rainfall in the early months of growth. Without rain, breakdown of fibre doesn't occur readily and nitrogen release is greatly retarded. None the less, the figures begin to indicate that farming in the Iron Age was indeed capable of surplus production.

In large numbers of Iron Age settlements on chalk, limestone and sand and gravels, the pit is an ubiquitous archaeological vestige. These pits average a depth of about five to ten feet with diameters ranging from about six feet to eight feet and varying in shape from a cylinder to a beehive. The hypothesis that such pits were used for grain storage has been validated by twenty years of experimental trials at the Ancient Farm and elsewhere. The technology is straightforward: Grain uses up oxygen and gives off carbon dioxide in its natural respiration cycle. Put inside a sealed container, it quickly produces an atmosphere loaded with carbon dioxide and enters a state of unstable dormancy. The instability is caused by the presence of micro-organisms, fungi and bacteria whose life cycles can be inhibited by low temperatures. The pit with a clay or dung seal operates as a sealed container and used for storage during the winter months the temperature is sufficiently low to restrain fungal and bacterial activity. The capacity of such pits normally exceeds sixty-five cubic feet; a ton of grain occupies about fifty-four cubic feet. The pits would seem therefore to provide a warehousing facility.

The idea that the Iron Age was a subsistence society barely surviving until the gift of Roman civilisation begins to lose ground in the face of both the documentary evidence of the Romans themselves and from the results described above. The implications are that crop yields were high enough to allow a surplus to native requirements and that the technology of storage was sufficiently advanced to guarantee not only good bulk storage of food grain but also seed grain. The hypothesised high level of agricultural production was seemingly maintained well after the Roman conquest. In the third century A.D., the Roman Army on the Rhine was faced with a critical food shortage which was solved by importing grain from Britain.

Finally the fundamental question why the Romans invaded Britain at all, this miserable island off the north-west coast of Europe? The fact that the Romans maintained Britain as a province for nearly four hundred years at the minimum cost of keeping approximately a fifth of their armed forces stationed here similarly has to be explained. The answer seems to lie with the agricultural production levels not based upon Roman but upon Celtic technology. The case made above is that Britain was the bread basket of western Europe and that the Celtic Gold, rather than the minimal resources in the Welsh mountains, was in fact the Emmer and Spelt wheats.

The Butser Ancient Farm is an independant Charitable Trust set up in 1972. The Ancient Farm is unique in world archaeology and through time has achieved an international reputation. Scholars from all over the world visit the farm to study the results, methodology and presentation. Because it is an independant charitable trust, it relies upon and needs grants, donations and sponsorship.

The farm is situated on a northern spur of Butser Hill, the highest of the downs in Hampshire