CPAT Report No 1199

Farms and Farming SEP

THE CLWYD-POWYS ARCHAEOLOGICAL TRUST

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Report for Cadw

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Cover photo: Pickhill Hall ridge and furrow, Sesswick (PRN 87012: CPAT 04-C-0055)

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Introduction

The Scheduling Enhancement Background

This report on medieval and early post-medieval farms and farming falls within the third phase of scheduling enhancement undertaken by the four regional trusts in Wales since the mid-1990s. The first phase began in 1995 when two pan-Wales projects were started, one looking at historic churches, the other on the heritage of the Welsh coast. Other pan-Wales projects followed, the results being used for increasing the schedule of protected ancient monuments, for increasing the coverage and quality of the then regional Sites and Monuments Record, and for more academic outputs. When we summed up the situation in the spring of 2010 in *The Archaeologist* published by the Institute for Archaeologists, Ken Murphy of the Dyfed Archaeological Trust and one of the writers estimated that over 26,000 sites (or assets as we are now advised to call them) had been visited and more than a thousand new schedulings made.

In the second quarter of 2007/8, Cadw requested a scoping study of sites and assets recorded in the regional Historic Environment Records (the HER being the successor term to the SMR) that might still need assessment in order to complete the scheduling enhancement programme for prehistoric and Roman sites in the region, taking the study from the earliest times through to around 400 AD. Such a study was required to inform thinking on priorities for scheduling enhancement in the two years up to April 2010 which at that time was the projected date timetabled for the implementation of the proposals in the Heritage Reform White Paper.

Though the White Paper was ultimately shelved, the completion of the prehistoric and Roman studies went ahead, and between September 2008 and March 2010 a second series of scheduling enhancement projects (SEPs) were conducted. Reports were submitted covering both themes (e.g. caves, mines and quarries, burnt mounds and Roman settlements) and geographical areas where multiple site types were in evidence (e.g. Vale of Clwyd, Elan Valley, Black Mountains etc). The submission of the final report in March 2010 effectively marked the end of the second phase.

In the summer of 2010 a scoping study was conducted by each of the Welsh trusts to examine the range of medieval and early post-medieval (pre-1750) site types that might warrant further assessment with a view to enhancing the schedule of designated sites. Independent of this Cadw had also assessed the types of material evidence relating to the period and developed a list of themes that might usefully be progressed. On completion of the scoping study and as an introduction to the period, a monastic and ecclesiastical project was completed during the later part of 2010/11. In the years that have followed, relevant themes have included industry and mills and milling. The complete series of SEP reports are available as grey literature reports and some at least appear as downloadable PDFs on CPAT's website.

The Project Outline and Scope

The project on farms and farming commenced in the first quarter of 2012/13 and was timetabled to be completed within the year. Of the other trusts only Gwynedd Archaeological Trust have been involved in a similar project, as far as we can establish.

The desk-top assessment utilising the HER and other resources was completed during the year and a start was made on fieldwork. The fieldwork continued in 2012/13 and the project was rounded off by the completion of two reports. The present report defines the desk-top assessment and provides details of sites related to farming where there has been a substantive addition to the information held in the HER as a result of either that desk-top work or subsequent fieldwork. This will act as a statement on the current state of knowledge of the topics under consideration and provide data for the enhancement of the regional HER. A second report, prepared solely for Cadw, provides a set of recommendations about potential scheduling targets in the region.

In the 2010 scoping exercise (Silvester 2010) the term 'farming' as employed here was seen to cover a wide range of site types, some agricultural (in the strict sense of the word), some pastoral, some common to both, with a few others that didn't fit comfortably into either of these categories. It was recognised that existing schedulings might cover the buildings at the heart of the farm complex but not the fields and enclosures that were also an integral part of the holding. For the uplands in particular this was seen as an issue that needed to be addressed. And just as there was a range of site types, so the terms employed in the HER were also very varied.

Agricultural practice (i.e. specifically cultivation) leads to:

cairnfields and clearance cairns normally considered only in prehistoric contexts, but also a feature undoubtedly of medieval and later farming activity as well.

open fields, which are considerably more prevalent than the few HER examples imply; to quillets, cultivation terraces and lynchets; to ridge and furrow where over 70% of referenced examples are considered to be medieval; to strip field systems which almost by definition appear to be medieval in date; and to corn-drying kilns, again remarkably few in number.

Some of these types have specific issues whether chronological or terminological. It is tempting to class ridge and furrow as medieval because of the classic 'Midlands' model, yet quite a lot of the cultivation ridging to be seen in east Wales could be much more recent in origin. And open fields are a medieval concept which do not survive in their original form anywhere within the region, but can be detected through their residual impact on the modern landscape; and they are also in general terms a feature of those regions that saw Anglo-Norman penetration, yet Welsh areas too had open fields (a.k.a. sharelands) which generally receive little attention. Thus strip fields may reflect the fossilisation of the former open fields within a date range spanning several centuries and in many cases may now be apparent only from earlier maps rather than as recordable physical entities. Cultivation practice, however, offers a challenge in the context of scheduling enhancement.

Pastoral farming includes:

ponds, dewponds, drove roads where only one medieval example is referenced in the HER and which might be better accommodated in a transport theme at some future point, pounds, sheepfolds where little more than 3% are classed as medieval, *hafod* sites, where the term is used in its land-use sense rather than for the dwelling. There is but a single vaccary, perhaps because as a site type it is a function of documentary analysis rather than fieldwork. And water meadows are a rarity – they may fall outside the timeframe if Cook and Williamson (2007) are to be believed, though not necessarily in the Severn Valley.

In the 2010 scoping unspecified agrarian activity generated shared site types such as 'farm' in its broad sense as an area of land under a single management, 'field' which had very few entries, 'field boundary' where 16% were classed as medieval, though with field system it was more than half the total number, 'bank' where over 20% of the HER records were categorised as medieval, 'ditch' where the comparable percentage was 12%, 'drainage ditch', and 'barn' which could be a feature of the farmyard or out in the fields, and where medieval citations were very sparse. During the course of this study it has become apparent that considering these general terms in greater detail and analysing their HER entries is of little merit.

Other activities associated with farming and registered in the HER included a single bee garden, coppices and managed woodland; dovecotes, gardens; peat cutting and peat stands, pillow mounds where around 12% of the three hundred entries are claimed to be medieval, though on what basis is unclear, and a much smaller number of rabbit warrens. Some of these themes will be the subject of future SEP studies.

Land use is allied to farming but constitutes a different approach to the land, connecting farming with administration. Included in the scoping study were common, common land and green, none of them currently well represented in the HER. But whereas it is difficult to justify the inclusion of common land (the records for which appear to be primarily commons), greens are an authentic medieval concept, emerging in parts of eastern Wales, even if they are really little more than town and village commons. The problem here is in part one of terminology for neither green nor common have been admitted into the thesaurus of acceptable HER terms, though this has now been rectified in the case of the former.

Unlike ecclesiastical sites or mills, farming is not a tightly circumscribed topic that can be defined in conceptual terms in advance of the study itself. This statement has developed and in a sense metamorphosed as the work has progressed. Some terms picked out in the scoping report (e.g. cairns and cairnfields) have been set aside, usually because there seemed to be little merit from either a scheduling or an analytical viewpoint in following them through, others previously unrecognised (e.g. stores) have been picked up because of their intrinsic interest in farming terms.

Field Systems

Fields are a fundamental, perhaps the fundamental, building block in the landscape. Of course, other elements interact (drainage patterns, geomorphological features, buildings etc) but it is the fields (or the absence of them) that consistently provide a framework for discussions of the historic landscape and whose own boundaries provide the outlines for defining historic landscape characterisation areas both in Wales and in England. It appears appropriate then to commence this report with fields, or more precisely the systems that are created by the coalescence of the fields This section of the report is broken down into two parts. The first examines those records of field systems as already entered into the HER, set against the background of past research, while the second section offers a necessarily very brief analysis of an extremely large topic, the field systems of east Wales.

Field systems and the HER

Introduction

It could be argued that were every field boundary or even the field encapsulated by a set of boundaries recorded in the HER, they would inevitably constitute the most numerous site type in the Record. One might have to doubt the sanity of anyone who sat down to produce an accurate estimate of the number of fields in the CPAT region, but an indicative guide comes by taking the number of parishes (provided by the Tithe assessment lists of the mid-19th century) and multiplying it by an estimate of the average number of fields per parish with the Tithe again being utilised.

It is no more than a guess on the writer's part, but a thousand fields per parish seems reasonable, when some of the larger parishes have in excess of two thousand fields. Caerwys, a smaller parish which is a current focus of interest for us because of the on-going Cadw-funded Hen Caerwys programme has around 980 entries including houses and their crofts. With 359 parishes in the five historic counties of the region, even someone lacking mathematical skills would work out that this would generate nearly 360,000 HER entries. For the sake of a perhaps facile comparison there are currently a fraction over 72,500 site-types records in the HER, i.e. almost precisely one-fifth of the figure.

But it is because of their ubiquity that fields and the systems that they make up are rarely entered into the HER. When we conduct a piece of contract work, we take note of the field boundaries, but unless one is particularly unusual or outstanding, it will not achieve a permanent place in the HER – the task of recording each boundary is too daunting a task, while the challenge of describing a field whose function, size, shape, and multiple edges are prone to change over time is a conceptual challenge yet to be met.

Field systems are important, in fact vitally so, for they frame much of the landscape, and in historic landscape characterisation, they form a key (and often the key) element in unravelling (or disaggregating) the landscape. With fields there has been a shift in thinking from the cultural model of Seebohm to the agrarian-focussed thinking of today. There are general books on the topic from the history and development of fields by Christopher Taylor and Richard and Nina Muir, through the regionalisation of field systems by Baker and Butlin and the appearance of fields as adjuncts derived from other analyses as with Kain and Prince's studies of the tithe surveys to the more abstract thinking of Robert Dodgshon. Wales may feature in these to a greater or lesser degree – Baker and Butlin carry two rather different chapters on north and south Wales – but there is a sparse regional literature which for the purposes of east Wales is much more useful.

Dorothy Sylvester's *The Rural Landscape of the Welsh Borderland* covers almost all of the region, with field systems occupying a central position in her historical-geographical analysis. This, together with the several historic landscape characterization reports, around 14 in number, prepared by the Trust between 1999 and 2008 use field system evidence though not in a specifically focused form. Published papers occasionally deal with individual field systems, as with the pioneering work on open fields by Palmer and Owen in the Wrexham area, Glanville Jones' work on Llanynys in the Vale of Clwyd and Caerwys on the limestone plateau of Flintshire, W. T. R. Pryce's study of the middle Banwy Valley in Montgomeryshire and the writer's work on upland fields. Other historical geographers such as E. G. Bowen, J. G. Thomas and Colin Thomas have contributed too, but the list, it must be admitted, is not a long one.

The Records

Fields and field systems, particularly the latter, appear regularly in the HER, just as they do in Coflein, and of course, cannot be ignored. But how do we approach this body of data, how is it relevant to this study and indeed how does this study inform the HER and its utility? There is no simple answer to this multi-faceted question, and we suspect that each Welsh trust might come up with a different solution.

A rapid search using standard qualifiers producing the following data, tabulated here for convenience.

Source	*Location*	*Qualifier 1*	*Qualifier 1*	*Qualifier 2*	*Nos*
HER	Entire area	Medieval		Field system	233
HER	Entire area		Post-medieval	Field system	293
Coflein	Breconshire	Medieval		Field system	58
Coflein	Breconshire		Post-medieval	Field system	51
Coflein	Denbighshire	Medieval		Field system	39
Coflein	Denbighshire		Post-medieval	Field system	33
Coflein	Flintshire	Medieval		Field system	12
Coflein	Flintshire		Post-medieval	Field system	11
Coflein	Montgomeryshire	Medieval		Field system	33
Coflein	Montgomeryshire		Post-medieval	Field system	16
Coflein	Radnorshire	Medieval		Field system	56
Coflein	Radnorshire		Post-medieval	Field system	47

Table 1. Comparisons by number of records in the HER and Coflein

As an exercise we looked at one county – Montgomeryshire – and asked a number of questions of the records, using Coflein data as a check.

The facility to search for old counties is not readily achievable in the HER, unlike Coflein, although the option to search via the local planning authority (Powys – Montgomeryshire) is available and this was used to isolate some 77 records which lie within an area corresponding reasonably closely to that of the old county. The focus was on records attributable to the medieval era. The Coflein search produced 33 records, of which one is 'Early Medieval' and 12 'Post Medieval', leaving 20 records which fulfil the search criteria, although one of these was subsequently dismissed as the site itself had been disproved by fieldwork. Of the 77 HER sites, 16 were dismissed due to a re-assessment of their type, period or authenticity, leaving 61 sites in the dataset.

Analysis of the 19 Coflein records revealed that the distribution was somewhat different to those upland counties where numbers had been heavily skewed by the level of fieldwork conducted under the Uplands Initiative, with only five sites in upland locations (*i.e.* above 300m OD), of which only one was discovered by upland survey. Most of the remainder related to agriculture in lowland contexts, including nine sites that appear to represent embanked fields with variable amounts of ridge and furrow. One Coflein site has been ascribed an Iron Age or Roman date in the HER, although whether this has been supported by a field assessment is unclear, and another two are not described and so cannot be characterised. A significantly higher proportion of the Coflein data concerns

sites seen from the air, as 13 out of the 19 can be so classified, with another recorded from an RAF aerial photograph taken in the 1960s, though this is not made clear in the description. A rapid assessment of the likely authenticity of the sites suggests to us that nine represented authentic medieval field systems, with some doubt regarding the potential origin or dating of nine others and one, as noted above, possibly even belonging to a different period.

The HER is a record of different character and origin and this is readily apparent from comparison of the figures below (Table 2). Particular examples of the variation in the records include the number of sites identified from direct observation on the ground, with 31% of those in the HER identified by this method as compared to 5% in Coflein, while the reverse is true when site identifications from the air are considered, with a figure of 36% for the sites in the HER and 74% for those in Coflein recognised in this way. This figure would no doubt be different in an area with a greater amount of upland, as 26% of the Coflein sites come from ground above 300m, against only 13% of the HER sites; clearly the HER contains a rather greater percentage of field systems at lower levels which fulfil the search criteria. Another marked difference is in the recording of putative place-name evidence for medieval field systems, as 28% of the HER record has been so derived but no sites of this category are recorded in Coflein.

The two main characteristics used in the identification of medieval field systems are the presence of ridge and furrow, though it is not consistently appreciated that this can be later than the medieval era, and this is a facet where a detailed HER description may assist in distinguishing medieval sites; and secondly the presence of field boundaries which are indicative of a medieval origin. Ridge and furrow is mentioned in connection with 15% of the total of HER sites, while 52% mention field boundaries. In Coflein, 26% mention ridge and furrow, against 63% with suggestive field boundaries.

Both records are deficient to some degree in the level of recording, and it can be difficult to comprehend why the recorder attributed a particular date to a field. We estimated that 20% of the field systems in the HER and 47% of those on Coflein could be reasonably attributed to the medieval era, but it was easy to identify from the record the inherent difficulties in assessing field systems. One significant factor is the overall lack of information regarding the area occupied by individual the field systems – in the HER only 16% have any dimensions and only 3% are defined by area, the comparable figures for Coflein being 21% and 0%, respectively. Our assessment suggests that about 44% of those in the HER and 48% in Coflein provide insufficient information for a reasoned revision of the type/date attribution to be made.

Not surprisingly, there is some overlap between HER and Coflein, although the effect is more marked with Coflein due to the lesser number of sites. Overall, 42% of those recorded in Coflein have a corresponding entry in the HER, although the type attribution is lower at 40% and the period at 75%. In the HER, 8% of records have parallels in Coflein records, with both type and period matching in only 40% of the cases. It might be noted that some of the field systems which occur in a search of one source may well not be found in the other owing to these variations of attribution.

	HER	Coflein
Total number of sites from search	77	33
Sites discounted on the basis of type/period	12	13
Sites discounted on the basis of authenticity	4	1
Revised number of sites	61	19
Sites with undoubted authenticity	12	9
Sites whose authenticity cannot be fully assessed owing to deficiencies in the available record	16	3
Sites whose authenticity cannot be fully assessed owing to deficiencies in the available description	11	6
Sites recorded in the other dataset in any form	5	8
Sites where their type corresponds in the other record	2	3
Sites where their period corresponds in the other record	2	6
Sites identified by ridge and furrow (possible overlap with criterion below)	9	5
Sites identified by field boundaries (possible overlap with criterion above)	32	12
Sites directly associated with a medieval settlement or feature	5	2
Sites whose extent is identified by length and/or width	8	4
Sites whose extent is identified by area	2	0
Sites identified by aerial photography	22	14
Sites identified by excavation	0	0
Sites identified by field survey/direct observation on the ground	19	1
Sites identified from published sources	3	0
Sites identified solely as place-names	17	0
Sites in upland (unenclosed or enclosed)	8	5
Sites in lowland	53	14

Table 2. Comparison of records recovered by a search using the terms 'Field system' and 'Medieval' for Montgomeryshire in the HER and Coflein

Conclusions

We can conclude that there is not a great deal to be gained from an in-depth study of the data already recorded in the HER. It is inconsistent in its approach, sporadic in its coverage, varied in its detail. Put another way, a newly admitted post-graduate student setting out to research field systems in east Wales would be ill-advised to resort to the HER for baseline data.

Few field system elements are scheduled. A few may be scheduled in conjunction with other features, but this is usually an incidental by-product of the system. It also seems to be generally accepted that a field system in itself is not a legitimate target for scheduling, that the scheduling criteria laid down by statute do not permit their consideration (D Morgan Evans: oral comment, October 2012).

If recording our fieldscapes on a field-by-field or boundary-by-boundary basis is impractical, are there alternatives? Though there is an increasing shift towards polygonising site data, it can be argued that the HER with its still-specific orientation towards site representation through point data is perhaps not the most useful mechanism for recording field systems. Comprehensive landscape characterisation, regardless of its faults (and see Rippon's analysis of the Blackdown Hills data spanning Somerset and Devon for an illuminating study) appears to offer a better entrée to the subject when the analysis is at the *fieldscape level* as opposed to the *individual field(s) level*. There is perhaps an alternative too, in the mapping of farm holdings using for example the mid-19th-century tithe awards, creating manageable blocks of fields for future analysis. More mechanical than characterisation, the two approaches would be complementary, though both are time-consuming, and it is likely that resources could be made available.

Sources. Baker and Butlin 1973; Bowen 1930; Dodgshon 1980; Harvey 2010; Jones 1964, 1985, 1991; Kain and Prince 1985; Muir and Muir 1989; Palmer and Owen 1910; Pryce 1961; Rippon 2004, 2012, 116; Silvester 2006a; Sylvester 1969; Taylor 1975; J G Thomas 1957; C Thomas 1975-6

Field Systems: an overview

Even the most cursory examination of a map at the 1:10,000 scale will reveal on a single sheet variations in the shape, coherency and collection form of the fields depicted. Analysis at the micro-level (i.e. on a field-by-field basis) is unlikely to be profitable, given the resources that would be required, and assessment at the parish or even township (i.e. macro-level) offers too coarse a picture. An assessment at an intermediate level is potentially more rewarding and indeed has been one of the key drivers in historic landscape characterization.

The various types of field pattern have long been the subject of discussion and indeed some speculation, even if on a sporadic basis. They re-occur in the more general context of settlement and land-use, but rarely appear to form a subject for consideration in their own right. Arguably Margaret Davies' statement on South Walian field systems offers the most useful guide, but because it works on a county-by-county basis, it is not comparable with the best of the English regional chapters in the Baker and Butlin synthesis on *Studies of Field Systems in the British Isles*. Perhaps when a companion volume for Wales is prepared to match *The Countryside of Medieval England* edited by Astill and Grant the lacuna may be filled, for what is absent for Wales (at least as far as we can tell) is a straightforward analysis of the morphology of field systems across the country.

Type 1 Open fields

The term 'open field' is preferred to the alternative 'common field' following Rippon and others, the term 'common field' being reserved for a specific type of open-field farming, commonplace in the English Midlands where a two or three-field rotation system is well-evidenced in the historic record. This is not to deny the presence of the three-field system in east Wales – Sylvester made a forceful case for their presence around Talgarth and Bronllys in the Llynfi valley of Breconshire – but is more a reflection of the apparent lack of research into the nature of the open fields, arguably a task for the historical geographer than for the landscape historian. Glanville Jones, perhaps the historian most likely to have tackled the subject, seems to have been reluctant to stray too far into this 'field' of

study. And there will no doubt continue to be a blurring of the topic through the use of differing terms, not helped by the fact that the tithe surveys often referred to a common field, as for instance at Llyswen in Breconshire, when according to the preferred terminology they would be open fields. A further term – sub-divided fields – has been offered as an alternative, but seems not to have found widespread acceptance.

The literature on open fields is a sizeable one: a brief and useful overview is provided by Adams, but virtually any study devoted to lowland field systems will carry an introduction to the subject. In Wales the open fields have attracted little attention, other than in the region around Wrexham where Alfred Palmer and Edward Owen made one of those significant 19th-century contributions to research that is today largely overlooked. E G Bowen early in the 1930s also made an early foray with a brief analysis of one group of fields beside the Severn at Trehelig Gro, south of Welshpool, a result of the 1810 enclosure map being brought to his attention. Dorothy Sylvester and Margaret Davies both contributed to the topic in its manifestations in east Wales, and the writer is currently working on the open-field systems of the Usk/Wye lowlands in Breconshire. There is though little more.

Open fields consist usually of narrow strips of arable separated, at best, by grass balks. Occasionally divisions between the strips were marked by mere stones, or perhaps markers of less durable material. Groups of strips running in the same direction were termed furlongs, groups of furlongs as fields. Farmers would originally have had their strips scattered widely throughout the open fields, and this fragmentation of a holding could continue through to the modern era (Fig 1). The significance of the open and common fields in the lowlands was that they could be communally gazed after the harvest, with stock able to roam freely across the grassy balks between the selions (or individual strips). Only as a landholder amalgamated adjacent strips with his original holding was he was able to create a block of land suitable for enclosure. Enclosure was certainly taking place in the later Middle Ages, but the chronology of enclosure varied from parish to parish and it was still taking place into the nineteenth century, as with Bronllys (Brecs) where over a hundred acres of the common fields were enclosed by Act of Parliament in 1860.

Open fields have survived into the twentieth century in Wales though they are rare. Rhossili Vile on Gower and Llan-non on the Ceredigion coastal plain are the two that immediately come to mind. There are none that remain, to the best of our knowledge, in east Wales.

In the 19th century at the time of the tithe surveys, relict open fields were very much more in evidence, in those areas where Anglo-Norman and subsequently English influence was strongest. Considerably more sporadic, late 18th-century estate maps also contribute to the picture of open-field survivals. But no one (as far as we are aware) has yet systematically searched through the tithe maps to identify a full inventory of survivals. Sylvester identified some (see Table 3), but her assessment was descriptive rather than quantitative and is not likely to be complete.

Source	*Location*	*Nos*
Sylvester 1969	Breconshire	3
Sylvester 1969	Denbighshire	1
Sylvester 1969	Flintshire	15
Sylvester 1969	Montgomeryshire	5
Sylvester 1969	Radnorshire	2

Table 3. Open field systems defined from early map sources by Dorothy Sylvester

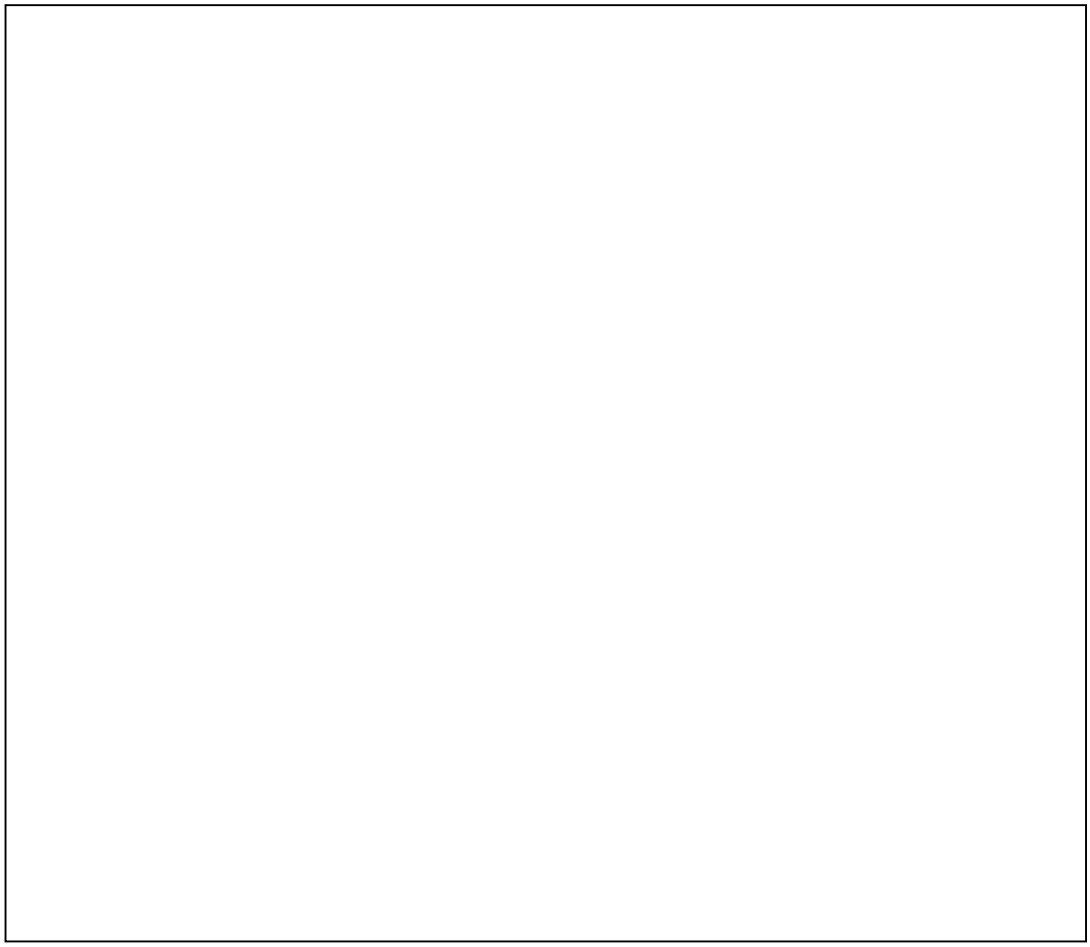


Fig 1. Peter Owens' landholding (part) at Rhos Goch in Caerwys, Flintshire in 1849. Strips in the surviving open fields are conventionally shown on tithe maps by dashed lines.

The open fields after enclosure also left their mark, both in the landscape and in the array of Welsh field-names to be found in map schedules (the latter may of course also appear in historical documents, though without the locational control provided by a map). Characteristics include a long narrow shape, leading to the loosely applied term 'strip field' (see below), a frequent though not invariable slight curve at one or both ends, the so called aratral or reverse-S curve, and a staggered set of right angle turns in the field boundaries where different lengths of adjacent strips of groups of strips have been enclosed. Significant field names include *maes, cyfar, dryll, talar* and less convincingly *erw* and the English term *quillet*. More information on the field names and their uses can be

found in Thomas and in a forthcoming paper by the writer, and on field shapes in the second of these sources.

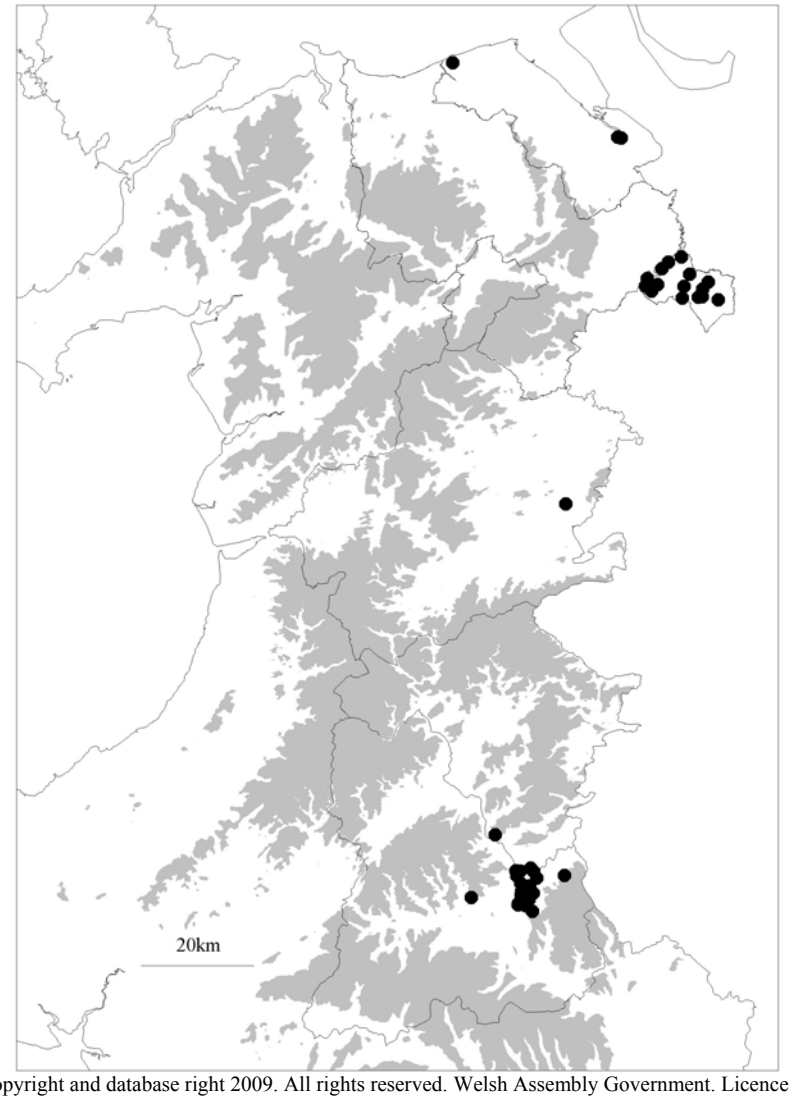


Fig 2 Distribution of open-field records in the study area

Almost all of the examples cited above come from those parts of east Wales where Anglo-Norman and, at a later date, English influence was strong. In Welsh Wales rather smaller 'open fields' were created, often less immediately obvious to the landscape historian and certainly less well-studied (though Llan-non in Ceredigion, cited above, is an exception). Usually described as sharelands, the work that has been done on these is largely down to the late Glanville Jones and to a lesser extent his older contemporary T. Jones Pierce, and the former in particular gradually built up a picture over many years, though throughout it was underpinned by his in-depth studies of the Welsh law codes. Finding a way through Glanville Jones' numerous publications is not always easy, but a useful but very brief and now perhaps rather out of date summary is to be found in Adams.

Jones described shareland survivals in the 19th century in the Cwm Pennant valley of Llandrillo on the western edge of the Berywn, at Llanynys in the Vale of Clwyd and in less detail in a handful of other places; Britnell has recognised survivals in Dyffryn Tanat. And the writer has identified some examples in Breconshire. The landscape evidence, too is

sparse. What looks to be a small shareland system comprising grassy balks dividing up strips of ridge and furrow, and complete with surrounding dwelling sites has been located within late enclosed ground near Llanwddyn above Lake Vyrnwy.

Type 2 Strip fields

The term 'strip field' has gradually acquired credibility in recent times, though as far as we know it has no basis in history, unlike say 'furlong' or 'common field'. Adams noted that strip fields could be derived from both the Anglo-Norman common fields and from the native systems of cultivation, although the only examples he could cite for the latter at the time that he was writing were from Irish contexts. There is a tendency now to use the term for any group of long narrow fields, regardless of whether they have been shown to signify the former presence of open fields. In essence the 'open field' describes an agricultural system, while the 'strip field' is a marker of physical form.

The characteristics of those strip fields that were formed from the open fields, as explained above, are their long and relatively narrow shape, the aratral or reverse-S curve at their terminals, and the staggered, right-angle or dog's-leg turns in their appearance, to which might be added their grouped appearance. It is the terminal curve which is usually the most convincing indicator (see Fig 3).

There is, however, no inherent reason why a group of strip fields, let alone a single example, should not have evolved through a different mechanism, simply being laid out in this fashion at the time of their origin. Proving it may be considerably more difficult, other perhaps than in such exceptional circumstances as where a burgage plot in a shrunken town has reverted to agricultural use, as at Caersws (Monts).

Fig 3. Strip fields near Llanfihangel Tal-y-llyn, Brecknock.

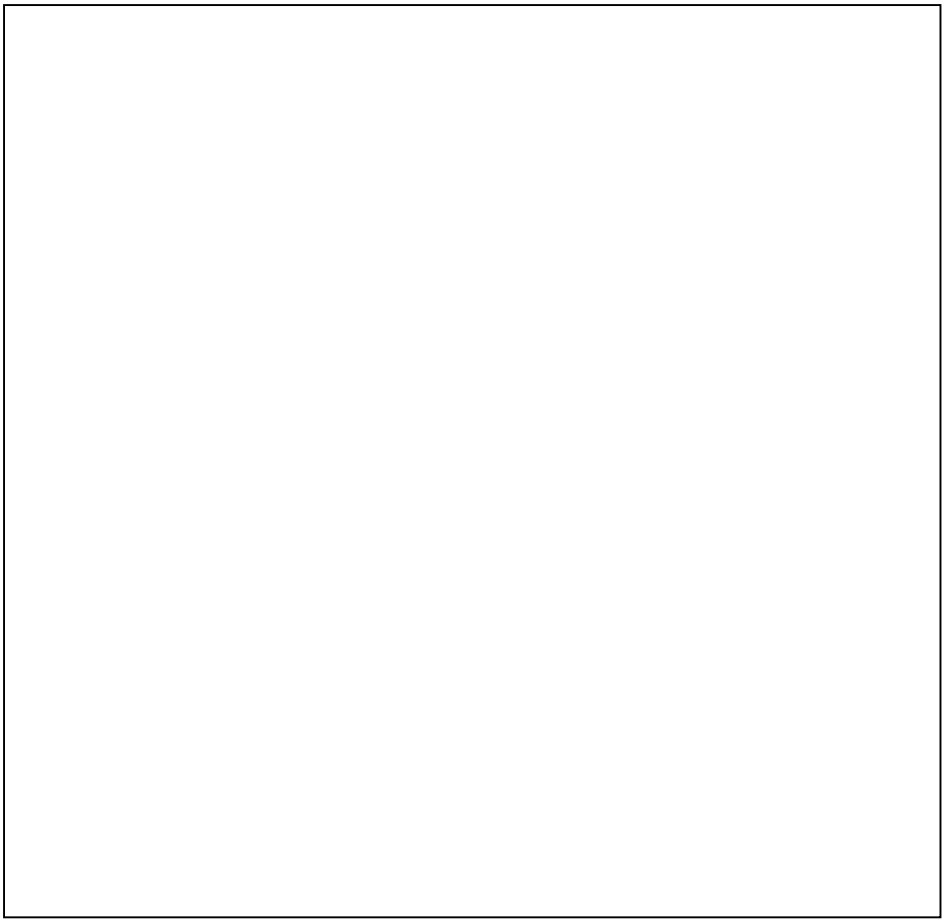


Fig 4. The tithe map of Caersws in Montgomeryshire with former burgage plots in agricultural use. © National Library of Wales

As far as we aware no one has attempted to list or map the extent of strip fields throughout east and north-east Wales, and the results of such an exercise would exhibit a degree of subjectivity, if it was attempting to define the extent of the former open fields. In some parts strip fields are (or were) extremely common as along the coastal strip of Flintshire and in the Brecon lowlands between the Wye and the Usk. With the advent of GIS it would become feasible to do it as long as the authenticating criteria were consistent (for the problems emerging through inconsistency the reader's attention is drawn to the problems encountered in a study of the Blackdown Hills on the Somerset/Devon border where different approaches to historic landscape characterisation in the adjacent counties resulted in markedly different and inconsistent results [Rippon 2012]).

Upland strips are relatively rare. The clearest example is on Penybont Common (Rads) where several platforms representing a single farmstead lies just below a set of strip fields, the strips divided by slightly raised grassy banks and exhibiting cultivation ridges. There is no likelihood of an open field here, just the fields of a single farm (Fig 5). The stony banks that divided the much larger expanse of fields at Cadwst, Llandrillo almost certainly represent sharelands. The banks which I suspect may have been largely the result of stone clearance from the fields, might have allowed stock to wander unhindered during periods of fallow, but this is not likely to be demonstrable either way.

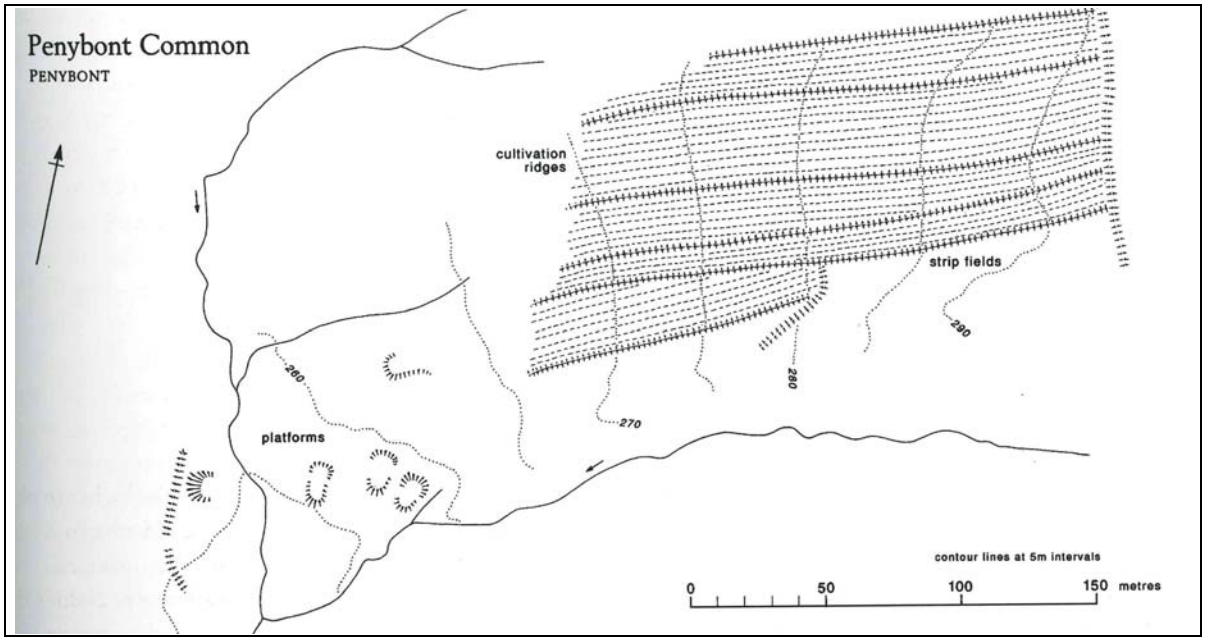


Fig 5. Strip fields attached to a single farm on Penybont Common (Rads)

Type 3 Regular fields

The majority of regularly laid-out or planned field systems result from the enclosure of the commons or waste (or occasionally in Wales of the common fields), usually though not invariably parliamentary in origin, for some enclosure was by local agreement without necessitating recourse to a higher authority. Simplistic though it may seem we can separate these into large rectilinear field systems and small rectilinear field systems, but it is also necessary to recognise that there is at least one other set of circumstances that could lead to highly regularised layouts. The controlling factor in this section is on field morphology or shape (rectilinearity) rather than field origin (enclosure).

Large rectilinear systems

It was the uplands that witnessed the largest enclosures and these led to the creation of rectangular fields, often of similar size, with straight roads and wide verges, all this where the topography allowed it. In Wales this was very much a 19th-century phenomenon. The historic landscape characterization reports allude to them regularly (see for instance the Clywedog Valley) and importantly they are probably the best documented form of field system, the maps and descriptive awards of the parliamentary enclosures being comprehensively listed.

Of secondary importance, at least in this region, was the enclosure of coastal marshes, (with the results much the same in appearance as in the uplands), of previously open meadows in the valleys, and of former parkland, exemplified in published reports at Maesllwch in Glasbury (Rads) and at Bathafarn (Denbs).

Small rectilinear systems

These are a feature, though not a common one, of the north-eastern industrial areas. Small regularly blocks of ground, sometimes with a house in them, suggest an attempt at the time of enclosure to provide a small amount of land to each cottager, or as an alternative perhaps, to lay out allotments in the hope of attracting industrial workers to an area. In

other words they are deliberately laid out with a specific purpose in mind rather than reflecting piecemeal enclosure. Not that individual intakes from the commons and waste necessarily spurned small rectilinear fields – both the 19th-century and modern Ordnance Survey mapping reveal that encroachments could enclose rectilinear patches of ground. Rather it is the scale of the activity which provides a guide to the origin. Published examples come from other parts of Wales (as near Bethesda, Caernarfonshire), and if work has been done on the phenomenon in the east of the country we are not aware of it. But we would probably not be far wrong in asserting that almost all of the examples that we can see on maps and on the ground are unlikely to be much earlier than the 18th century.

Other rectilinear field systems

The complete redesign of farmholdings is not something that has attracted much attention from archaeologists or landscape historians, in contrast to the enclosure of the uplands or marshes remarked on above. That it occurred, particularly in the 19th century, there can be no doubt, but as to whether it was a rare or a common occurrence there is no evidence. A cautious assumption would allow that it happened occasionally where an improving landlord or owner saw advantages in redesigning the fieldscape to facilitate its agricultural use, but not often. Agrarian historians may, of course, know better.

The re-configuration of the field pattern is most likely to emerge through a comparison of sets of historic maps, or by the close study of a particular landscape where the evidence of maps, aerial photography and fieldwork can be combined. For the former we can cite the example of Nantygwreiddyn in Merthyr Cynog (Brecs) which was completely redesigned between the estate being surveyed in 1780 and the Ordnance Survey first edition mapping in 1888, the distinction showing clearly when the 1780 map is compared with its modern successor and particularly to the west of the road that bisects the holding (Fig 6).

Fig 6 Nantygwreiddyn in Merthyr Cynog. The plan on the left shows the field layout in *c.*1780, while that on the right is the modern day pattern.

Of the latter, the field system below Tŷ-draw in Llanarmon Mynydd Mawr is the best published example, an extremely irregular set of fields still faintly visible on the ground but more readily revealed on an estate map of the 1750s (*NLW/Chirk Castle F5538*) was almost entirely replaced by long rectilinear fields (Fig 7).

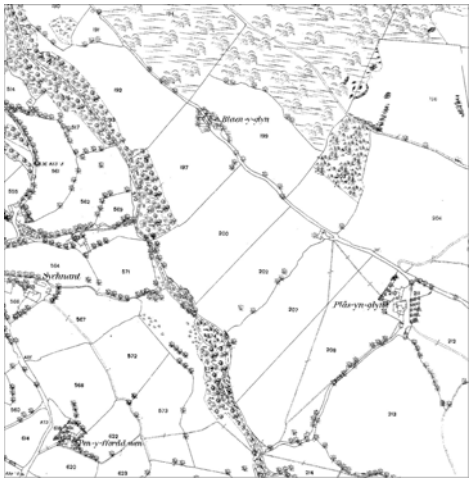


Fig 7 Tŷ-draw, Llanarmon Mynydd Mawr and its field patterns in the mid-18th and late 19th centuries. © National Library of Wales

There is also scope for considerable variation here. A field system may only be partially re-designed, the more useful elements (such as straight boundaries, watercourses etc) being retained while superfluous boundaries are removed, or sometimes replaced by straighter lines, or one group of fields is changed while the remainder survive in their original form. The scale of this activity will vary from holding to holding, and the final result may be far from the purely rectilinear forms referred to above.
Hypothetically, a more specialised function or a creator out of the ordinary might also lead to a regular field system. This has been suggested for the regularly laid fields on the north side of the Elan near Rhayader (Rads) thought to be associated with a Cistercian grange. But it needs to be stressed that this is only a theory, without as yet substantive evidence to back it up.

Type 4 Irregular fields

Most common across eastern Wales are the numerous small to medium-sized irregular fields, a hallmark of the Welshries, but present to in areas penetrated by Anglo-Norman settlers. These are normally found in valley bottoms and the lower valley sides, expanding along valleys and higher up the sides as more land was assarted and enclosed. So common indeed are these type of fields that they are rarely recorded in the cultural heritage databases. Some might call them closes rather than fields, though this is terminology perhaps more likely to be encountered in England than in Wales

Irregular fields were certainly a feature of the later Middle Ages (i.e. after the disasters of the first half of the 14th century) but what is less clear is the scale of irregular enclosure in earlier centuries. It has been noted that on the Brecon Priory estates, the enclosed land had virtually reached the margins of the mountain land on the eastern side of the Llynfi in the 13th century, the implication being that discrete enclosures were being carved out on the sides of the Black Mountains earlier in the Middle Ages, and that by extension the fields below them down to the estate centres were already in existence. Similarly variously

sized irregular fields in Arwystli (Monts) are also considered to have been in existence by the 13th century, while even earlier origins are implied for some systems in the Vale of Llangollen and the Caersws Basin. On the other hand the patterns of small irregular fields on the western slopes of the Clwydians resulting from the enclosure of cleared woodland are attributed to the late medieval/early post-medieval centuries. Associated features frequently include ancient hedges and lynchets, though to what these might be classed as *exclusive* associations or indeed whether there is any chronological significance to their occurrence remains to be established.

There are on-going attempts in England to identify different phases or periods of irregular enclosure with broad date ranges being attributed to them as in work by Rippon and by Faith. In Wales as far as we are aware even less progress has been made, other than as broad and non-specific generalisations. One of the few attempts – C. B. Crampton's attempt to identify early medieval fields on Mynydd Illtyd and other commons in Breconshire based at least in part on lines of gorse bushes has been treated with general scepticism in more recent times.

Small often irregularly shaped fields surrounded by much more regular field layouts, and usually in the uplands though also to be found on the hill commons, are indicative of piecemeal cottage encroachments on the commons which survived the process of formal enclosure. Examples in the Clywedog region and on Holywell Common and Halkyn Mountain can be cited, but they appear with minor variations in form in many upland areas.

The integration of moorland tracts into existing farms or sometimes new encroachments on the moor itself led to a distinctive field pattern with 'characteristically curving upper boundaries', sometimes termed *ffridd*. Britnell in his commentary on the Brecon Beacons claims these as typically 10-20ha in size (though much larger ones of up to 80ha have also been recognised) and attributable to the period from the 17th to early 19th century, and these criteria almost certainly hold true for similar farm holdings in other areas. But this should not blind us to the possibility that such field system designs could in some places, have earlier origins, and that fields of a similar layout but of smaller size are possible.

Type 5 Lynchets

There are a number of terms relating to agricultural practices that might have found their way into this report, but one of the more evocative labels is 'lynchet', particularly to an archaeologist raised in the English lowlands. 'Cultivation terrace', a broadly synonymous term, simply does not have the same timbre, and strip lynchet is no more than an alternative form. Adams claimed that lynchets are found mainly in chalk country, whilst acknowledging that they could appear on other geological formations.

Chambers Dictionary under 'linch' (also linchet or lynchet) defines the term as 'a boundary ridge, or unploughed strip; a terrace or ledge'. Linch in fact seems to be a dialect variant, more used perhaps in the countryside than in archaeological circles. Adams refers to two rather different processes: that a lynchet may be the rising part (riser), used for grazing, between terraces under arable cultivation, or that they were created by ploughing along the contour, not up or down the hill.

It is the latter explanation that will find a certain resonance in this region. The traditional pattern of lynchets ranging up a hillside on the chalklands and elsewhere (the lynchets to

be seen on the isolated tump of Brent Knoll by anyone travelling the M5 in Somerset are eye-catching) is very rarely encountered (we think) in east Wales. Instead, quite regularly, one encounters fields on slopes where the uphill level is notably higher than the level below the field boundary. If the boundary is then removed a scarp bank remains.

Many of the 154 'lynchet' records in the HER reference this phenomenon. The number would be tremendously higher if all such lynchets were recorded in the landscape, but rather like the field boundaries themselves they are so commonplace in hilly areas that it would become a thankless task.

Generally the lynchet records in HER are to single earthworks, a scarp bank noticed here or there during a specific field project. Occasionally a system of rectangular fields generates several discrete lynchets within one record, as with the field system associated with the excavated farmhouse and its neighbours at Tŷ-draw in Llanarmon Mynydd Mawr where several of the field boundaries showed as slight lynchets rather than relict banks. Rarer are groups of small, parallel lynchets are recorded as with a group to the south of Powys Castle on the edge of Welshpool (recorded here as Pentre Field system: 5025), where LiDAR points to other adjacent earthworks that might be worth examining in this context; with larger ones at Llechwedd-y-garth (37332) on the steep southern slopes overlooking the Tanat west of Llangynog look impressive on LiDAR but really need to be examined in the field.

But the open field strips on rising ground which create the tradition lynchet patterns are largely absent. Closest to the norm perhaps is Old Impton above Norton (Rads: 54159) where the removal of strip field boundaries has exposed lynchets which though they cross the contours as depicted on an Ordnance Survey map also reflect the more subtle slope of the ground that is evident during fieldwork (see fig 8); and the same is true at the northern end of Cefn Penagored above Cwm Pennant at Llandrillo where ridges running down the prevailing slope have also converted to lynchets because the ground falls away in two directions.

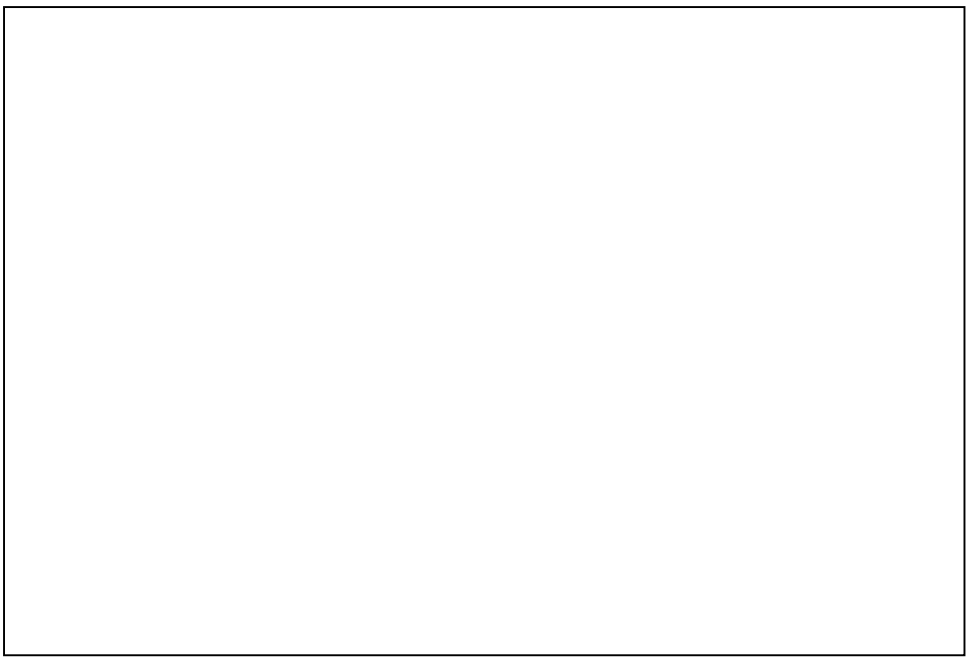


Fig 8 Lynchets near Old Impton, Norton (Rads).

Sources. Adams 1976, 80ff, 123; Astill and Grant 1988; Baker and Butlin 1973; Barnwell and Roberts 2011; Bowen 1930; Britnell 2001, 32, 60, 109; Britnell 2004, 30; Britnell 2005, 23; Britnell 2007a, 21; Britnell 2007b, 23; Britnell 2008, 23; Britnell et al 2000; Britnell et al 2001, 31; Britnell et al 2008; Britnell and Martin 1999b, 15, 19; Chapman 1992, 31; Crampton 1967; Davies 1973; Faith 2012; Jones 1964; Jones 1973, 458, 472; Jones 1985, 165; Kain et al. 2004; Palmer and Owen 1910; Rippon 2012, 12, 117ff; Silvester 2000; Silvester 2006a, 23; Silvester 2006b; Silvester forthcoming; Sylvester 1954/55; Sylvester 1969, 427, 433; Thomas 1979-80; Wiliam 2010, 40.

Land Use

Arable Cultivation: Introduction

The HER is awash with references to ridge and furrow, many of them factual but uncritical entries which tell of little more than the presence of a corrugated land surface. A large proportion of the entries are probably the result of solitary observations, whether during groundwork or aerial photograph study. Where a period is specified for a particular record, it is as likely to be 'medieval' as anything else. This is not so much a criticism of erstwhile and present colleagues – it is after all quite likely that the present authors have been responsible for more than their fair share of such records – but more an observation on general archaeological perceptions, along the lines of: cultivation ridging (and its ridges) is much the same as ridge and furrow; ridge and furrow is demonstrably medieval in the English midlands; therefore cultivation ridges in Wales are medieval.

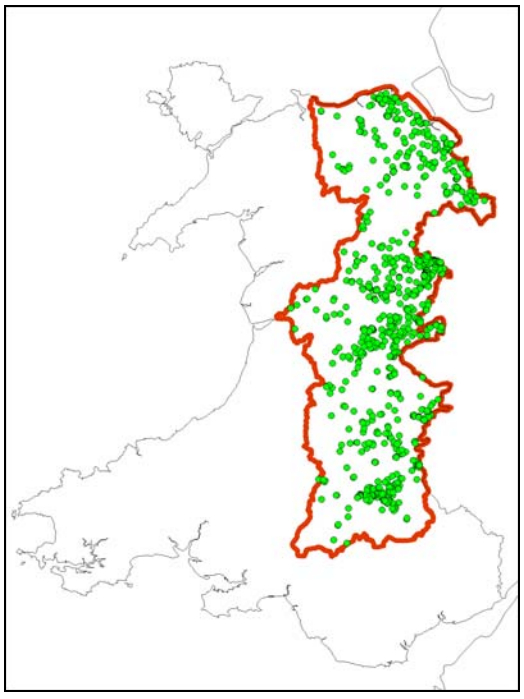


Fig 9 Distribution map of ridge and furrow in HER

The HER carries over eleven hundred records of ridge and furrow. Fig 9 is a simple and relatively meaningless distribution map of ridge and furrow from this source, though it does reveal some coarse concentrations: the north-eastern borderland, Montgomeryshire and the Usk and Wye lowlands of Breconshire. It is a map of observations whether from groundwork or from aerial photographs. It is no more than that and in addition to the

usual biases which reflect not the genuine presence or absence of archaeological features but the level of fieldwork in particular localities, there is the issue of few of the observations being properly validated. In passing it might be noted that Wrexham Maelor, the one area of east Wales with superb ridge and furrow survival, is not particularly prominent on the distribution map.

There can be no doubt that Welsh archaeologists have failed to keep pace with their colleagues in other parts of the British Isles in identifying and studying cultivation ridging. In Scotland, for instance, the shift to narrow, straight and level ridges is attributed to the later 18th century, preceded perhaps by narrow curving ridges, and a recent assessment has identified no less than eight separate categories of what in Scotland is called rig-and-furrow, including prehistoric cord rig and lazy beds.

Perhaps this does not matter too much, except during the compilation of a study such as this, when the paucity of thinking about the subject becomes both clear and an all too obvious handicap. In essence, the date of an extant tract of ridging becomes critical because it is only when the ridges are dated that the archaeologist can start to compare like with like, and move beyond a starting point of simply recording presence.

Ultimately, this comes down to a question of date. But this is not the place to analyse the HER's data on ridge and furrow which would necessitate a record-by-record assessment to a level that is normally reserved for higher profile site types. This is a project in itself, but one we suspect that would not have a ready appeal. A more viable approach is the local one, examining potential sitings of ridge and furrow in a restricted area. It is this approach which we have started to build on below.

Medieval ridge and furrow

Introduction

Ridge and furrow has been described on countless occasions. From the early disputes between Maurice Beresford and Eric Kerridge in the late 1940s and early 1950s on its date and its significance, to the more recent and exhaustive analytical work by David Hall in the English Midlands, and the mapping exercises by Robert Hartley in Leicestershire, the literature is voluminous. It is the central region of England, where ridge and furrow is (or at least was) commonplace, if not ubiquitous, that dominates all general discussions about ridge and furrow, and peripheral regions, not unexpectedly, normally receive little attention. Hall acknowledged for instance that ridge and furrow appeared in Cheshire and Shropshire and the valleys and lower lying lands of Wales and Scotland, the immediate implication being that the examples in these outlying regions were also medieval in origin.

In the English Midlands ridge and furrow represents the open fields which were fully functioning in the Middle Ages and probably originated in the late Saxon era, say the 9th century AD. Whether a similar age can be applied to ridging beyond this core area is an issue that seems to be rarely addressed. However, the excavations at Hen Domen (Monts) are instructive in this context for the excavators argued cogently that the land was under plough and ridging was forming when the motte was superimposed on it, and that ploughing then continued around the new earthworks.

In the core area, cultivation ridges represent strips known as lands, which were parcelled together into furlongs, which in turn were grouped into fields. These fields, open in the sense that they were not delineated by hedges or other continuous bounds, numbered two or three to a community, and defined the rotation which allowed some ground to remain fallow each year. Each set of lands and ridges would terminate in headlands where the plough was turned. The furrows between the ridges provided a drainage function, and demarcated one land from another.

We are not aware of any publications that address the issue of ridge and furrow in Wales specifically, and indeed with one or two exceptions such as Aris' work on the Great Orme in Caernarfonshire, Barker and Higham's at Hen Domen near Montgomery, and occasional and usually passing references in Royal Commission Inventories of recent vintage such as Glamorgan, there are few local studies. But in passing it is worth noting the extremely detailed analysis of ridge and furrow beside Offa's Dyke near Chirbury (Shropshire) which utilised both ground survey and aerial photography to resolve a specific chronological issue. This is perhaps one of the most exhaustive reports on a small area of ridge and furrow that has ever published and it reveals that even something as seemingly simple as cultivation ridging can generate considerable debate.

It is perhaps worth stressing that ridge and furrow is an archaeological component of the landscape, and not one that will necessarily attract the attention of the historian or historical geographer. Witness Dorothy Sylvester's study of the Welsh borderland where the index in her *Rural Landscape of the Welsh Borderland* contains a rash of open-field references but not a single one for ridge and furrow, or Robert Dodgshon's on the origins of British field systems which lists only a solitary comment.

Characteristics

The chief characteristics of medieval ridge and furrow are likely to be:

a an extensive spread of parallel ridges, with furlongs that are sometimes set at right angles to each other. Well-defined Midland ridge and furrow can also display more complex lands and headlands that include *joints*, *gores* and other specifically termed components.

b slightly sinuous, reverse-S shape (an *aratral* curve) to the terminals of the ridges, facilitating the turning of the plough on the headland.

c intermittently, the appearance of a later pattern of fields that pays little or no heed to the layout of the underlying ridges.

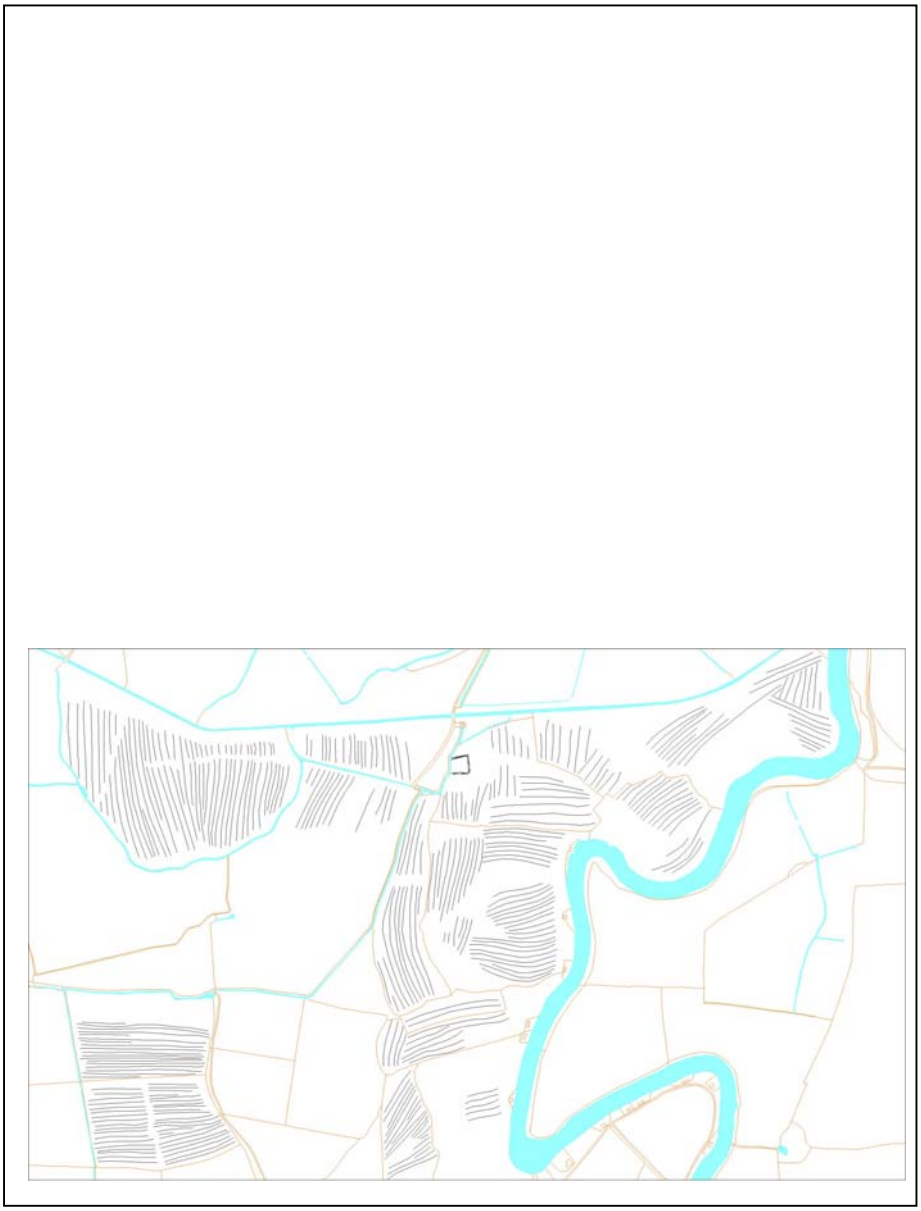
d a range of associated field-names (in English rather than Welsh though these will also be associated with open-field agriculture where ridge and furrow was not an integral element)

Recording ridge and furrow

Ridge and furrow has been recorded in two ways in the HER. The conventional method is the written description as an individual HER record with a Primary Record Number attached, and it is these that have resulted in Fig. 9. In addition, for ridge and furrow, two rapid mapping exercises of ridge and furrow in the Wrexham Maelor area have been undertaken at different times in recent years. Nigel Jones plotted ridge and furrow appearing on Geonex colour photography taken for the Countryside Council for Wales in 1992, whilst some years later one of the writers (RJS) conducted a similar but less exhaustive exercise using the late 1940s RAF photography housed in the Welsh Government's Aerial Photograph Unit.

The two exercises produced GIS-based maps (as data tables), but are incomplete in three essentials. Firstly, modern fields containing ridge and furrow were defined in outline only. Secondly, no PRNs have been attributed to the different spreads of ridging, so each electronic map is effectively a single record rather than an agglomeration of multiple records. And thirdly, very few of the observations based on the remote sensing have been validated on the ground.

To the two tables referred to above we have now added a further table through a rapid mapping exercise from the LiDAR imagery recently passed to the Trust by the Environment Agency. As a source of data on ridge and furrow, the imagery is without undoubtedly the best that is currently available. Because of time constraints it has, however, been used only for Wrexham Maelor.



Figs 10 and 11. Ridge and furrow in Trevalyn Meadows beside the Dee below Holt on LiDAR and as mapped. © Geomatics Group. Not for reproduction

Ultimately the ideal would be to map the ridge and furrow of Wales in detail. Arguably, each furlong could then be given a PRN, but such is the variation in surviving detail (incomplete furlongs, small, ridged areas that might or might not be furlongs in themselves, furlongs seemingly broken up by later features, etc) that a more pragmatic approach might be to number each modern field that held ridge and furrow. The arrival of LiDAR has made such a mapping exercise feasible, but in practice it seems unlikely to happen, at least in the short-term. Primarily, it is time-consuming: as an example the mapping of the furrows in Figs. 10 and 11 took 45 minutes to prepare, and whilst it serves for a report such as this it would not be good enough for a publication. Also detailed mapping would benefit from examination on the ground to confirm the finer detail provided by headlands, rick places and other components of the arable. Even putting the fieldwork to one side, there would be several weeks of work mapping the cultivation ridges of Wrexham Maelor, for it is wearing on the eyes and it is unlikely that anyone would be able to work at it continuously for hours on end.

The distribution of ridge and furrow in east Wales

Ridge and furrow is not ubiquitous across east and north-east Wales. Instead it is a feature of the lower-lying and sometimes more fertile lands around the major river valleys where they break out of the upland massif. But this generalisation in turn needs to be qualified, because of the two conflicting variables of absence and survival. And it highlights an issue which appears particularly pertinent to the HER, namely that where a single isolated field is identified with ridge and furrow within it (and there are a significant number of these in the HER), it would be incautious to imply or assert a medieval date, in the absence of any corroborative evidence.

The northern coastal plain

A limited amount of ridge and furrow has been recorded on the lower lands fringing the Dee Estuary, though this is potentially a fruitful region, with extensive strip fields surviving into the 19th century, a tradition of English agricultural practices imported into the area in the wake of the late 13th-century Edwardian conquest, and the Cheshire plain with the remains of extensive ridge and furrow being only a relatively short distance away.

That ridge and furrow of medieval appearance did, and to some degree still does, exist is demonstrated by good quality vertical RAF aerial photography of the area around Hawarden airfield taken in January 1947 (Fig 12) which was acquired by the trust in the summer of 2102 as an aid for another Cadw-funded project.

The area studied comprised some 750ha, in which fourteen discrete areas of ridge and furrow were identified, ranging in size from 1.5ha up to 24.1ha, and covering an area totalling 108.3ha. These were mapped in GIS and compared to LiDAR images to determine what proportion was still extant. The results showed that just over 30% of the ridge and furrow had been lost subsequent to 1947; the survival rate of 70% is encouraging given what might have been expected in a locality which has seen ever increasing development in the second half of the 20th century, although we are conscious of the fact that LiDAR may provide a clearer picture than fieldwork and suggest a greater degree of preservation than is actually the case.

The largest amount of the ridge and furrow which has been lost falls in fields which have been levelled and improved, but there has also been a significant impact from housing and other development, which accounts for 42% of the total lost. It also has to be borne in mind that this only relates to evidence which was conclusively visible on the aerial photographs whose survival could be assessed by examination of the LIDAR images. It may well be that other sections of ridging were either not highlighted owing to their possessing an unsuitable alignment in comparison to the angle of sunlight in the 1947 photographs.

Fig 12 Ridge and furrow around RAF Hawarden in January 1947 (Photo RAF/CPE/UK 1935 No 4014, reproduced by courtesy of the Central Register of Air Photography for Wales)

The areas plotted were also compared to the HER revealing correspondences with five PRNs in the record (23694, 99030, 99087, 99102 and 99118), though two of these were duplicates.

What this exercise cannot resolve is the historical timeframe of the ridge and furrow. Was it a function of the open-field agriculture that developed after the Edwardian Conquest

along the coastal plain, or was it an extension of what was happening in Cheshire which in turn was certainly developing prior to the late 13th century.

Wrexham Maelor

That part of historic Flintshire that forms a distinctive projection into England is a lowland region which geographically is an extension of the Cheshire Plain, with sometimes heavy clay soils that has encouraged pastoral farming. In a swathe of low-lying land from Rossett and Holt in the north to Hanmer and Overton in the south, ridge and furrow coats (or in the past has coated) the landscape, fading out quite sharply where it reaches the Wrexham conurbation and the rising ground of the hills behind. It is an irregular area about 20km from north to south and perhaps 16km from east to west. For ridge and furrow it is the Welsh region *par excellence.* It has, however, been little studied and we have to look to adjacent Cheshire for analytical assessments by writers such as G. White and S. R. Williams.

The ridging though is something of a heterogeneous mix. There is some narrow ridging and also some broader ridging that has more of a medieval flavour, though as far as the writer can tell the latter does not reach the scale of the classic Midland ridge and furrow in either width or height. Some of the Maelor ridging appears to be constrained by the closes or fields in which it lies, hinting to some writers that it is relatively late in date. But other ridges group into patterns of furlongs that must have originated in the medieval open fields, displaying aratral (reverse-S) curves and prominent headlands.

Despite occasional suggestions to the contrary, there can be no doubt that much of the Maelor ridging is medieval in date, and there seems little doubt that in some parts of the region, virtually every available patch of land was turned over to cultivation in this way, with ridges running to the edges of streams and scarps, and even small areas restricted by inconvenient natural landforms being ridged up. However, it seems likely that some fields do exhibit ridging of a later date, perhaps well into the post-medieval era. Defining which fields, though, is largely down to surmise than to scientific principles. More than one of the moats which constitute a distinctive element of Maelor's medieval settlement hierarchy is overlain by ridge and furrow, but does this mean that the moated site was short lived or that the ridging is relatively recent? Even some of the narrow ridging conventionally attributed a late date, shows aratral curves which would favour a medieval origin.

The level of preservation, particular to Wrexham Maelor, should be improved by the presence of such large parks as Iscoyd, Greddington and, further west Erddig, where one would assume that ridge and furrow might remain in fossilised form. Erddig certainly has some – it is mentioned in passing in the parks and gardens register – but the others seem to be largely devoid of ridging.

Ridge and furrow in Maelor is a diminishing asset. Although the region is predominantly pastoral, there is no doubt that many areas of ridging have been levelled out by repeated cultivation since the mid-20th century and a suspicion that some tracts have been deliberately flattened. The LiDAR analysis tends to confirm this gradual loss – the number of modern fields where ridge and furrow was identified on aerial photographs of the 1940s and 1980s, but is no longer apparent on the LiDAR imagery, is surprisingly large.

The Severn-Vyrnwy Confluence

The plain of the River Severn where it is joined by the Vyrnwy, low-lying but gradually rising westwards towards Arddleen and Four Crosses, has been claimed as an area where ridge and furrow survives extensively. In theory, this is credible, but LiDAR does not confirm it. There are ridged areas and some are convincing as medieval survivals (e.g. north of Domgay at SJ 289196) but they are small and localised when compared with the distribution in Maelor. There are hints that these survivals are the last of their kind – at Domgay other nearby fields display faint traces of ridging and on the far side of the Vyrnwy which is in Shropshire there are further tracts of ridging. Indeed these are rather more extensive as 1979 aerial photographs displaying residual snow in the furrows reveal (Fig 13) and as it might be inferred that the flood plain conditions are much the same on either side of the river, it is probably subsequent agricultural practices that have obliterated the traces in Powys.

Fig 13 – Ridge and furrow at Maesbrook. © Clwyd-Powys Archaeological Trust

On the other hand a group of rectangular fields now amalgamated into one on the banks of the Severn at Rhyd-esgyn north of Pool Quay all have ridging that neatly conforms with the major axes of these smaller fields (Fig 14). The patterns thus generated look almost too neat and regular to be medieval, LiDAR is of little assistance and the evidence weighs in favour of a late date.

Three areas of ridging were identified in work carried out to the south of Llandysilio church, although only two of these were still extant at the time. These fragments of ridging related to two open fields (Maes y Llan and Maes y Groes) that were recorded on the Enclosure Award (National Library of Wales: Award No 19 for Montgomeryshire of 1799), a time when the open-field cultivation was clearly terminated. A bond of 1591 (Shropshire Records and Research Centre 103/1/10/98) refers to '..eight selions or ridges of lands in a field called Maes y Groes in the township of Ryssnant' and Maes y Llan is

also mentioned on a 17th-century terrier (SRRC 103/3/9). While these records are post-medieval in date, it is reasonable to assume that the areas of open field (and ridging to which they refer) were survivals from the medieval period.

Fig 14 –Ridging at Rhyd-esgyn. © Clwyd-Powys Archaeological Trust

In Arddleen itself the double-ditched enclosure excavated by the Trust in 2002 was overlain by ridge and furrow, primarily discernible as a set of cropmarks, though gentle ridging does appear to have been visible in the pasture field in the 1970s.

The evidence for much more extensive ridge and furrow in former times is not wholly compelling but is certainly suggestive. There are also oblique aerial photos, probably from the 1980s, which show ridging with snow or water lying in the furrows, but as far as can be established the ridging has never been plotted, on the grounds of it being too minor an element in the landscape. On present evidence then the ridge and furrow component of the area is slight.

The Vale of Montgomery

For the heavily agriculturalised region, it might be tempting to think of the better quality farmlands around Montgomery as an area where ridging up the ground in medieval times was not practiced. Superficially little cultivation ridging has been recorded in the area. Two factors, however, require further consideration.

Firstly, past work by the late Phillip Barker threw up two places where early ridge and furrow could still be detected. In 1968, excavation revealed low ridge and furrow beneath the motte/bailey at Hen Domen. There is an interesting dichotomy here. Without Barker's detailed observations it is questionable whether this would be recognised as late Saxon ridge and furrow. LiDAR and presumably aerial photographs do show faint ridge and furrow in fields to the north of the motte and strip fields with fugitive ridging to the

east. Close to the motte the earthworks become so faint as to be imperceptible on LiDAR, but 1984 and later aerial photos are considerably more illuminating.

A second example where relative chronology seemed to play a part was at Dudston near Chirbury (Shropshire) where Barker argued that cultivation ridges ran under Offa's Dyke, which near this point formed the boundary between Wales and England. This caused more discussion than Hen Domen, possibly because the chronological implications were far-reaching for the development of farming practices where a mid-Saxon earthwork rather than an early Norman motte was claimed as a later landscape introduction. Detailed analysis based on ground survey by the English Royal Commission led to the rejection of this relative chronology by Everson though one senses that Barker in his rejoinder to Paul Everson's analysis was not entirely converted.

Fig 15 Ridge and furrow at Hen Domen (the motte is obscured by the plane's wing).

The second issue relates to the appearance of cultivation ridges in the grounds of Lymore Park on the edge of Montgomery. The establishment of the park cannot be pinpointed – it was perhaps in the 16th century, but its creation has fossilised a field system of reasonably typical medieval type, and there is no credible reason why this particular spread of relict ridges should be assumed to be an exceptional occurrence in Montgomery. Indeed, there is a second, rather similar survival in the parkland at Gunley Hall near Forden. Even Powis Castle on the edge of Welshpool may contribute to this argument for there is the fossilisation of a stray set of medieval ridges near the motte known as Ladies Mount.

Together the landscapes encompassing these gentry homes suggest that medieval ridge and furrow was much more prevalent in the Vale of Montgomery in the past, but now there are only rare survivals. It should also require us to re-evaluate many of those isolated blocks of ridging in this area, picked up by remote sensing techniques, rather than dismissing them out of hand as post-medieval intrusions on the landscape, though

every case needs to be considered on its own merits. Britnell and Martin list half a dozen places where they identified medieval ridge and furrow in the Vale of Montgomery historic landscape, LiDAR shows a single field containing ridging immediately to the south of Lower Munlyn motte in Forden, while on the opposite bank of the Severn only a couple of hundred metres away relict ridge and furrow was photographed by Chris Musson. Individually these might have been dismissed as post-medieval creations, but together they are more likely to be residual medieval cultivation remains.

The Walton Basin

The medieval history of this area would suggest that this could be a potentially significant area for ridge and furrow, and the prevalence of strip fields fossilising medieval open-field cultivation strengthens the case. Yet in the event very little has been recorded here and this in spite of the fact that the Trust are concurrently engaged in a project where past agrarian use of this low-lying basin is heavily represented. A few stray remnants of ridging have been observed around Evenjobb, Downton Farm and in the vicinity of New Radnor, but generally where ridges do occur they are faint and undiagnostic. This is not to say that ridging was absent in the past but its consistent omission in the basin is surprising.

The Wye and Usk Lowlands

The lowlands around the Wye and Usk valleys, and the Rhiangoll which virtually links them through the western fringes of the Black Mountains, are an obvious contender for ridge and furrow. A region penetrated and settled by the Anglo-Normans revealed in the wide spread of open fields, low-lying in comparison to many parts of the region, and with a mixed arable and pastoral farming regime in modern times, this is potentially a good area for ridge and furrow.

In practice very little survives (*pace* Britnell 2001, 30). A few small pockets in the Llynfi lowlands south of the Wye hint that in earlier times ridging may have been prevalent, but now much of it has been erased. Buried ridging has recently been suggested south of the church in Llanfilo village and patches of relict ridges can be seen on LiDAR near Talgarth. There are also, in keeping with other areas of east Wales, enough faint traces of ridging visible through the medium of remote sensing to be optimistic about the prevalence of a more widespread medieval practice. Yet what are generally missing are the contiguous furlongs suggestive of open fields later enclosed. The only place where slight traces remain in this locality is at Bronllys, where 'Colebrook common field', to the north-east of the village, retains two strips (now enclosed) about 180m long by 20m wide on the south-east of the A479 road. Both of these display an aratral curve, and while one became an orchard the other retained traces of ridging in 1995. The open field is depicted on a map of 1754 (National Library of Wales: Large MS maps Brec PFC 7) and remained unenclosed until 1863 (Powys County Archives: Bronllys Common Enclosure Award). What is more normally seen is the type of ridging that fits comfortably within an existing perimeter and for which therefore there is always a suspicion that the ground was ridged up after the enclosure of the field. In the generally narrower confines of the Usk valley, little ridging of any type is visible.

Scheduling ridge and furrow

English Heritage took a lead on ridge and furrow in the 1990s and in publishing David Hall's *Turning the Plough* produced one of the few reports that have examined the problems of managing and preserving ridge and furrow. This though had a firm analytical base resulting from many years of recording ridge and furrow by David Hall and others. No ridge and furrow was scheduled at the time as a result of this exercise, but the question of the on-going loss of ridge and furrow in England is one of the topics now being addressed by the National Heritage Protection Plan (Paul Stamper: pers. comm.).

No comparable work has occurred in Wales in the relatively limited areas where ridge and furrow is prevalent, and the approach adopted here has been a pragmatic one. Using the LiDAR imagery as a base, those tracts of land have been identified where a relatively coherent pattern of surviving ridge and furrow, spread over several modern fields, remains. These have then been assessed against two criteria, the relative crispness of the ridging as it appears on the images and the presence of an associated settlement site, usually a moat. Where both criteria are met, we believe an area, limited in size, may have scheduling potential.

Sources. Aris 1996; Barker and Lawson 1991, 61; Barker and Higham 2000; Britnell and Martin 1999, 21; Cadw 1999, 164; Dixon 1994; Dodgshon 1980; Everson 1991; Grant 2004; Hall 1982, Hall 1994, Hall 2001; Halliday 2003; Hankinson 1995a; Hankinson 1995b; Hartley 1984; Musson 2011, 92, 100; Sylvester 1969; White 1995; Williams 1997

Medieval upland ridge and furrow

There is no valid reason why cultivation ridges of medieval date shouldn't appear in the Welsh uplands and Stephen Briggs was firmly of the belief that medieval ploughing could have been widespread in Wales. Yet despite specifically focussed research by one of the writers over a number of years, it is very clear that medieval upland cultivation ridging is very uncommon.

In east Wales only three definite examples have been identified, all corroborated by the presence of medieval house sites, and all considered in *Lost Farmsteads* edited by Kate Roberts. Both to the north and the south of Lake Vyrnwy there are tracts of cultivation ridges, the former (at Tŷ-uchaf, also known misleadingly as Bryn-gwyn; 70648) with a ring of house platforms encompassing the fields, the latter associated with the Llanwddyn *hospitium*, a Knights Hospitallers' grange (93557; Fig 16). The picture at the *hospitium* is not entirely clear for there are cultivation ridges within its enclosure which display a faint but unmistakable curvature towards their terminals and where a medieval attribution can hardly be doubted, but there is further ridging immediately outside the enclosure to the east. From the air this appears remarkably straight, as well as being extensive, running right up to the encroachment farm of Pant-y-ffynnon, and thus raising the possibility that this is of post-medieval origin (for which see below). The third example comes from the Radnorshire commons, though Penybont Common is amongst the least elevated of the county's commons (Fig 5 above). Here several strip fields, ridged within, lie immediately above a group of platforms, a suggestive though not ineluctable relationship.

Moving from the probable to the possible, the strip fields that run up onto the common of Aberedw Hill (Rads) show quite clearly from the air and at least one of them and probably more displays faint furrows. Yet on the ground it is virtually impossible to

detect the banks defining the strip fields, let alone the furrows of an even slighter nature, and vertical aerial photography leans towards a post-medieval origin (see below). More ambiguous is the evidence of the cultivation ridges still visible both within the enclosed land and on the open common of Cefn Penagored in Llandrillo yn Edeirnion (105074). A decade and more ago the writer was tempted to view the ridges as relict traces of medieval date, surviving beyond the terminals of the medieval strip fields. I am now more inclined to the view that this is post-medieval upland ridging.

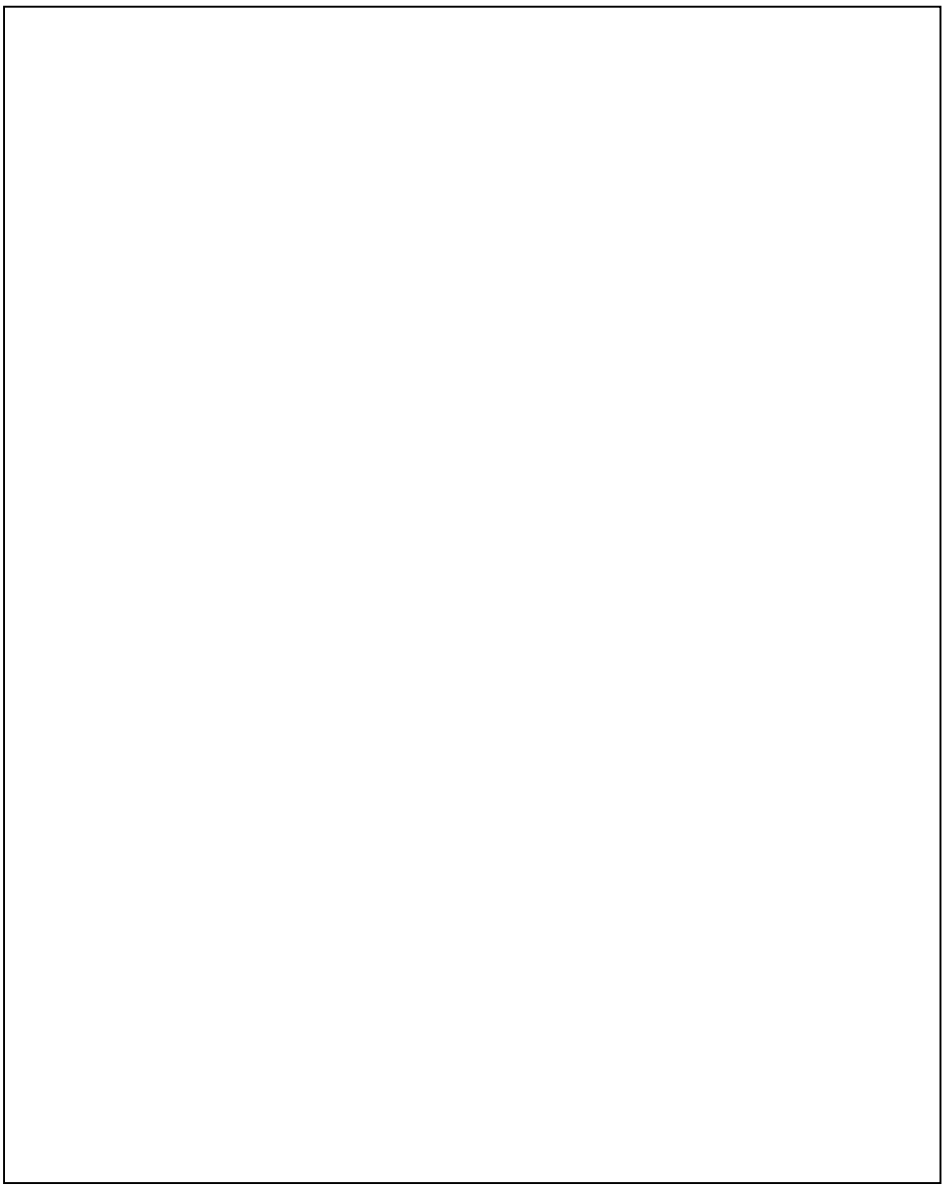


Fig 16 The *hospitium* at Llanwddyn showing ridge and furrow.

Other examples of medieval upland ridging are likely to come to light through examination of aerial photography, though it is assumed that they will be not be frequent nor extensive. All three of the known examples described above, the two from around Vyrnwy (Mg241 and Mg 251) and that on Penybont Common (Rd 157), are already scheduled, not because of the ridges specifically but because they form one element of a wider settlement picture where the settlement sites themselves form the focus.

Sources. Briggs 1985; Silvester 1997; Silvester 2000, fig 2; Silvester 2006a, 24

Post-medieval ridge and furrow

It is generally acknowledged by experts who have studied the subject that cultivation ridges could have been created at any time. For instance, steam ploughing, where a steam engine hauled a plough from one side of a field to another, produced ridges, consistently straight and running parallel to one of the boundaries of the field in which they lay. This is usually attributed to the 19th century in published works, but these do not consider whether such ridging could be earlier. David Hall has pointed out, based on his experience of post-enclosure practice in the English midlands that ridges were also produced after enclosure and are clearly distinguishable from their medieval counterparts in that they are straight, parallel to at least one modern field hedge, and usually wider, up to 13m. He also picked out a second type of ploughing technique that left ridges only a few feet wide, and cites an early 19th-century writer on Warwickshire who identified new ridges as being 'six feet' (i.e. less than 2m) wide.

Perhaps the most cogent explanation came from Chris Taylor talking of Clopton in Cambridgeshire in the 1970s. 'Ridge and furrow appears in each of these new fields [laid out in the seventeenth century]. Though superficially it is identical to ridge-and-furrow of the common fields, more careful examination reveals distinctive differences. The ridge-and-furrow is quite straight and fits the new seventeenth-century fields exactly. More important, at each there is a seven-metre-wide headland lying inside the boundary hedge onto which the ridge-and-furrow runs. That is, the ridge-and-furrow was formed after the establishment of the hedges, not before, as the headland had been built up by the plough turning inside the field. Thus we have ridge-and-furrow clearly dated to the post-medieval period, and having nothing whatsoever to do with the common-strip fields. This occurrence of late ridge-and-furrow in seventeenth- and eighteenth-century contexts within enclosed fields has been noted elsewhere. It takes careful examination to recognise it and distinguish it form the old varieties, but it is important that this should be done, otherwise a misleading impression of medieval agriculture will be gained with a consequent loss in knowledge of later agricultural practices'.

Richard Newman offers a different perspective, alluding to a number of processes, other than arable cultivation that might lead to the formation of ridge and furrow. Narrow ridges (or rig) might reflect a method of drainage, and has been identified in northern England and on Dartmoor, straight ridge and furrow was used foe tree-growing in orchards, and from his own research he argued that common meadows in Gloucestershire can exhibit sinuous ridging.

What impact do these views have on the present study. The likelihood is that a significant number of the current records in the HER could relate to these later, effectively post-medieval agrarian practices. But that number is unquantifiable.

By way of illustration, Fig 17 shows a field with cultivation ridges which one of the writers noted very recently in the gentle hills on the south side of the Severn valley east of Newtown. A search of the HER revealed that the ridge and furrow named as Cefn Caled was already recorded as PRN 4695, the free text stating that there were 'four fields of ridge and furrow; about 4m to 5m wide; aligned north-west to south-east'. The first and only record was in 1978, and all options were covered in the period box for it was

claimed as either medieval or post-medieval. Unfortunately there is no LiDAR coverage, but the evidence of two different sets of vertical aerial photography suggests that the ridges lie straight and parallel to the field boundaries to north-east and south-west. This then appears not to be classic, curving ridge and furrow but probably later ridging of post-medieval date, created after the fields were established. Yet there may always be a slight concern that this could be medieval ridging though atypical in form, or perhaps that medieval ridging was sufficiently distinctive to have influenced the layout of later fields. Furthermore there is the possibility too that ridging that was initiated in the medieval era continued in use and thus continued to form in later centuries.

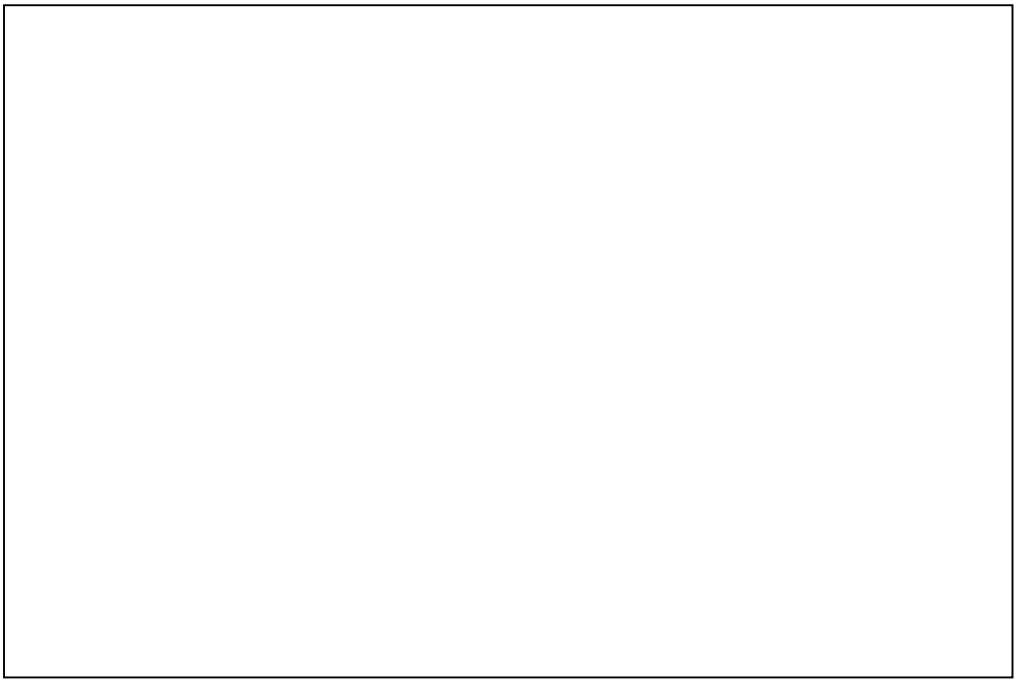


Fig 17 Cultivation ridges at Cefn Caled near Newtown © R J Silvester

As already stated in the general introduction above, a record-by-record analysis is not feasible, nor is it likely to be rewarding. All that can be done at present is to acknowledge that the attribution of ridge and furrow to a particular era, and indeed to a specific process, may not be straightforward, and that existing records need to be treated with caution.

Sources. Hall 1994, 98; Newman 2001, 107; Taylor 1975, 126

Post-medieval upland ridging and betting

Many of the upland commons of central Wales display evidence of what must have been short-lived cultivation in the form of low parallel ridges, a classic example being Coed-swydd, to the east of Llandrindod Wells where virtually the whole hill top seems to be swathed in ridging (Fig 18). And while the frequency of such tracts of ridging in central Wales is particularly noteworthy, their occurrence in other regions is only to be expected. This for instance could be the reason behind the otherwise remarkable claim by David Longley that around 10% of medieval house sites in Gwynedd are accompanied by ridge and furrow, particularly between 285 and 340m OD. This appears to be a remarkably high figure for a region where medieval ridging is not generally well-evidenced – it

would make much more sense if later ridging had been inadvertently incorporated into the calculation.

Fig 18 Coed Swydd in Radnorshire © Clwyd-Powys Archaeological Trust: 92-c-510

Examples of this type of ridging, also termed narrow-rig have found their way into the CPAT HER, and it is probable that some at least has been mistakenly attributed to the Middle Ages. There is little to be gained at this stage in working through the HER to isolate such examples.

There is a tendency to view this 'marginal' cultivation as a result of the expansion in arable farming that was encouraged by increasing grain prices during the Napoleonic Wars. That there was a significant increase in arable cultivation at the turn of the 19th century cannot be doubted. That all the physical traces of upland cultivation should then be linked to this perceived expansion is a conclusion that must be questioned. Obviously if this were the case, then the subject of upland cultivation would fall beyond the remit of this study, but in all likelihood it is an over-simplification of the actual situation.

Chris Taylor took a slightly broader view. Terming this type of ridging 'narrow rig', he suggested that it is always under 5m across, furrow to furrow, usually running in exactly straight lines, and always low, being only a few centimetres high. His belief was that where it could be dated it was invariably of the late 18th or early 19th century.

We would argue here that cultivation beyond the enclosed grounds could have taken place at any time and would have been dependent on local circumstances. Thus for Coed Swydd Chris Musson has argued with some justification that pillow mounds, probably though not certainly of 18th or 19th-century date, overlie the ridges on the hill, and the excavations of the warren at Y Foel in Montgomeryshire by one of the writers revealed ridges beneath mounds that were tentatively attributed to the second half of the 18th century.

Looking at upland cultivation from a different angle, there is a term – 'betting' – local to Radnorshire and parts of neighbouring Herefordshire, but which can also be found amongst the field names recorded in tithe and estate schedules from Brecknock and Glamorgan. Sir Joseph Bailey of Glanusk (Brecs) giving evidence to the Royal Commission on Land in 1895 noted that in the mid-19th century 'betting' had involved taking a skim of turf off the mountain with a breast plough, then taking two or three 'white' crops off, then let it go back to the mountain, a practice that had died out by the end of the century. Hughes writing in 1998 reported that turf pared from the surface of ground before ploughing was known as *betingo* [sic] to Daniel of Cynala on the edge of Mynydd Epynt But it was G. C. Lewis in 1839 who provided the fullest definition: *Bett – to pare the greensward with a breast-plough or betting iron, usually with a view to it being burnt and the ashes spread for manure. The sod when so pared is called 'the betting'. The same process is known in Devonshire and other parts of England as 'beat'.* A search of the National Library of Wales' records suggests that the name was in use from at least the later part of the 16th century.

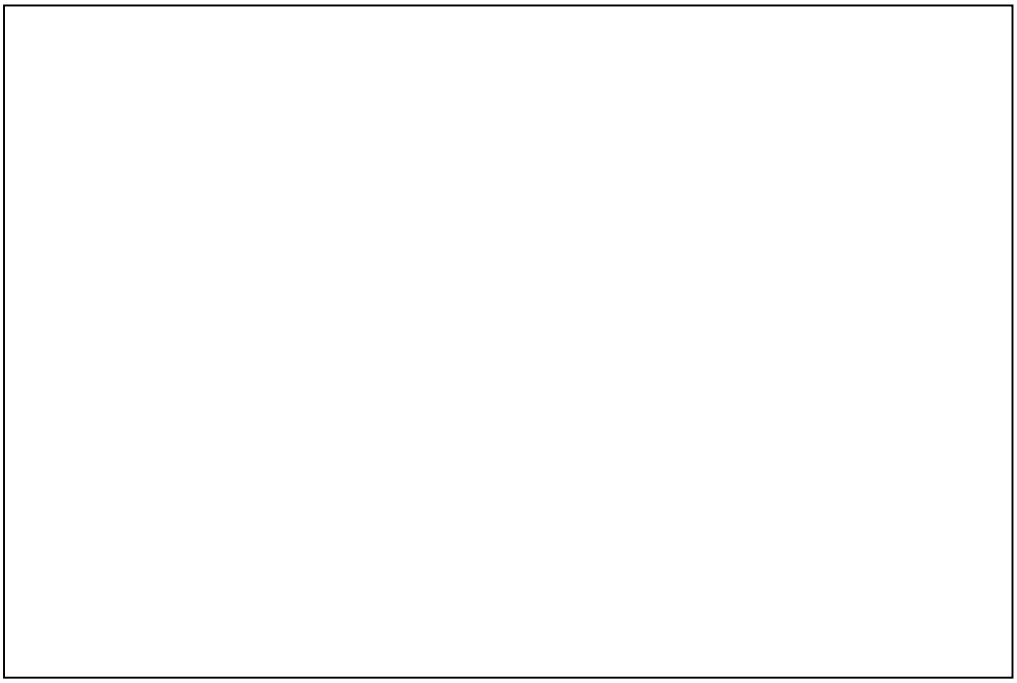


Fig 19 Allt Dolanog ridging © R J Silvester

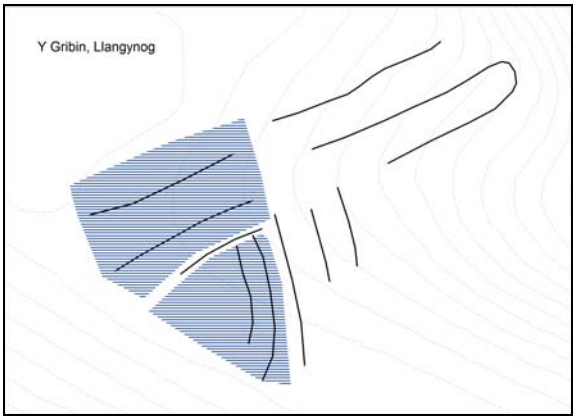
The physical evidence for ridging the ground surface, albeit slightly, in the unenclosed uplands, presumably to provide a better bed for the crop and perhaps to facilitate drainage, cannot be married directly to the agricultural practice of betting as described by 19th-century commentators. It seems likely on the common basis of their upland localities that they were associated, yet it would probably be inadvisable to use the term 'betting' to allude to the physical form of these upland ridges.

Sources. Britnell 2001, 133; Hughes 1998, 24; Lewis 1839, 12; Longley 2006, 68; Musson 1994, 152; Silvester 1995; Silvester manuscript notes; Taylor 1975, 143

Upland grooving

In Scotland a variant form of ridging has been identified where the ground is virtually flat, but the individual 'ridges' are defined by furrows or grooves, hence the Scottish label of 'broad grooving'.

Not surprisingly the term is not one that makes an appearance in the Welsh thesaurus of HER terms, and at present only one example has been noted, on Y Gribin above Llangynog in the central Cambrian Mountains. Here there are a series of lynchetted fields, in one case set at angles to the others (7005). Probably but not certainly associated with them is a small long house (35054). Within some of the fields but also apparently extending beyond them are parallel furrows in blocks (see fig 20). No date can be put on any of these features, but the furrows look to be late in the sequence and could fall outside the time range of this study. However, this is at best a surmise.



Figs 20 and 21

Above: the aerial photograph of Y Gribin near Llangynog (Monts), and below: a sketch of the lynchets and grooving (shaded). © Clwyd-Powys Archaeological Trust

Sources. Halliday 2003, 72; Silvester 2000, 56

Lazy beds

This is a colloquial term for cultivation ridges created by hand, otherwise known as spade-dug ridges. Adams' description of lazy beds, drawing on other sources, is as succinct as any: 'lazy beds are arable spade-built ridges 2 to 8 ft wide, divided by a furrow 1 to 3 ft wide, found in the outfields and planted with potatoes, and sometimes barley and cabbages'.

The concept of spade-digging is one that is elucidated most widely in Scotland and Ireland, though the evidence from the former appears to suggest that the use of the spade and the creation of raised beds was a late development, perhaps only in the 18th century. Because of its general utility, the terminology has, however, been adopted for other regions and to describe farming practice over a much longer timespan. Thus Hodges uses it of narrow ridges of late Roman date at Roystone Grange (Derbys) and Fowler points to early medieval (i.e pre-Conquest) lazy beds at Gwithian (Cornwall).

The term is thus one of convenience to describe small patches of cultivation ridges, often lying close to a farm or cottage, or perhaps in a rocky area where it is difficult to envisage the plough being practicable. They are much more likely to appear in the uplands than in the lowlands, partly as a response to the local environment, but partly too because they are likely to have been wiped away by later activity in the more heavily agriculturalised lowlands.

Lazy beds feature amongst the minor components that go to make up the farmholding. They are rarely mentioned let alone described in the published literature. And they are without doubt heavily under-represented in the HER. Only 7 sites are recorded as 'lazy beds' in the HER, and there are 24 sites which are ascribed to other types but have the term in their description, though some of these are duplicate references. The true total of records which denote the presence of lazy beds is 21, some of which occur as elements in relation to a more complex site. There are 3 sites recorded in Coflein as lazy beds, at least one of which (NPRN 242220) appears to be associated with a settlement site.

Some breakdown of the HER records is instructive in determining underlying trends. Of the total number, one third (7) were recorded as part of Tir Gofal farm surveys by a single fieldworker, while it seems that none of the other Tir Gofal surveys have led to recorded lazy beds. CPAT fieldworkers have also been responsible for the recording of 7 sites during area survey work in the uplands and 5 further sites during the Cadw-funded assessment of deserted rural settlements. Single records have come from a survey of the military range at Epynt and Historic Landscape assessment in the upper Hepste valley. At present, none of the known areas of lazy bed cultivation have been included in areas of statutory designation. The level of recording for lazy beds in the HER has varied widely, and it seems possible that sites which were formed by ploughing have been mistakenly included in this category, while authentic sites have been classified as ridge and furrow. The recording of dimensions is variable too, with 7 sites not having any dimensions recorded in the HER. The most often recorded feature of the ridging is the separation between individual ridges, which occurs in 11 cases out of the 21, while 5 out of 21 have their total area recorded; three have information on both area and separation. The largest area of lazy beds recorded in the HER covers 0.5ha, which seems excessive for spade-dug cultivation.

Sources: Adams 1976, 88; Fenton 1997, 285; Fowler 2002;

Meadows

Introduction to Water Meadows

Water meadows were areas of low-lying grassland which were regularly irrigated, artificially in order to stimulate the early growth of grass during the spring and in some places to improve the quality and quantity of the summer hay crop. The term 'water meadow' was thus in the past used in a rather specific way to denote a particular farming system purpose, but today it is used rather more loosely for any low-lying land producing hay.

The use of water meadows appears to have begun in Wessex around about 1600, continued through the 19th century when according to current wisdom it spread into the more upland regions of the United Kingdom and declined in the 20th century, so that it is practiced now in only a very few places.

Two types of systems are known. The simpler of the two, 'catchworks', involved the cutting of gullies or gutters along the contours and allowing water to overflow down the slope. More complex were 'bedworks' where blocks of ridges were cut on the valley floor and water was channelled from sluices on the river between the ridges. A third method is referred to in passing in some texts and is probably the simplest of all: it appears to be known as 'floating upwards' and involved damming a stream and allowing the water that is ponded to flow back over the meadowland.

Water meadows in Wales

It seems to be generally believed that it was in the later 18th and 19th centuries that water meadow flooding spread into Wales. The sources cited by recent writers on water meadows are all very late, for Pembrokeshire (1794) Breconshire (1795), and Carmarthenshire (1794 and 1796), all of them advocating what seems then to have been viewed as a new technique. But the practice seems to have caught on quickly and by the middle of the 19th century even the mountains and moors of Wales and Scotland were considered likely to benefit from the technique. Generally, though, as far as we can establish commentaries on water meadows in Wales are sparse.

Such a late date may seem surprising, for it was at the beginning of the 17th century that Rowland Vaughan, a landowner in the Golden Valley published details of watering meadows in Herefordshire, and one might have expected the practices that he lauded to have spread to adjacent areas of lowland Radnorshire. But if it did we have now no evidence, either physical or documentary.

It is likely that water meadows are grossly under-represented in the HER with only five records at present, all in the south of the region, the first four in Radnorshire, the fifth in Brecknock. The Castle Pren meadows (54098) lie in the Cwm Minwood valley near Dolau and Llanfihangel Rhydithon, Kinnerton water meadows (19349) have several catchwork leats which must post-date the medieval house platforms that lie between them, leats have recently been recognised at Hindwell (123537) close to the Roman fort and similar features have been recently reinterpreted as water meadows at Downton (33144), while at Llan-y-wern well-preserved earthworks (37022) were recognised in 1992. All five records result from ground observations with further aid from remote sensing techniques – aerial photography and Lidar - but no documentary or cartographic evidence has been

produced to support the identifications. Nevertheless, there is no reason to doubt the authenticity of any of the observations, and in at least one case – Hindwell – it was the landowner who drew attention to them.

To these can be added five examples recorded by the Royal Commission, at Abercynrig, Llanfrynach, Closcoed near Brecon and Penpont, Trallong, all in Brecknock; a solitary Montgomeryshire example by Nant Rhyd-y-moch in Guilsfield; and at Pengwern Vale by Llangollen in Denbighshire. With the exception of the Guilsfield example, all these records result from aerial observations by Toby Driver in recent years.

None of the examples above can be precisely dated and our earliest information for the entire region comes from cartographic sources. Maps dated to 1780/1 in the atlases of the Tredegar and Camden estates' holdings in Breconshire (*NLW/Tredegar 2; Kent Archives/CKS-U840/EW22*) show three places in the Usk Valley near Brecon and a fourth in one of its tributaries, the Ysgir Fawr, where a water channel stopping abruptly in a field is labelled in variant forms as 'stream for watering meadow'. Recently, a rather earlier reference has come to light by chance. In a set of estate maps for the Erddig estate compiled in 1715 (*Flintshire Record Office/E/2348*) the schedule of lands for the French Mill tenement refers to the 'floated field', today classed as a meadow lying beside the Clywedog in Erddig Country Park (see Gazetteer: Part 2).

Neither the thin documentary evidence nor the infrequent field observations disrupt the traditional view that water meadows in Wales are a late feature of the landscape, a late 18th-century starting date being generally agreed, although the evidence in the previous paragraph should be noted as a suggestion that there is at least one site with an earlier origin. As such most fall outside the time limits of this survey, yet even if the chronology was relevant, it is difficult to see how a system, regardless of its condition, might qualify for statutory protection.

Sources: Cook and Williamson 2007; Cutting and Cummings 1999; Jones and Owen 1996

Commons

The common pastures

Complementing the fields were the areas that had never been enclosed, yet provided vital resources for the majority of the communities in Wales: pasture or rough grazing for stock, raw materials for the home and farm, foodstuffs for man and beast. There is a tendency to think of these commons and wastes in terms of the extensive tracts of upland which remain open today, or were excised from the landscape by act of parliament during the 19th century. Because of their sheer scale, it is these vast upland commons that are prominent in commentaries on the commons such as Hoskins and Stamp in their major study of 1963, and dominate maps of open landscape in counties such as Radnorshire and Breconshire.

But in focusing on these vast tracts, we risk overlooking the numerous commons that existed at lower altitudes, in parishes that today are almost entirely enclosed but in the 18th as well as in previous centuries had extensive areas of open land. Two examples are displayed here, both reflecting current work in progress. Fig 22 shows the commons that lay within a few miles of Welshpool (Monts) in the 18th century. Even on the flood plain

of the Severn there were some unenclosed commons, but the majority lay in an arc around the town, reaching almost to its suburban limits. The picture even then is incomplete. It is based solely on the existence of several groups of maps depicting the estates of Lord Powis during the second half of the 18th century, compiled not long before many of these commons were enclosed. Estates in other ownerships were not mapped so comprehensively (or else the maps have not survived) and it can reasonably be assumed that other commons also existed within the border of the depicted area.

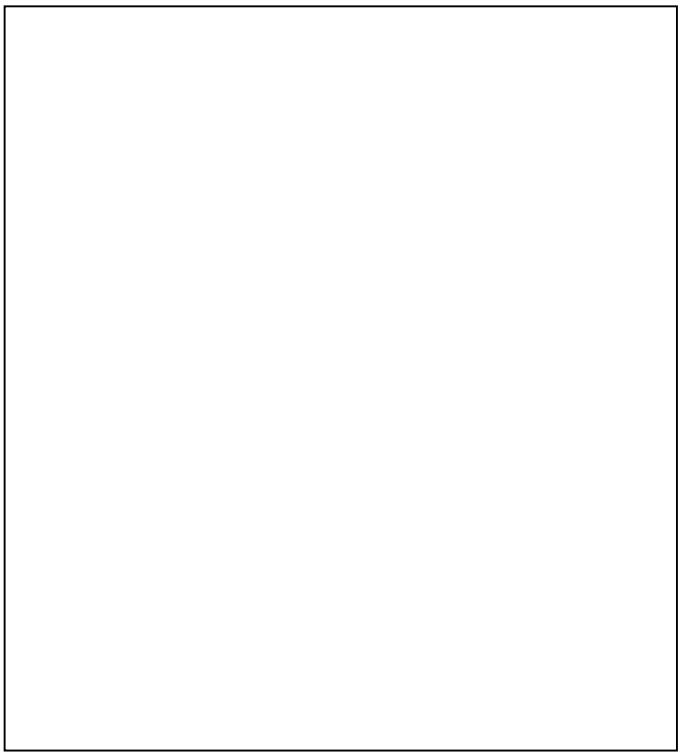


Fig 22 The commons around Welshpool in the 18th century © R J Silvester

The second example (Fig 23) comes from the limestone plateau of Flintshire and depicts the commons in Caerwys, Whitford and neighbouring Ysceifiog. Again the picture is not necessarily a complete one, dependent as it is on sets of maps from the 1740s prepared for the Mostyn and Grosvenor estates which covered much though not all of the area. Caerwys is shown in brown to the south with Hen Caerwys and then Whitford further north.

Other examples come from more focussed studies such as the Pratts' study of Penley in Wrexham Maelor, or the writer's work on Forden, Montgomeryshire, though these geographically restricted studies tend to mask the wider picture. What is clear is that unenclosed tracts of common were commonplace in 17th- and 18th-century Wales and reflected a situation that had been current in the Middle Ages. Many of the areas were labelled as commons, but the term 'green' was also used. In practice they meant much the same thing though greens tend to be closer to settlements and seem to be a feature of the Englishries rather than the Welshries. However, as far as can be established there is no specific criterion that determines when a common should be classed as a green, and in eastern England, which reveals some parallels with Wales when it comes to areas of unenclosed land, the tem 'green ' is applied to smaller areas as Williamson has shown.

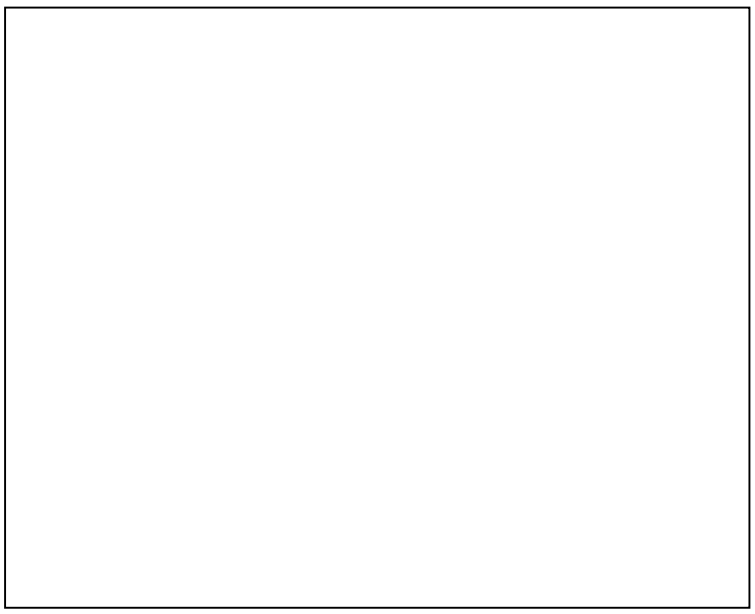


Fig 23 The commons around Caerwys in the 18th century © R J Silvester

Nearly sixty 'green' names are to be found on the large-scale first edition Ordnance Survey maps, including quite well-known ones such as Denbigh Green (still represented by a village sign on the road from Denbigh to St Asaph) and Horseman's Green in Wrexham Maelor with its moated site, the names seemingly surviving better than the greens themselves. Commons are rather less easy to tie down. The Ordnance Survey surveyors' drawings are useful in some regions, but not all, and their compilation came after many commons had been enclosed. Similarly some of the smaller commons may have succumbed to enclosure under an act of parliament, and details will be found in the enclosure award and its supporting map, but others will have resulted from a landowner's determination to enclose a common unilaterally.

Finally, it is inevitable that neither greens nor commons will feature in the HER. They are a form of land use, more obvious on the historic map than on the ground, and their attributes do not readily lend themselves to classification in cultural heritage asset terms.

Common meadows and woods

The open fields were not the only form of land utilisation where adjacent strips or blocks were worked by different farmers. Both meadowland and woodland might be held in common, though whether either was particularly prevalent in a region such as east Wales, is only likely to be resolved by a close study of the specialist literature, something that is beyond the remit of this project.

Meadows Meadowland in some areas at least was more valuable (presumably because of its scarcity?) than arable, and might be divided up into strips known as doles. Lammas Meadows as they are called survive in around twenty places in the UK, the Lugg meadows in Hereford being the largest and most important. Whether any remain in Wales has not been established, but Dorothy Sylvester records common meadows in Glasbury and Norton (Rads), Berriew and Llandrinio (Monts), Bangor (Flints), and Derwen and perhaps Holt (Denbs). To this list can be added the survival of a common

meadow at Castle Caereinion (Monts) into the middle of the 18th century, a rare cartographic depiction.

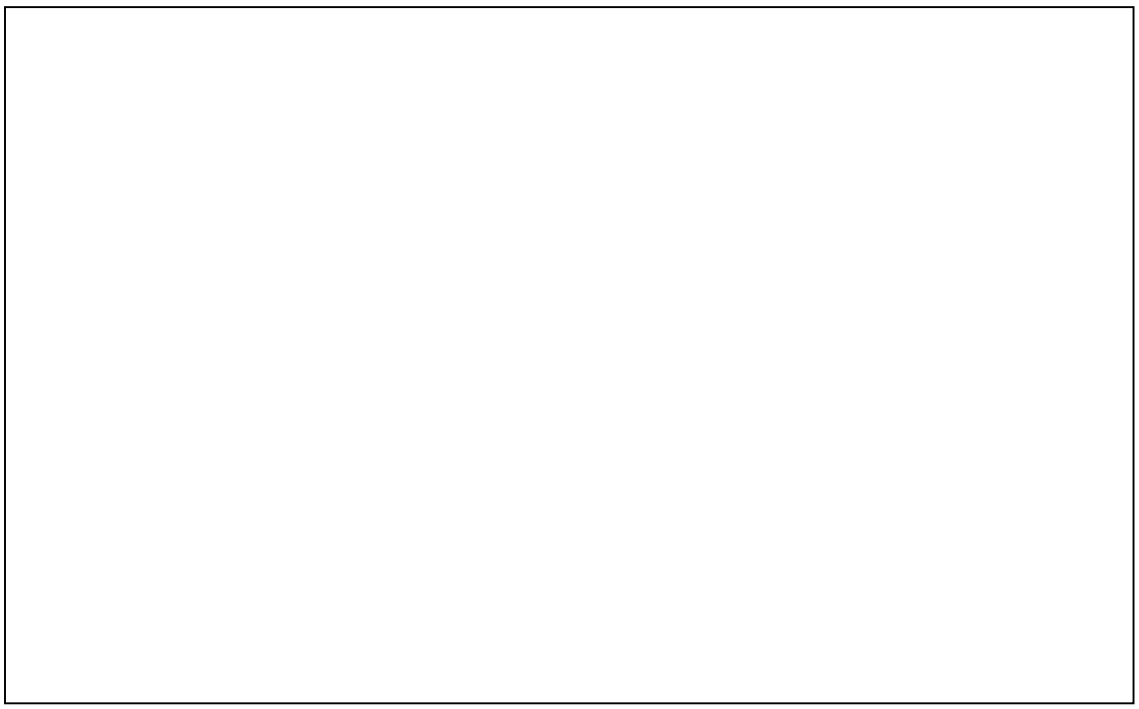


Fig 24. Common meadow at Castle Caereinion, in 1747.

Woods The only common wood that has come to our attention, though it is hardly likely to have been the only one in the region, was at Holt (Denbs), a short piece in a c.1994 newsletter circulated by the Clwyd Archaeology Service being virtually the only published statement on the subject. Now managed as allotments by the local town trust, the wood was used by the town's burgesses who had the rights to take timber and wood for fuel. From this it might be inferred that the wood was used in common in the Middle Ages, but the earliest reference seems to come in 1628 and even this may not have named the wood. Blocks of the woodland were enclosed at least from the 17th century and by 1843 it had been reduced to 204 acres. Five years later it was formally enclosed.

Sources: Hoskins and Stamp 1963; Pratt and Pratt 2000; Silvester 2007; Sylvester 1969; Williamson 2003

Farmholdings

Introduction

The number of farmholdings that currently function or have functioned in the past within east Wales must run to many thousands. For the former, those that are in operation at present, listing provides a statutory mechanism for conserving the better examples, whether they be the farmhouses or the ancillary buildings such as barns, cowhouses and the like. For the latter where the buildings have been abandoned and have over the centuries been reduced to low ruins or earthworks, scheduling provides a means of protection as long as the remains are sufficiently old and are in good condition. The Cadw-sponsored deserted rural settlement survey, which commenced in 1996, was completed in 2001 and culminated in the publication of *Caring for Lost Farmsteads* in 2002 and *Lost Farmsteads. Deserted Rural Settlements in Wales* (edited by Kate Roberts) in 2006. This focused on medieval and early post-medieval farming settlements and resulted in substantial numbers of new schedulings, as well as much new data that was integrated into the HER. For this reason if for no other, a fresh study of farmholdings from the period between 1100 and 1750 is unwarranted, yet at the same time it needs to be acknowledged that farmsteads should form an integral part of a SEP of farms and farming.

Our approach here in order to balance these two seemingly conflicting objectives has been to examine those deserted rural settlements of medieval and later date that are already scheduled and determine whether the scheduled areas (as defined by the GIS polygons made available by Cadw) take in a sufficient amount of the immediately surrounding ground and the ancillary elements it supports to be able to claim with some justification that it is not just the farmhouse but the farmholding that is adequately protected.

In addition two farm complexes that we have encountered in conducting other projects since 2001 have been considered in more detail.

Assessment of already scheduled deserted rural settlements

The range of features which denote that a settlement was engaged in agrarian or agricultural activity varies significantly depending on the type of activity that was carried out. It might include such elements as stock enclosures and pens, closes and gardens, fields and the cultivation traces that go with them, and crop storage structures, a point emphasised in the *Caring for Lost Farmsteads* booklet. To provide a comprehensive picture of any individual settlement or farm site, it is important that all these features are taken into consideration in combination with the main focus of settlement, which of course is the dwelling.

For this study relevant sites were selected from the complete schedule and the surroundings of each designated area were examined using the existing HER record, modern vertical aerial photography, and LiDAR, where this was available. The bottom line was to determine whether the ancillary components of the farmholding were under-represented in the schedule.

In some instances it became clear that features which might be considered to represent contemporary activity had not been included in the original designation, and in those

cases it seems relevant at least to consider the extension of the designated area to include these features. An example is Ffynnon yr Oerfa deserted farmstead on Mynydd Epynt (SAM BR223; SN864332), where the existing designation embraces the curtilage of an upland farmstead, including a number of former buildings and embanked stock enclosures. But what appears to have been overlooked in the scheduling process is an area of narrow ridging, the ridges averaging 3m in individual width, which covers an area of about 200m north-east/south-west by 70m north-west/south-east and is seemingly bounded by an enclosure bank. There are similarities with the Nant y Foel Long Hut, Pentrefoelas (SAM DE298; SH875553), where the designated zone covers a settlement site lying at the heart of an area of (undesignated) ridging, the whole contained within a larger sub-oval enclosure extending over some 27ha.

With some other farmholdings, the omission of relevant features from the designated area may have been an accidental omission. This seems to have been the case at the medieval settlement on Penybont Common, Radnorshire (RD157; SO126642), where a tract of cultivation ridges, similar in character to those already designated, was not included.

The case is rather different with those farms where an extensive area of fields associated with the farm buildings can be identified from early Ordnance Survey mapping. This is the case with Llwyn-on Farmstead, Llanfrynach (BR240; SO030172), for example, where the scheduled area of the farm is 0.6ha in extent, but its fields spread over 9.4ha. Though it is possible to identify the full extent of these fields, the value of protecting by statute many (or all) of the surviving boundaries in the absence of other contemporary features is questionable. More satisfactory would be their careful depiction in GIS format in the HER, suitably annotated and sourced, to allow their preservation by record. There are too farm sites that lie within fields which clearly represent a completely different phase of farming activity – those fields have not been deemed worthy of designation here.

Of 73 scheduled sites that were examined, some 26 were found to have elements, potentially integrally related and contemporary, lying outside the existing designated area. It is not proposed that every one of these scheduled areas be revised and enlarged to encompass additional features as some of the evidence is understandably slight, but a selection of the most coherent groupings has been made to provide a representative sample. Seven sites were selected, the total of the existing designated areas being 11.30ha. If the total hectarage was increased to 32.39ha this would ensure that the associated features are similarly protected. Of the seven, six are on open moorland.

As an aside the geographical distribution of designated farms was examined through an analysis based on the old (pre-1974) counties. The numbers of medieval and post-medieval farming sites designated varies widely from county to county, with a marked concentration in the two southern counties, Breconshire (29) and Radnorshire (30), perhaps not surprising in view of the topography of the countryside and the amount of unenclosed upland which has nevertheless been exploited in the past. The relative sparsity of similar sites in Montgomeryshire with only a single designation is very obvious, suggesting a lacuna in the spread of designations that ought to be addressed. The numbers for Flintshire (3) and Denbighshire (10) are relatively small but can explained by the different natural landscapes of these two counties (and this is particularly true for Flintshire, a county very poorly represented by the medieval rural settlement record) which may mean that there is a smaller reservoir of relevant farms from which a selection can be made.

Assessment of scheduled moated sites

The same methods were adopted for scheduled moated sites, but with limited results. Of eleven scheduled moats in eastern Flintshire and Wrexham Maelor, only one – Green Lane Farm in Broughton (FL176; SJ333638) – revealed evidence of adjoining features that might be contemporary. A group of small pockets of cultivation ridges were observed on the LiDAR coverage to the east of the designated area; these were on two alignments and the ridges displayed an average width of around 10m. Possibly the rest of the field to the east of the moat – some is already included within the designated area – could be added to the existing scheduling to preserve what appear to be traces of contemporary arable practice.

Cwm y Saeson, near Llangurig (SN 927 770)

A single day's fieldwork was carried out around the upper reaches of Cwm y Saeson, about 3km south-south-east of Llangurig in western Powys. The aim was to examine an area of upland ridging that had been identified on an RCAHMW aerial photograph (935123-41) taken in 1993 and to assess its relationship, if any, with at least two enclosures, also showing on the photograph. While there, the opportunity was taken to broaden the search area, fully record the cultivation traces and seek any further associated settlement.

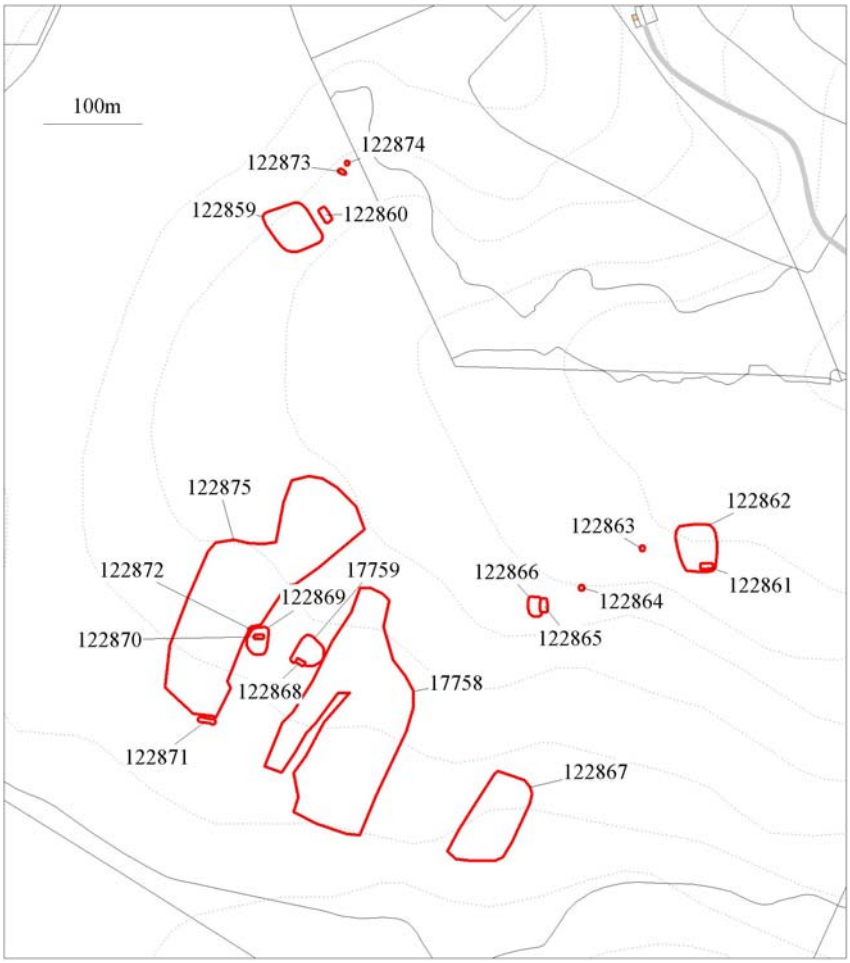


Fig 25 Archaeological features at Cwm y Saeson

Three discrete areas of ridging were identified, their morphology unusual in that they appeared to consist of short lengths of grouped ridges, in blocks between 30m and 45m long. Possibly the term 'furrowing' might be more appropriate given the appearance of the cultivation traces. The widths between furrows were also variable with individual furrows having a separation at one end of 3m, extending to 5m at the opposite end in one example, although they more commonly displayed widths in the order of 4m to 6m. The implication could be that these were created by hand, and they certainly represent small-scale attempts at crop growing.

In all there were five settlement sites with associated enclosures around the head of the valley, and at least two of these seemed to be closely associated with the areas of ridging. The dwellings here were a mix of platforms and long huts, although the latter were often partially platformed and their nature suggests they probably represent the remains of rectilinear sleeper walls on which a timber building would have been constructed; they lie at an altitude of about 400m OD and it may be that they were only occupied during the summer months. Examination of the physical remains suggested the repeated use of the same methods of construction and this was even more noticeable with the enclosures, which commonly displayed boundaries comprising a bank with an internal ditch or a scarp facing into the interior of the enclosure; these methods are not commonly encountered in this locality but are paralleled at Hafod y Nant Craifolen, Mynydd Hiraethog, where enclosures of this morphology occur in association with summer dwellings dated to the 15th-16th centuries (Allen 1993, 176). The morphological form of the enclosures were somewhat variable, from D-shaped to sub-square, and ranged from 0.02ha to 0.17ha in area.

Fig 26 Cwm y Saeson. © Crown copyright

Some six possible root vegetable clamps were identified in relatively close proximity to the settlements, so it is tempting to see the ridging as indicative of vegetable growing,

although the possibility remains that some of these features could have performed different functions. The small-scale arable activity witnessed here presumably provided a useful adjunct to stock grazing.

The features identified at Cwm y Saeson are listed in Part 3 of the Gazetteer at the end of this report.

Partrishow Common (SO275217)
There are two adjacent earthwork platforms here, which lie on the eastern slopes of Partrishow Hill in the south-eastern part of Breconshire, some 6km east-north-east of the town of Crickhowell. They represent the site of a dwelling, perhaps with an adjacent barn or similar structure, and have been designated as a scheduled ancient monument, covering a rectangular area of 0.08ha.

A combination of fieldwork and examination of the modern vertical aerial photography coverage shows that the platforms lie immediately to the east of a large group of abandoned fields, within which further platforms, an abandoned farmstead and a long hut are located. There is no definite evidence of cultivation on the steep south-east-facing slope, although it seems reasonable to expect some slight traces. There are other dwellings within the enclosed ground to the south and east, and it seems possible that this may have been some form of dispersed hamlet bordering the unenclosed common. In subsequent years the edge of enclosure has retreated, such that the platforms and other features now lie on the common.

Drying and Storage

Corn-drying kilns

Origins
The drying of corn to enable its long-term storage and milling into flour is an activity that appears to have been common throughout the medieval and post-medieval periods. Kilns formed a necessary part of the harvesting process in areas where the weather was generally wetter and/or time was not available for the crop to ripen naturally owing to a bad season or longer-term changes in climate. Any moisture in corn at the time of its storage promotes fungal growth which can both reduce yield and lead to disease in both humans and animals. Small-scale drying may not have required access to a kiln. Alexander Fenton, referring to Scotland, mentioned a process known as *graddaning*, where ears of oats were set on fire and burned off their stalks, and he also describes other simple drying methods, such as by the use of hot stones in pots, or in nets over peat fires.

The use of a kiln for drying grain certainly goes back into the prehistoric era elsewhere in the British Isles, while in the study area, early evidence of corn-drying has been provided by a group of nine kilns or ovens used for drying cereals which were uncovered at Sarn-y-bryn-caled near Welshpool in 1998-9 and radiocarbon-dated to the 6th and 7th centuries AD. The legal situation regarding the worth of, and procedures relating to, kilns is specified in the Welsh laws, where the kiln or kiln-house was one of the nine buildings specified for the king's court. Lawrence Butler has remarked that 'the kiln is the most intriguing structure of all the associated agrarian and industrial buildings [of the court]. It

was so necessary a feature that it was considered appropriate to every rank of society as in the table of compensations….. It was also a perquisite that should not be erected illegally'. The compilation of the laws is attributed to Hywel Dda in the 10th century, although the extant texts date to the period between the early 13th and early 16th centuries. It is the ubiquity of the kiln implied in the laws that makes the site type so significant.

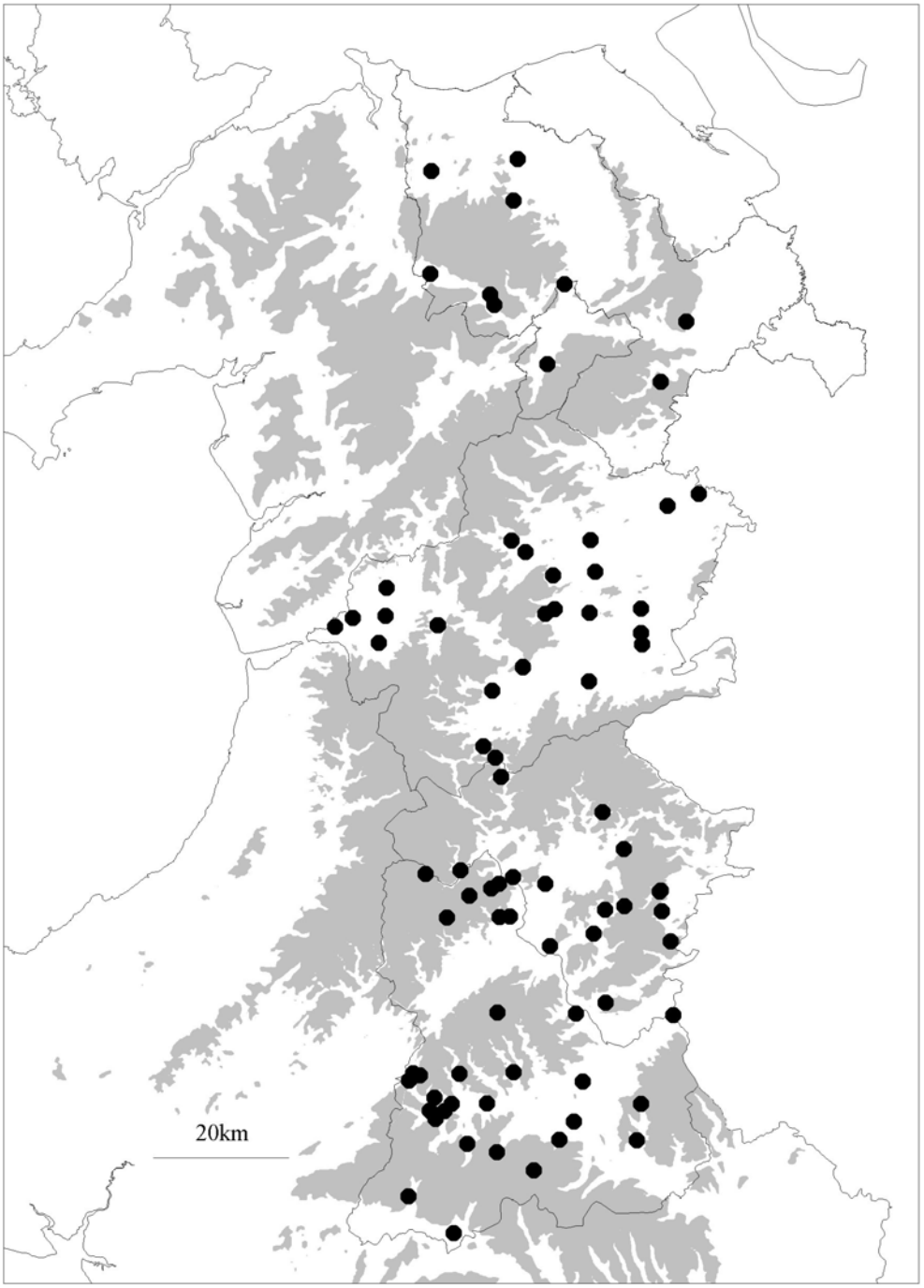


Fig 27 Recorded corn-drying kilns in east Wales

Siting and structure

Various types of corn-drying kilns can be identified. The earliest tend to be associated with farm holdings, lying either in close proximity to the farmhouse or in a convenient place within the farmland. There are few cartographic sources which provide detailed evidence of their siting in the study area, but Edward Thomas' 18th-century maps of the Camden and Vernon estates in Breconshire (see discussion below) demonstrate that farms in a district would have had access to a kiln for their own use at that time, and there is little doubt that this would have been an arrangement of some antiquity. Evidence from across the country suggests that the significance of the field kiln waned during the 18th century, perhaps largely disappearing by the end of the century, supplanted by the custom of building kilns on the sites of water-powered corn mills, a movement which Brunskill attributes to the 18th and 19th centuries, and is supported by the Welsh evidence. The single kiln not associated with a farm on Thomas' maps lies a short distance from a 'grist mill', and it can be noted too that a number of those by farms are termed 'an old oat kiln', implying that practices were changing by the late 18th century. A reason for the movement from farm to mill is posited by Harvey who suggests that improved communications weakened the need for self-sufficiency and led farmers in more remote and wet locations 'to abandon the growing of cereals and with it the kilns required for drying their crops'.

Drying kilns have also been found within villages and towns, examples having been archaeologically examined within the medieval towns of Hay-on-Wye, New Radnor and Newtown. Of the two stone-built kilns excavated at New Radnor, one was associated with pottery of the 14th to 16th centuries, while a 15th-century date of construction was posited for the second, discovered during excavations in 1991 at The Porth, in the western part of the town. At Newtown, directly associated material of 13th- to 14th-century date was recovered, while the five kilns excavated at Hay-on-Wye were dated to the period between 1250 and 1350 through the associated pottery assemblage.

Fig 28 The corn drying kiln at The Porth, New Radnor. © CPAT: CS 91/33/499

The reason for the construction of these kilns in an urban context needs further research, but the second New Radnor example hints at a tendency for communal drying as it was attached to an ironworking smithy and lay within a group of structures whose use was thought by the excavator to have been potentially shared by the community. Evidence for the communal use of kilns is provided in the Welsh laws, where it is stated 'Whosoever leaves a fire in a kiln, though it be with another that it burns, if he does not take security from him who dries in it after him, let him pay one-third of the act of that fire'.

Brunskill in 1987 provided an overview of the general typology of drying kilns, here presented in amended form (and see also below):

> a: At their simplest, kilns can be little more than a bowl-shaped sunken area accessed by a flue and placed in the bank of a field. These were often lined with stone and placed near a stream to ensure that a supply of water was available if the grain caught fire. Owen mentions that it was 'common to find primitive kilns built in the corner of a field, usually with a channel of several feet or yards to separate the grain from the fire providing the heat, so as to prevent a conflagration'.
>
> b: A rather more permanent structure might be incorporated within the farmhouse, to allow for the drying of small quantities of grain. It might also have been used for other, similar purposes.
>
> c: The purpose-built permanent kiln would generally be constructed from stone, if available, and comprised a stokehole connected by a flue to the drying chamber, where hot air from the fire could be directed through a platform on which the damp grain was spread, the whole probably within a building but at least protected by a roof. Where a relationship can be confirmed the earlier kilns were often placed a short distance away from nearby buildings, to prevent the spread of fire, but this seems to have been less important in later years, largely owing to a change in materials. Initially the grain was probably placed on a textile blanket or sheaves of straw supported on stone or wooden slats, but in later years the platform would be far more fire-resistant, being constructed from perforated ceramic tiles carried on iron joists and the fire was more likely to have been placed directly beneath the drying platform. The permanent kiln was effectively a separate building, something which, again, is noted in the Welsh laws, where the values of different kilns are specified, using the term 'when there is a legal house over it'. Evidence of roofing material was recovered from the second New Radnor example, which contained a large quantity of stone roof tiles, thought to denote its collapse at or after the point of becoming disused.

Extant/excavated examples

Unsurprisingly, all of the kilns found within medieval towns have been revealed by excavations in advance of urban developments, but not all of the excavated examples have come to light in this way. As recently as 2008-9, a drying kiln (PRN 122829) directly associated with a late medieval or early post-medieval farmstead was revealed by excavation at Llanelwedd (Rads), in advance of quarrying. Its construction was unusual in that a bread oven had been placed on top of the flue that linked the stokehole and drying chamber.

Fig 29 The corn drying kiln at Llanelwedd, Radnorshire. © CPAT: 2696-0782

Other kilns used for corn-drying revealed by excavation include one near Llandysilio church, where excavations in advance of road improvements at Four Crosses uncovered a small, pear-shaped, corn-drying kiln, measuring 3.5m by 1.55m overall, with a drying chamber at the north-north-eastern end, although there was no evidence for any roofed structure covering it. The base of the flue and drying chamber contained significant quantities of charred grain, which produced radiocarbon dates indicating a period of use between cal. AD 1450-1640. In this case the kiln was sited near a rectangular post-built structure, measuring 9m north-north-west/south-south-east by 5m and founded on three pairs of posts. The post-holes contained angular packing stones which had previously been burnt and fire-cracked as well as charcoal which provided radiocarbon dates indicating a period of use between cal. AD 1460-1640, thereby suggesting that the structure was contemporary with the corn-drying kiln. The most plausible explanation is that this was a barn used for storing the grain. A similar date was obtained from a kiln excavated within the Iron Age enclosure at Collfryn (Monts), where charcoal in the kiln was dated to AD 1470 $\pm$ 55.

An illuminating example of a drying kiln associated with a water mill was provided by the recent Mills and Milling scheduling enhancement programme carried out by CPAT for Cadw. Melin Hafod, near Henllan (Denbs) was not previously recorded in the HER but the interest here is the kiln which was sited about 30m away and was a well-preserved rectangular stone structure containing the fire on a lower level with a brick-built funnel above and retaining evidence of the iron supports and ventilated tiles that had formed the drying floor.

Name	PRN	NGR	Date	Notes
Collfryn	50538	SJ22191737	1470 (+/-55) RC date	Circular dry-stone built corn drying kiln with flue built into the innermost rampart of Iron Age enclosure. Found during excavation of enclosure.
Hay-on-Wye (Heol-y-dwr)	122856	SO2311942547	1250-1350	In the medieval town. Group of 5 corn-drying kilns excavated in advance of development
Llandysilio	122857	SJ2683719164	1450-1640 RC date	Associated with a post-built building of the same date. Excavated in advance of road
Llanelwedd	122829	SO0497452672	Late medieval or early post-medieval	Directly associated with a farm of the same date. Excavated in advance of quarrying
New Radnor (The Porth)	17409	SO21056075	Built 15th century, disused by late 16th century (RC date)	In the medieval town. Excavated in advance of a proposed development
New Radnor (Hall St)	17483	SO21246084	14th-16th century	In the medieval town. Excavated in advance of development.
Newtown (Wesley Place)	34979	SO10729169	13th-14th century ?	In the medieval town. Excavated in advance of development.
Sarn-y-bryn-caled	43134	SJ22020504	Early Medieval	A group of 9 cereal drying kilns excavated in advance of road construction

Table 4. Excavated corn-drying kilns in the study area

Assessment of the existing record

Three drying kilns lie within scheduled areas at present, although the figure is misleading as two, at Nant Chwefri (16512) on Abergwesyn Common (Brecs) and at Collfryn (50538), in the parish of Llansantffraid-ym-Mechain (Monts), have been included within larger areas (SAMs BR215 and MG200 respectively) containing a complex of sites. The third, at Cwmfforest (Brecs, SAM BR007) in the upper reaches of the Rhiangoll valley south of Talgarth, appears to have been scheduled in error as a chambered tomb, as two later sources clearly regarded this as a corn-drying kiln. At least five further kilns are either listed individually or as part of a building complex, namely those at Llifior Mill (8546) near Berriew, Bontdolgadfan (32607) near Llanbrynmair (both Monts), Melin y Bwlch (37089) near Cerrigudrudion (Denbs), Meiarth Mill (118681) near Gwyddelwern, and Melin-y-wig (25667) near Bettws Gwerfil Goch, (both Merioneths) which is described as a two-storied oat kiln. To these can be added Upper Llanddewi (36611), near Painscastle where later modifications to the 16th-century house included the use of part of the chamber over the passage bay as a corn-drying kiln.

A relatively small number of simple field kilns are recorded in the HER, though these must have been commonplace in the landscape, and it is far more common to find indicative place-names in the HER collected from sources such as the Tithe survey of the mid-19th century. Not all of these cases, where the term 'kiln' or its Welsh equivalent 'odyn' were used, will relate to a drying kiln, particularly in limestone districts, where it could infer the presence of a structure used to burn lime for fertilising the land, and in

other areas where it may denote a structure used in brick-making. However, these industries can be fairly readily defined geographically as they depend on suitable natural deposits or on transport links, and it is reasonable to assume that in most farming districts the main use of the term would have been to signify that this was a location in which corn-drying either was taking place, or where its use was remembered.

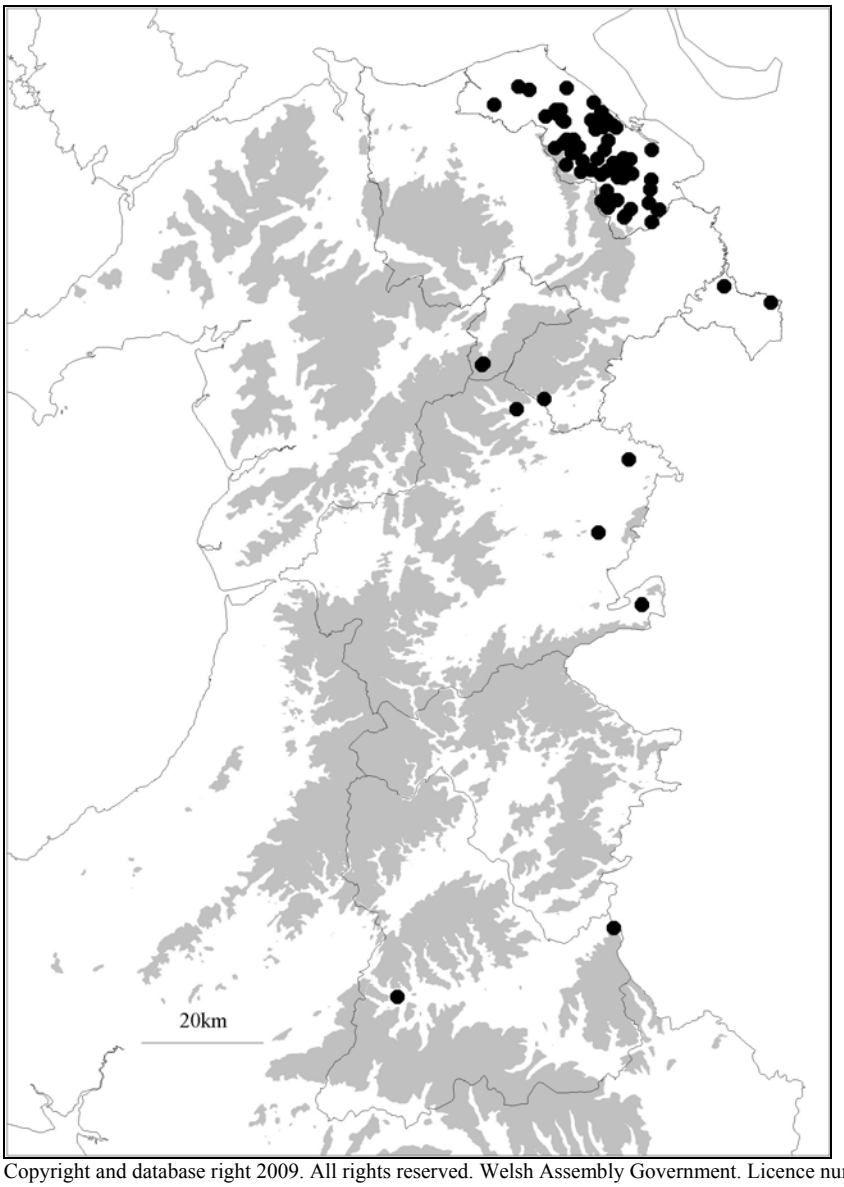


Fig 30 Kiln field-names and place-names in the HER

Four main types of drying kilns can be identified, largely via their associations; a) the 'field kiln' of simple design, often set in the embankment of a field or any other convenient earthwork; b) the 'farm kiln', in close proximity to a farmstead and generally of more complex appearance; c) the 'town kiln', which can be taken to be an urban version of that found at farms and probably designed for community use; and d) the 'mill kiln', a later version which was erected at a water mill from the 18th century onwards.

The HER has no individual records of drying kilns at the larger medieval sites such as castles and abbeys, though it seems likely that they would have been present, and there is

certainly English evidence to support the contention. Steane mentions excavations at Stamford Castle (Lincs), which revealed corn-drying kilns and bake ovens. It may be that evidence is not differentiated in some records.

Field kilns	Farm kilns	Town kilns	Mill kilns	Kiln place-names
11	23	8 (5 at Hay-on-Wye)	45	63

Table 5. Kilns by type

Examination of the HER and the National Monument Record via Coflein using these simple divisions provides the evidence given in the preceding table, although it should be noted that the numbers of 'farm kilns' were nearly doubled by the recording of those depicted on Thomas' maps from the late 18th century as part of this study.

Clearly, a large part of the existing record is made up of the easily traced kilns built at or near water mills, but this must be a distorted picture as this later trend was one of centralisation of the drying process to a few sites from its original dispersed distribution in the farms and fields of the medieval and post-medieval periods. The few sites which are known can represent only a small fraction of the total number that were constructed, something which is hinted at by the large number of place-names that have been recorded as evidence from cartographic and other sources in the past. There are other clues that suggest significant under-recording of corn-drying kilns, such as the lack of any confirmed examples in Maelor Saesneg, an area which was presumably intensively used for cereals in the medieval period to judge from the amount of ridge and furrow cultivation present. And only a single kiln is recorded in the parish of Llandrillo (Merioneths), which also retains evidence of large areas of medieval cultivation and is thought to have seen significant levels of contemporary cereal production. Kiln place-names are recorded in both areas, however, and in this regard the relatively transitory nature of the field kiln, and the potential that it may only have been used for a limited time, means that traces will be difficult to discern in the landscape. The potential for kilns to be found within medieval and post-medieval urban settings should also be considered, given the small number of known examples. It is evident that the corn-drying kiln is a type of site which is in need of further investigation if anything like a representative distribution is to be determined.

Kilns and the written record

It is instructive to consider the writing of Hugh Evans in the years after the second world war who, in discussing the area between Corwen and Cerrigydrudion in the mid-19th century, mentioned two kinds of kilns – known locally as a *straw kiln* and a *tile kiln* – used for parching oats in the district. Their names referring to the material used to form the drying platform. Both appear to have been of relatively late design, with the fire laid below the drying platform, although he noted that the straw kiln was the earlier in origin. Peat had been used for fuel in earlier times but this had been supplanted by charcoal by the mid-19th century. There is some suggestion that the activity was carried out in conjunction with milling, although the person responsible was not the miller. While this information is valuable in understanding the methods of 19th-century corn drying, what is really significant is that there are, at present, only two recorded corn-drying kilns in

this district. The kilns in question are associated with mills and lie within 2km of each other; the district covers an area of about 15km by 5km.

Oat kilns and historic cartography

The most concentrated group of kilns comes not from fieldwork but from three sets of estate maps by the surveyor Edward Thomas working in rural Breconshire in the late 1770s and again in 1780-1. Thomas pinpointed a total of 12 oat kilns on his maps, 11 of them on the groups of maps relating to Lord Camden's holdings, most of them on the edge of Mynydd Epynt. As to why they were recorded is not clear. Thomas stands out for his predilection to show extraneous detail over and above what a traditional surveyor might have introduced on to his maps, but it is not impossible that Camden's own estate agent had expressed a requirement for the kilns to be shown.

Fig 31 Oat-drying kiln at Nant-garw on Mynydd Epynt © Clwyd-Powys Archaeological Trust

We have no idea of the form of these kilns though there is no reason to think they were anything other than of standard type. One or two were looked for during a survey of Epynt farms a few years ago but none was found. Their interest lies firstly in the tacit acknowledgement that oats were the primary cereal that was grown at these higher altitudes, that in one group of farms virtually every other one had a kiln that was presumably still in use in the last quarter of the 18th century or had only recently fallen out of use, that generally they were positioned within 20-80m of the farmhouse, and that in one instance the kiln was recorded even though the house to which it was associated had gone. Possibly it is the second of these points that is the most telling – that kilns were commonplace in the post-medieval period and that many have been lost to sight, perhaps deliberately filled in. Significantly, the Ordnance Survey surveyors did not map kilns. The only certain example found in the Mynydd Epynt survey was one near the abandoned farm at Nant-garw inaccurately labelled as a lime kiln on the Ordnance Survey map (Fig 31).

Sources: Blockley 1999, 127-8; Blockley and Tavener 2002, 46-53; Brunskill 1987, 97; Butler 1987, 53; Dorling 1988, 76; Evans 1948, 117-8; Fenton 1999, 99; Hankinson 1995c; Harvey 1984, 77; Jenkins 2000, xxi, 170; Jones 1998, 144-150; Jones and Grant 2011; Owen 1991, 8; Steane 1985, 50; Wade-Evans 1909, 246-7

Bracken kilns

One other type of kiln can also be considered here, though it is related only by name and not by subject**.** The bracken or potash kiln is defined in the English Heritage online thesaurus as 'a kiln for the slow burning of vegetable matter to produce calcium carbonate', though this should in fact read potassium carbonate. The vegetable matter in question was derived from a variety of sources including bracken and small twigs, and the mineral thus produced could be employed in a number of ways; in the manufacture of both soap and glass, and as a mordant in the dyeing process. Its use in dyeing comes from a property, through the pre-treatment of cloth in solutions, that makes dyes more colourfast. It also found other uses in connection with the early cloth industry, so examples might be expected near fulling mills.

In modern times potash has a significant role as a fertiliser, although this comes from mined deposits. It is claimed that its use in this regard was unknown prior to the 19th century. (Williams 2010, 135).

Analysis of the HER reveals no sites where the term is used, either in the site type field or in a general search of the site descriptions, and it is evident that there is also no available term in the RCAHMW's *Thesaurus of Monument Types for Wales*. One example is, however, noted by name in Coflein, near Llandderfel in Gwynedd, though whether this is a correct attribution remains in doubt. Other, as yet to be confirmed, examples come from the north-eastern edge of Epynt and at Llanfachreth (Merioneths), outside this trust's area, but reported to one of the writers by the owner who had been informed of its nature by Peter Crew who in turn had seen examples in the Lake District.

There are a number of reasons why sites may either go unrecognised or where a site of different origin could be identified as a potash kiln, largely owing to the structural similarities between a site used for creating potash and both limekilns and corn-drying kilns; this is evident from both the descriptions of English examples and an examination of available images. There may have been differences in the degree of heat used, but these are not generally apparent from field examination of any extant remains. Other factors might or might not provide some corroboration, but at present it is evident that this is not a type of site which has gained recognition, either within the study area or Wales as a whole.

Sources: Williams 2010

Stores

Introduction

Several types of store have been identified on farmholdings in the region, reflecting the fact that as long as the conditions are cool, the long-term storage of root crops and perhaps other foodstuffs allows them to be used as a food source throughout much of the year. Generally small in size, stores can be readily overlooked, they are very rarely mapped by the Ordnance Survey or indeed other surveyors, and they frequently tend to receive only a passing mention in HER records. As far as we can establish very little has been written on them. Nevertheless, they are usually sufficiently distinctive to be characterised and are ascribed labels here which are not necessarily as yet common currency. An exception is upland Breconshire where the variety of stores that have been

found generates a more complex picture, and these are worth considering in their own right.

Root Stores

Root stores are more prevalent than might be appreciated. The HER contains references to 51 stores but a further 18 have now been added by the inclusion of others from one of the author's own files. Stores are permanent structures, usually sited in close proximity to a farmstead or dwelling. They are built of stone or more rarely entirely of brick (as at Llys Farm, Llanfechain, (128005; Monts;) and even timber, though bricks and timber are occasionally used in conjunction with stone for roofing, doorways and the like. They are found in both lowland and upland locations, and if one thing emerges from the distribution map (Fig 32), it is their ubiquity. Many more certainly remain to be discovered.

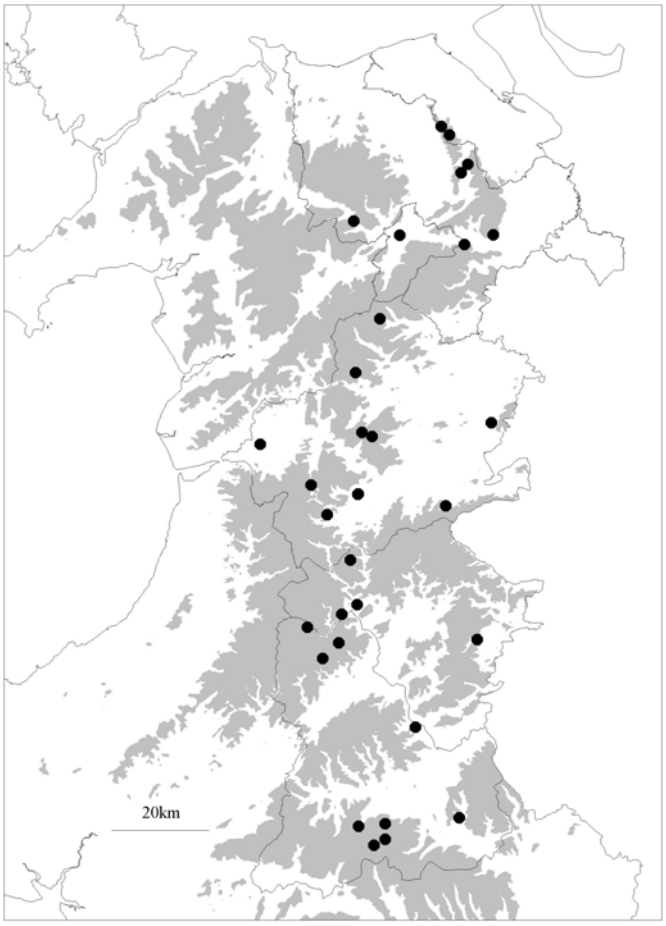


Fig 32 Root stores recorded in the HER for eastern Wales

One store, at the abandoned farmstead of Bon y Maen in Llanerfyl (Monts), is scheduled (MG218), and provides details that illustrate the form and nature of the store and are broadly typical of the store as a type. It consists of a passage about 5.5m long and 0.7m wide with well-laid drystone retaining walls to either side and large capstones above. This is covered by an earthen mound which measures about 7.0m by 3.6m externally, is 1.3m high and is revetted with stone on the south side. On the east, uphill end, a

ventilation hole has been provided, about 0.35m by 0.25m in size. The passage is currently 0.55m deep but excavation in 1990 revealed that originally it was virtually twice this deep. Access was through a narrow gap at the west end, but the details of this are obscure because of later damage. Pottery in the fill of the chamber was predominantly of 19th-century date.

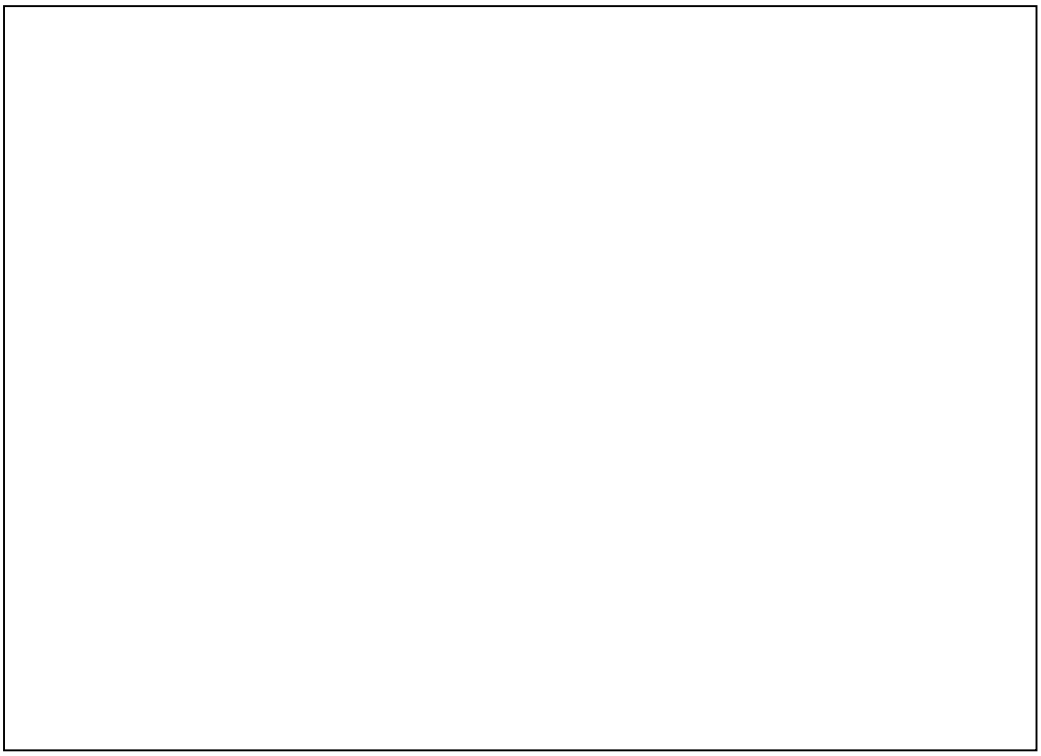


Fig 33 The scheduled root store at Bon-y-maen, nr Llanerfyl
© R J Silvester

Other stores are set into natural banks, creating a semi-subterranean appearance, a time-saving device which probably also provided greater stability, and has been described as the 'cut and cover technique'. Roofs can have capstones or be barrel-vaulted, and one or two examples with peaked roofs are known. In one case a store has been created in the side of Domen Fawr Castle, a motte at Llanbrynmair (Monts) and as a consequence is also scheduled (MG65), in another at Dernol near Llangurig (Monts), a store was built into an existing round barrow (1660). Stores usually occur singularly, but a pair were noted at Vivod near Llangollen (48428; Denbs) and three on the roadside at Cae Cwm, Churchstoke (Monts).

The construction and use of a root store was not restricted to ordinary farmsteads. The walled garden at Llangedwyn Hall (Denbs) has two brick-built tunnels covered with turf and having wooden doorways (128004), and there is at least one store and probably another on the Vaynor Estate in Berriew (128011; Monts).

The examples referred to here are likely to be 19th-century, or possibly a little earlier. Pottery of 19th-century date came from Bon-y-maen as noted above, and also from a store at Erwood (70881; Brecs).

It is not uncommon for root stores to be mistaken for prehistoric funerary structures. Thus the store at Felin-newydd (118410) in Trefeglwys (Monts) was brought to the

attention of CPAT by a correspondent who believed that she had found a new chambered tomb, and a similar attribution was made for the store in Cwm Cynwyn (26387) in the Brecon Beacons.

Where they have been reported in the past, root stores have been associated almost exclusively with the storage of potatoes, something which is a relatively late feature of farming practice in the study area. The potato was only introduced into Europe from southern America in the second half of the 16th century and took some time to become accepted. Its use in Wales does not seem to be well documented, but letters between Richard and Lewis Morris show that it was in use by 1760. Potato growing may have spread eastwards from early production centres in Ireland, and it is reasonable to assume that, as elsewhere in the British Isles, the crop became the staple diet of many of the poorer members of the community in the 18th and 19th centuries. Fenton mentions its introduction into the west of Scotland as starting in 1743, with a more general adoption from 1770 onwards. Although recorders have generally ascribed sites of this appearance to potato storage, it is likely that that the root store could have been used for other crops, such as turnips or carrots. Both of these have a considerably longer tradition of use, although Wiliam has pointed out that the turnip was first introduced into Denbighshire in 1765 and Montgomeryshire at much the same date.

Root Clamps

A further method of storage is the clamp, a shallow scoop in the ground where the crop is placed with a covering of straw, and the whole then sealed with the soil dug from the scoop. Various shapes are possible, but the most common is a linear or sub-rectangular earthwork which allows the crop to be removed from one end as required without disturbing the whole structure. The clamp is normally distinguishable as a scoop with a low bank on one or both sides, a characteristic resulting from the initial excavation of the clamp, and subsequently the removal of the stored crop.

A typical clamp might be 5m long and 2.5m wide, with a linear scoop running down the centre of its long axis of around 0.5m deep. As with the root stores they are usually found close to a dwelling, rather than out in the fields. Relatively few, however, have been recorded in the HER in the region, not, we can assume, because they were less common that root stores – rather the opposite is much more likely – but because they are more susceptible to damage and destruction combined with the difficulties of recognition amongst inexperienced fieldworkers. Eight temporary clamps are recorded as 'potato clamps' in the Royal Commission's Coflein record, although this is only a selection of sites ascribed to this type as the term is also used there more broadly to include structured stores.

Given that any of a number of root vegetables may be stored in this way, it would be more appropriate to use the term 'root clamp' as a means of identifying sites of this appearance. The archaeological records commonly use the word 'potato' in conjunction with this type of site and this introduces an incorrect assumption that they are chronologically tied to the period following the introduction of the potato.

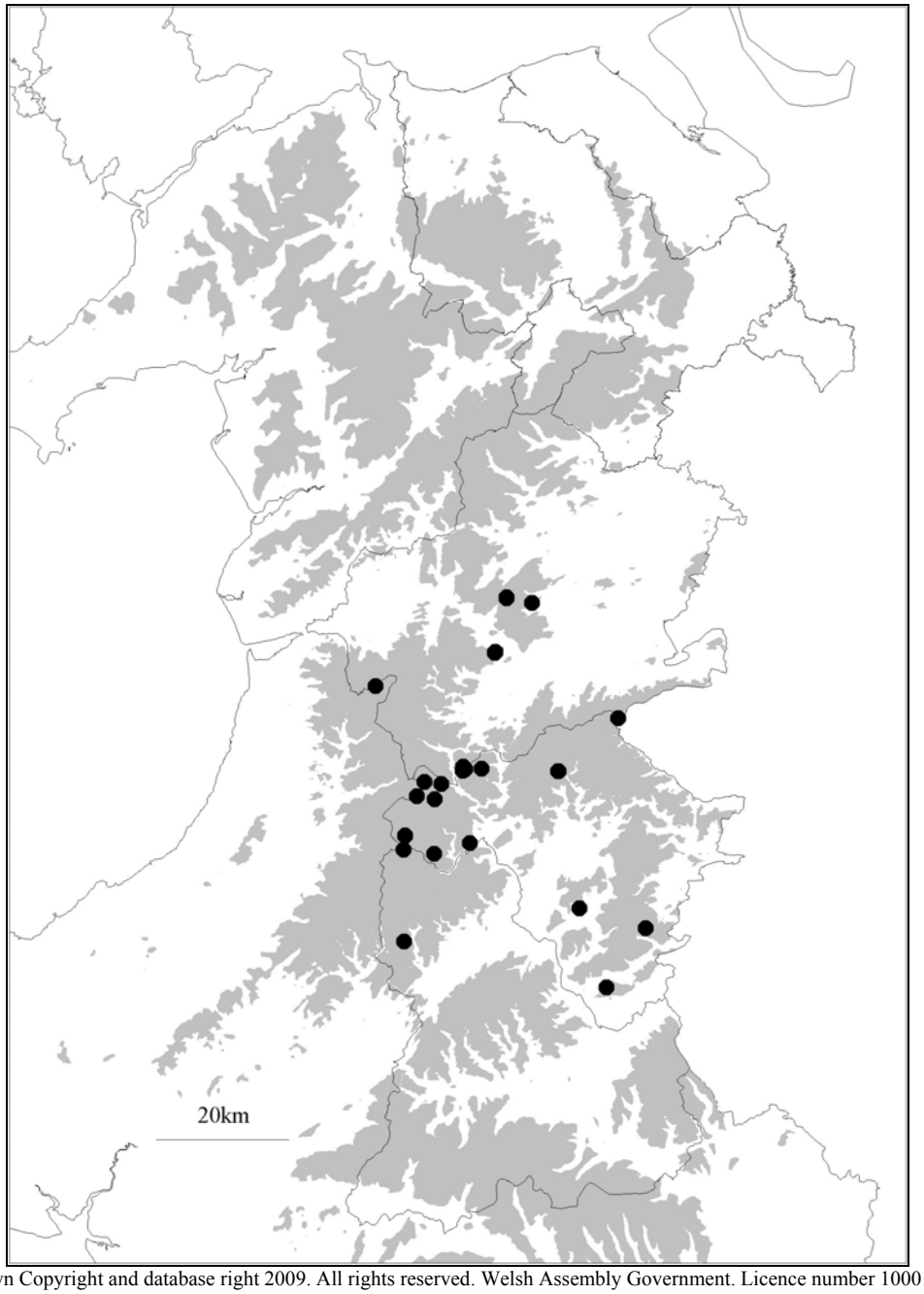


Fig 34 Root clamps recorded in the HER for eastern Wales

Sunken stores

The 'sunken shelter' is a term which was inaugurated in Dyfed during the Cadw-funded DRS surveys of the late 1990s and has now regrettably spread into this region as a result of records generated during the Royal Commission's Uplands Initiative projects, with seven examples currently appearing in the Coflein records (now ascribed PRNs 128027-128033). They are not, however, shelters in the conventional sense of providing protection for man or beast, but a variation on the store concept, one that falls between the permanent root store and the earthen clamp. For this reason we have preferred the term 'sunken store'.

In form they are sunken hollows, often with some form of stone lining, and are generally associated with medieval or post-medieval settlements. It may be no more than the presence of a stone lining that differentiates an example from an earthen clamp, but Paul Sambrook's definition for his Dyfed examples additionally flags up a further difference, that of size, and his description is worth repeating here.

'Sunken shelters have been noted during the field survey at a number of deserted settlement sites in eastern Ceredigion and, although they are not fully understood (there are no known excavated examples), they are thought to represent the remains of some form of underground cool-stores. The examples recorded tend to measure between 10m and 16m long, 2-3m wide and can be well over 1m deep, with upstanding earthwork banks forming a U-shaped structure in plan. The downslope end is usually left open, suggesting that access was possible into the low chamber that was formed. It can only be assumed that these structures had a simple thatched roof '.

The recorded examples in the study area vary from the smallest around 5.0m by 2.3m overall to 9.5m by 6m; all have a central hollow, which can be up 1.0m deep, flanked by earth (and sometimes stone banks up to 0.6m in height). In appearance they seem fairly similar to typical storage clamps, although perhaps rather larger in size. Several have stone revetting defining the edges of the central hollow, and the possibility that its appearance might reflect the remains of a structured root store which has been damaged following its abandonment cannot be entirely discounted.

Stores in Breconshire

A significant amount of fieldwork has been conducted by CPAT in Breconshire, much of it in the three main upland blocks of the Brecon Beacons, the Black Mountains and Mynydd Epynt. The resultant records, primarily from the DRS enhancement project from the end of the 1990s, but also from various studies on the military range that occupies the Epynt, reveal a range of store types unparalleled elsewhere in the region. At the same time re-visiting the records, most of which were compiled by the authors of this report, demonstrates the drawbacks of rapid field study, for the emphasis of the various studies was on the habitation remains – farmsteads, cottages, *hafodydd* etc – rather than on the ancillary structures that collectively made up a farm holding. As a consequence some of the records are not as complete as might be wished for in an assessment focussed specifically on particular ancillary structures.

A rapid re-examination of the DRS dataset for Breconshire isolated nearly thirty sites where stores had been identified. All three of the types described above are present, sometimes with more than one type being recognised at the same settlement. Thus the only published example – at Pant-y-Blodiau on Mynydd Epynt (Fig 35) – shows an embanked store which is akin to a sunken store, and two earthen clamps. But in addition to those stores that cannot be differentiated in the record as it exists at present, another site type stands out.

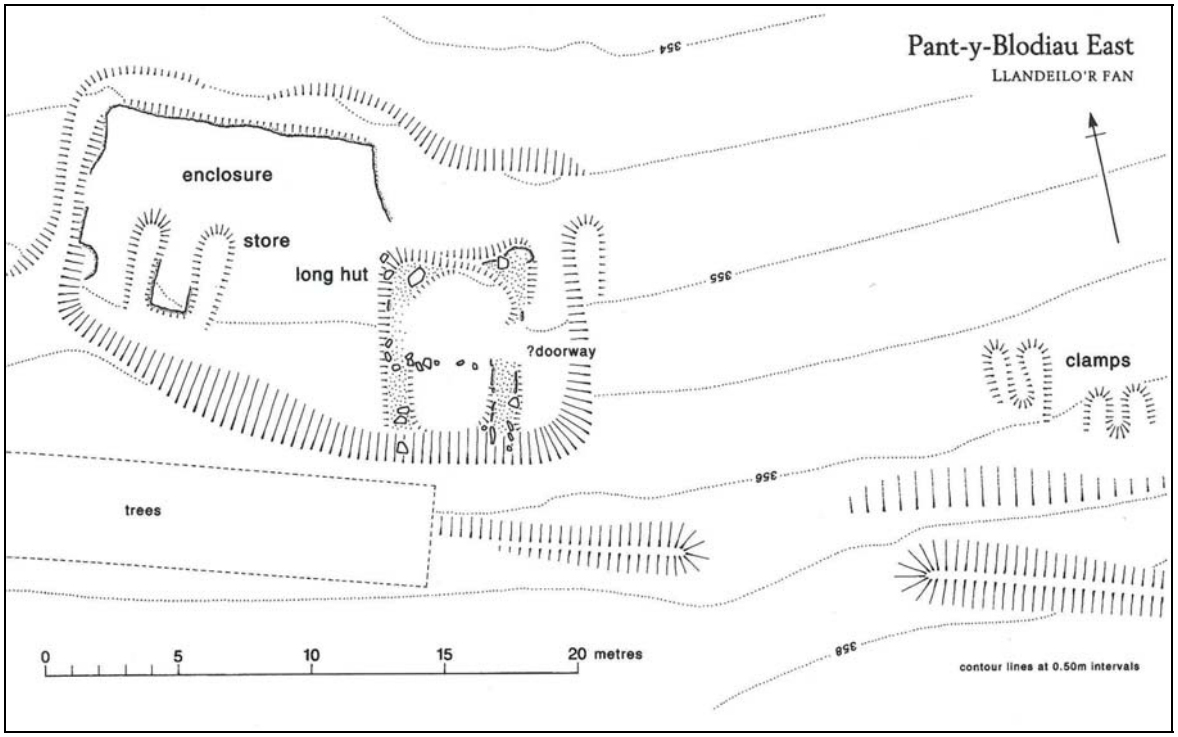


Fig 35 Pant-y-Blodiau, Mynydd Epynt

One of the writers (RJS) has a memory of at least one small slab-lined store at a seasonally occupied hut in the Brecon Beacons which at the time was considered to be a cold store for dairy products created during the summer months. Unfortunately, it has not proved possible to pinpoint this particular feature with certainty, but it may well be the Cwm Sere example below, one of several small stores that emerge from the records. At Esgair Garn near Llanwrtyd Wells (3028) a small stone-revetted structure no more than 1.5m long was set into the slope adjacent to a dwelling, in Cwm Sere (26339) in the northern Beacons there was a well-built stone chamber about 2.5m long with several capstones and in Cwm Crew to the south of the main Beacons ridge was a well built rectangular-drystone wall feature with chamfered corners which overall was 3.9m long. All of these are considerably smaller than the standard root stores described above, and we have little hesitation as describing them as cold stores (a term used in the English Heritage lexicon) used during the summer months.

Sources: *Fenton 1999, 121-2; Owen 1978, 115; Sambrook 2006, 96****;*** *Silvester 2006a, fig 2.12; Wiliam 1986, 31*

Stock Management

Vaccaries

The vaccary was an upland cattle ranch, and by implication they were under royal or lordly control, and in later times monastic as well. They are regularly alluded to by historians of medieval Wales, less readily recognised by their archaeological counterparts. David Longley for instance in his chapter on deserted rural settlements in north-west Wales in the Cadw volume of 2006 defines a vaccary (after Lat. *vaccaria)* and flags up its close association with the *hafod* and with *ffrith* land, but the reader will then look in vain for a section that deals with the physical manifestations of the vaccary. The vaccaries of the princes in Gwynedd in Snowdonia have been considered by Glanville Jones, by Beverley Smith and no doubt by others, and where pinpointed it is assumed that the vaccaries of the medieval era are now represented by large farms where presumably all earlier traces have been swept away.

The vaccary as a farming institution has been recognised in almost all the northern counties of England: Lancashire (Atkin; Higham), Staffordshire (Hey), Yorkshire (Hey) and in the Pennines generally (Winchester). In eastern Wales, David Williams has identified a possible vaccary belonging to Valle Crucis at Efenechdy near Corwen (35787), but this is solely on the basis of the place-name. And Efenechtyd in Denbighshire was in 1545 referred to as a 'vaccury and dairy house', but again there is no guide to where this might have been and to the form that it took. It might also be noted here that the earthwork enclosure of Hen Ddinbych on the Denbigh Moors has been considered a vaccary on the basis of a reference within the *Survey of the Honour of Denbigh* in 1334 to the cattle that could be supported in that part of the Mynydd Hiraethog. The association is an attractive one but it is questionable whether the long buildings within the enclosure would have been large enough to house cattle.

At present the vaccary is an historical construct rather than an archaeological one. As Beverley Smith has precisely stated 'the archaeology of the seigniorial vaccaries is yet to be properly explored', and this is for an area, Gwynedd, where they are much better known than their counterparts in eastern Wales.

Sources: Astill 1988, 45; Atkin 1985; Higham 2004, Jones 1969, 39; Longley 2006; Owen and Morgan 2007; Silvester 2011, 47; Smith 1998, 230; Williams 1990, 65; Winchester 2010

Stock folds

Sheep folds, or perhaps more accurately stock folds, are a ubiquitous element of the upland landscape throughout east Wales. On first acquaintance it might be assumed that folds were built to protect and shelter stock, but it is more often the case that they were constructed for the management of flocks and herds. An assessment of origin and function needs to draw on such factors as whether the site lies within the curtilage of a farmstead or in a remote location, too distant for there to be easy access to its buildings and structures, and whether there are additional features whose function can be readily identified. The use to which folds were put often has an effect on their morphology, yet the most common are simple, sub-rectangular, walled structures, which might be placed in close proximity to a stream to allow access to water. On occasion, a fold may display greater complexity, which might be due to the inclusion of other elements, as for instance

a sheep wash using a pool in a stream, where walls were constructed to funnel the sheep and aid their movement.

Although single-celled sub-rectangular folds are probably the most common type (based on our personal experience), a search has been made for variants using the HER, particularly to determine whether there are any parallels for the multi-celled sheep folds found in parts of Snowdonia. These often occur on open moorland and comprise a central enclosure surrounded by a large number of small cells, each the property of an individual farm, into which sheep were herded; an 18th-century origin has been posited for these by the Royal Commission. The open moorland of Snowdonia was gathered communally by the surrounding landowners using methods described by Firbank (1956, 36-46), but the complexes do not occur in all districts and the localised distribution suggests that they were only built if the stock on a particular mountain was in multiple ownership. Where land was owned by a single farm, the folds would generally be sited at convenient places within the farmholding and there was no need for a multi-celled fold.

The word 'complex' occurs in the HER description of 12 sites and 'multi' in the description of two sites, but in none does the fold contain more than about four or five individual cells. It is evident that the methods employed in parts of Snowdonia did not extend into the study area. This, however, should not be taken to mean that the communal gathering of sheep on a large scale from mountainous districts was not a widespread activity.

Fig. 36 Nant yr Offeiriad Sheepfold (PRN 34133) in the Brecon Beacons
© CPAT 2695-0039

A few examples of circular folds akin to the Scottish stell are known to the writers, so a further HER search was made for 'circular' in the description field; this revealed 11 sites which can be confirmed as circular sheep folds, a reasonable proportion of which are relatively modern in date. It is worth bearing in mind that these would be difficult to use unless additional features, commonly known as shedding walls, were erected to assist in driving the animals into the fold. This is admirably displayed by the Pen y Waun Dwr Sheepfold (2246), near Crai in Brecknock, where the circular fold lies at the centre of walls which form a cross in plan. The circular fold at Pennant, Llandrillo (Denbs formerly Merioneth; 105021) on the western slopes of the Berwyn mountains is rather older and is interesting as it seems to have been built on the site of a prehistoric cairn, perhaps a more common occurrence than might be imagined as it allowed the builders to have access to a ready supply of stone. The re-use of earlier stone-built monuments in landscapes where supplies were restricted is well-evidenced and it is commonly the case that the last phase of activity on the site of an abandoned upland dwelling involved the creation of a fold or set of folds from the remains of the habitation. This is a sequence of events typified by the Nant-y-foel farmstead on Mynydd Hiraethog which is likely to be of medieval or early post-medieval origin, but has an 18th- or 19th-century sheep fold superimposed over its remains.

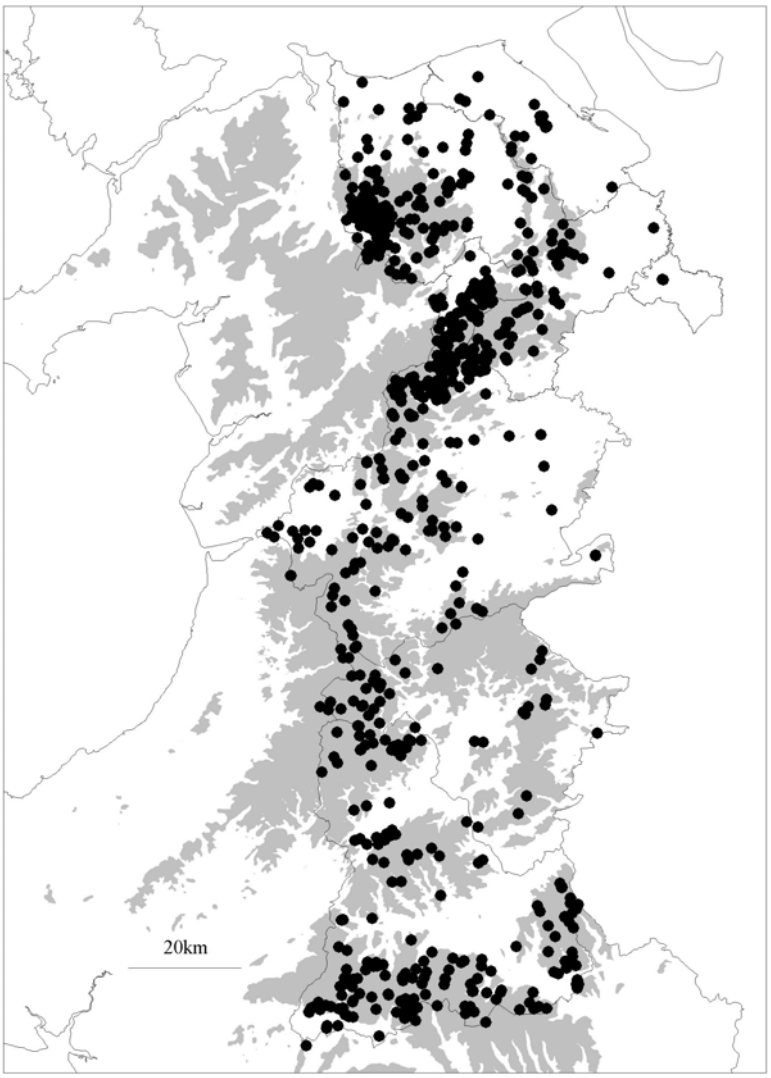


Fig. 37 Distribution of sheep folds in the study area

The HER has 780 sites recorded as sheep folds, 12 only as folds, yet it is the latter term that is preferred here. In some cases the term 'sheep fold' is an incorrect attribution, for during different periods they could have been used for cattle, though we might expect the different kinds of stock to be reflected in morphological differences, something that has yet to be identified and certainly doesn't figure in the records. The hendref-hafod system of transhumance involved the keeping of both cattle and sheep on upland pastures in summer time, as noted by Pennant writing in the late 18th century about Snowdonia, so the bias in the record towards structures specifically designed to manage sheep is arguably misleading.

The distribution of sheep folds as recorded in the HER is curious, given that most parts of eastern Wales were predominantly used for stock-rearing and dairying. While a large percentage of folds fall in two of the five counties - Montgomeryshire and Breconshire (26% and 25% of the total, respectively) - and large numbers are found in the north-western part of the study area (Denbighshire), the situation is markedly different in both Radnorshire and Flintshire. Farming in Radnorshire is likely to have always been agrarian in nature, so the fact that only 5% of the total number of folds are found in the county looks to require an explanation. The numbers for the north-eastern part of the region also provide about 5% of the total, but this is more readily explained by the greater degree of arable, both in modern times and in the past, and other differences in the nature of stock rearing in these usually enclosed lowlands.

Most sheep folds in the HER – 720 - have been attributed to the post-medieval era, a relatively small number (23) have been given a medieval date, and rather more (37) are believed to be modern. This date span is problematic for a number of reasons. Firstly, there has been a general assumption amongst fieldworkers that most belong to the post-medieval period, constructed by individual landowners or tenants to manage stock at particular times in the farming year, as for instance at shearing. The use of 'post-medieval' here is no more than a generalisation, as it is only in cases where there is definite proof of modern or medieval construction that another date would normally have been ascribed.

Secondly, the majority of the folds in the landscape are devoid of any clues which might allow them to be dated, so although surviving folds of medieval date might be expected, few have been recognised. Excavation would be unlikely to be helpful, and only where there was a direct association with the remains of a dwelling when diagnostic finds might be expected, would it be possible to resolve the issue. It may, however, occasionally be possible to provide an interpretation that offers some relative dating. Such a case occurs with a group of small isolated folds recorded in the upper part of the Afon Eiddew valley, near Lake Vyrnwy, where the suggestion has been made by one of the writers that these might be folds used for hefting sheep at the point of their introduction to this block of upland. If so, they would have been used for a short period of time to allow the sheep to become accustomed to the area; once accustomed the animals would find individual territories, which reduced the risk of straying on what was otherwise open moorland, and this trait was then passed on to their descendants, making the folds redundant.

A few folds can be tied fairly closely to a particular period. A group of late medieval date were investigated as part of excavations at Hafod y Nant Griafolen on Mynydd Hiraethog where they were directly associated with summer settlements of hafod type. They were mostly sub-circular enclosures defined by an earth bank with an internal ditch and covering an area of between 0.02ha and 0.04ha, although one larger example (0.22ha)

of rectilinear shape was also present. David Allen's discussion of the sites hints at a division between individual use for the smaller folds and communal use for the larger and also notes that they were probably used for both sheep and cattle. Enclosures of a similar morphology were recorded in upper Cwm y Saeson, 3km south-east of Llangurig, during fieldwork for this project, although these seem to be directly associated with individual dwellings, rather than having a communal function (see above). The Llangurig sites remain undated, but the close correlation in the size of folds (from 0.05ha to 0.19ha) between these and the Hiraethog examples hints at a correspondence in terms of origin and potential date.

Of later date, probably broadly contemporary with the construction of the Vyrnwy reservoir in the 1880s, are a series of complex folds which were identified during fieldwork on the surrounding Severn-Trent Water estate. These were distributed around the estate, implying some degree of central planning in their construction, presumably by the then owners, the Liverpool Corporation. This is supported by the presence of stone-built sheep-washing and dipping pools and the fact that they lay on open moorland, outside the already occupied enclosed land. Although of relatively late date, these sites are indicative of what might be expected on large estates and parallels could be sought in other areas.

Sheep shelters

Features which primarily provided shelter for stock, without involving some form of enclosed pen, were built, particularly on the open uplands. The best examples in the region come from Mynydd Hiraethog where sheep shelters take the form of walls of I, L, T, X, Y and Z plan; designed as windbreaks, the more complex have the benefit of providing shelter regardless of the direction of wind or rain. Allen suggested that the earliest could have been constructed in the 17th century. Elsewhere, shelters may be constructed from earth or stone, with the most common plan being a simple linear wall, although there are variants ranging from curved to cross-shaped examples. In total 41 sheep shelters are recorded in the HER, and all except five lie within the old counties of Denbighshire and Flintshire. Whether this has any bearing on past fieldwork recording methods is not known, but it is evident that this is not a true reflection of the site-type distribution as an initial search of 267 sites recorded simply as 'shelters' revealed that a reasonable proportion were also built for stock.

The presence of these shelters may signify no more than the varying farming practices of different landholders, but there is another possible explanation. In modern times, it has become a common practice to introduce improved stock to upland areas, meaning that larger and more prolific animals from the lowlands to the east have been imported to districts where they need protection from cold and damp conditions if they are to survive. The advent of large, easily erected, sectional sheds has meant that these animals can now be provided with cover during lambing, but this was not an option in the past. Possibly the sheep shelters represent earlier evidence of attempts to introduce sheep which were less able to cope with extremes of climate than the indigenous breeds.

Sheep dips and washes

Other structures utilised in flock management include the sheep wash and the sheep dip. Although both site types are often used interchangeably in the HER, they actually performed different functions, and should be differentiated more rigorously, as it is often

possible to do so from an examination of the locality. The function of the sheep wash is clearly indicated by its name, the idea being that sheep should be immersed in water to clean their fleeces prior to shearing, something which was done in early July in central Snowdonia as Firbank recorded. This needed nothing more than a suitably large body of water, perhaps a pool along the course of a stream or an artificial pond created by the damming of a watercourse, in which the sheep could be immersed. In order for the body of water to be used efficiently, some form of embanked or stone-walled funnel was often created to direct the sheep to the deepest section and it is this which is often seen as an element of more complex sheep folds in riverine locations.

The sheep dip might be superficially similar, but its function was to provide a means of chemically treating the sheep with insecticide to prevent various diseases, such as sheep scab, this happened somewhat later in the year, after shearing, and Firbank gives late August as the relevant time in central Snowdonia. The first chemical dip used in this way was arsenic-based and invented in 1830 by George Wilson at Coldstream on the Scottish borders. Clearly, any site of earlier date must be a sheep wash, but the main reason that the two processes are mutually discernible is that the chemical treatment would be rapidly diluted and lost if it was placed in a system which utilised flowing water, thereby precluding the use of natural or minimally modified watercourses. Most true sheep dips (in a historic sense) were a closed system comprising a holding pen with a small tank adjacent in which sheep were individually placed to ensure they were completely immersed. The exit from the dip was generally into a second (draining) pen which was sloped to ensure that the dipping fluid returned to the tank, thereby minimising the waste of chemicals. Water supplies were required for mixing with the chemicals, which often led to dips being placed near watercourses (i.e. in similar locations to sheep washes) where they might also be found combined with an existing sheep fold. The early arsenic-based chemicals were highly toxic and the proximity to watercourses led inevitably to pollution; it was only in the latter part of the 20th century that precautions began to be taken to prevent the escape of chemicals into the environment.

Only 6 sheep washes are recorded in the HER but it is clear that at least 12 which are identified as sheep dips should be reassigned; even this is surely a tiny fraction of the original number of such sites, and recognition of the few known has often come about only as a result of evidence on early Ordnance Survey maps. Sheep dips are better represented with 24 sites but, again, this can only be a very small proportion of the resource as almost every farm would have had access to a dip in the latter part of the 19th and the 20th centuries.

Goats, geese and pigs

In addition to sheep and cattle, it has to be remembered that pastoral farming in the medieval and post-medieval periods involved other animals, such as geese and pigs, even goats. As with other animals, these require some management, either to ensure that they do not stray or to protect them from predation, the latter something which would have been more common in earlier periods. As with other topics in this report, some of the site types associated with these animals are heavily under-recorded, an example being the goose pen, of which only two examples (60763 and 128077) are recorded in the HER, and one of these only because it is listed. Likewise, there are no recorded kid pens, these built to house a young goat with a view to ensuring that its mother could be controlled because she would return regularly and could then be caught and milked; they

are known in other places, particularly north-west Wales, and it may be that there are examples in the study area which have not been recognised.

The situation is rather different with pigsties, of which there are 73 records in the HER, although one of these – the circular pigsty (21762) within the abandoned settlement at the Graig - is actually outside the CPAT region. Of the remainder it is clear that the bulk (53) have been recorded during visits associated with the Tir Gofal scheme, and this is indicative of the emphasis that was placed on the recording of historic farm buildings in the scheme. Most of the other records, some 15 in total, are simple notes that a particular pigsty is a listed building, perhaps forming part of a wider group of listed buildings in a farmstead. Overall, it is readily apparent that pigsties have only been recorded where they have been seen to have some architectural merit or when they have been recognised as an important element of the buildings at a farmstead. The recorded examples can be no more than a small percentage of those that exist or once existed as most farms would have had a pigsty at some point in their history, and for smallholders, in particular, ham and bacon from the home-kept pig often provided an important element of their diet. It is probably best to assume that recording in the past has included pigsties only in the descriptive text, something confirmed by a search for pigsty in the description field of the HER, which yielded 146 sites.

Sources: Allen 1993; Firbank 1956, 36-46; Hankinson 2000; Pennant 1991, II, 169; RCAHMW 1956, lxxvii; Silvester 2011, 52-3, 57

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Appendix

Gazetteer

Part 1: New medieval strip fields

128078 Upper Llethr strip fields, Aberedw SO 1099 5143
Series of strip fields running onto the common from the head dyke running along the edge of the valley. Visible on Royal Commission oblique photographs (see Silvester 2006, fig. 2.5) and also on various vertical sorties. Almost certainly of medieval date.

Part 2: New water meadows

128047 Brynich water meadow, Brecon SO 0711 2790
Point on a watercourse shown on an Edward Thomas map of the Brecon area and dating from 1780-1 (NLW/Tredegar/Vol 2, map 1). By the watercourse is written 'stream for watering meadow', a clear indication of a water meadow.

128048 The Held water meadow, near Brecon SO 0368 2651
Point on a watercourse shown on an Edward Thomas map of the Brecon area and dating from 1780-1 (NLW/Tredegar/Vol 2 map 3). Within the Usk valley. By the watercourse is written 'stream for watering the meadows', a clear indication of a water meadow.

128049 Llwynllwyd water meadow, Merthyr Cynog SN 9921 3842
Point on a watercourse shown on an Edward Thomas map of the Epynt foothills and dating from 1780 (Kent Archives/CKS-U840/EW22 map 9). By the watercourse is written 'stream for overflowing the meadows', a clear indication of a water meadow.

128050 Gilfach isaf water meadow, Trallong SN 9733 3082
Point on a watercourse shown on an Edward Thomas map of land to the north of the Usk valley and dating from 1780 (Kent Archives/CKS-U840/EW22 map 13). By the watercourse is written 'stream for watering ye meadows', a clear indication of a water meadow. The stream still functions as a field boundary.

128051 Erddig water meadow SJ 3290 4868
The schedule of lands accompanying a set of estate maps for the Erddig estate compiled in 1715 (Flintshire Record Office D/E/2348) includes a reference to the 'floated field' on French Mill tenement, today classed as a meadow lying beside the Clywedog in Erddig Country Park. It seems probable that this was a water meadow and it is significant that linear earthworks have been recorded here under PRN 80730.

Part 3: Sites recorded in Cwm y Saeson, near Llangurig

17758 Pen-y-cerrig ridge and furrow I SN 92757 76871
Field system shown AP 935123-41 (Royal Commission). Rectangular fields crossing ridge and valley, marks (of cultivation?) at right angles. Curving boundary to one side. Sub-rectangular enclosure cutting one linear alignment. (Original record in the HER)

Revised following visit - This is the SE of two areas of ridging visible on the RCAHMW AP and is potentially associated with long hut 122868 in enclosure 17759. It comprises a series of irregular furrows with slight ridges, running NNE/SSW along a broad ridge and probably hand-dug. The widths between furrows vary from 3m to 6m, and the features have a maximum depth or height of 0.3m, although generally this is less than 0.2m. They appear in blocks of between 30m and 45m long. No evidence of the surrounding boundaries suggested in the original record, the features running approximately with the contours on the AP are sheep tracks. Overall area 1.92ha.

17759 Pen-y-cerrig enclosure SN 92725 76932
Sub-rectangular enclosure shown on AP 935123-41 (Royal Commission). Lies on slight slope and cutting linear alignment - probable field boundary (see PRN 17758). (Original record in the HER)

Revised following visit - The enclosure is D-shaped and is defined a bank with internal ditch on the NW and NE, the SE side being a scarp which faces inwards and with the SW defined largely by the levelled area on which long hut 122868 was placed. Maximum width of boundary about 3m, up to 0.4m high. Total area 0.07ha.

122859 Cwm y Saeson enclosure I SN 92713 77354
Enclosure associated with long hut 122860, 10m to NE. Difficult to ascertain its exact shape as the upper and lower parts are overgrown with tussocks, but an approximate parallelogram, area 0.19ha. Only the NE and SW sides are readily visible, showing as a bank with internal ditch, about 3m wide and up to 0.4m high. Faint internal scarp on NW.

122860 Cwm y Saeson long hut I SN 92743 77368
Site of a rectangular building defined by a broad rectilinear bank, about 2m wide and 0.3m high. Measures about 13m NNW/SSE by 6m wide, overall. Sunken slightly into the slope on the NNW and built up only 0.3m on the SSE, but it mostly follows the slope, at 90 degrees to the contours. Only 10m distant from enclosure 122859, which must surely be associated. Interior partly rush-filled - not possible to see any detail. Probably only intended for summer use owing to exposed location.

122861 Cwm y Saeson platform II SN 93124 77017
Level area about 10m WNW/ESE by 5m wide defining a platform at the SE corner of enclosure 122862. WNW end of the building which lay on the platform shows as a low bank. Aligned parallel to the contours.

122862 Cwm y Season enclosure IV SN 93117 77035
Earthwork enclosure associated with platform 122861. Defined by a bank with internal ditch, overall up to 5m wide and 0.6m high, on W and N. On the S there is an internal scarp up to 1m high, more pronounced at the SE corner of the enclosure where the platform is located. E end of enclosure hidden by boggy ground. Overall area 0.17ha.

122863 Cwm y Saeson root vegetable clamp I SN 93060 77034
Possible root vegetable clamp, about 5m in overall diameter and 0.6m deep. Cut into slope to S with banks to E and W, but open to the N.

122864 Cwm y Saeson root vegetable clamp II SN 93000 76995
Possible root vegetable clamp, about 5m N/S by 4m E/W and 0.6m deep. Cut into slope to S with banks to E and W, but open to the N.

122865 Cwm y Saeson long hut II SN 92961 76978
Remains of a long hut defined by broad banks about 1.5m wide and 0.4m high, forming a rectangle about 12m N/S by 6m wide. It lies at 90 degrees to the contours on a moderate N-facing slope and is slightly platformed. Possible entrance shown by a gap at the NE corner. Attached enclosure (122866) on W side.

122866 Cwm y Saeson enclosure II SN 92951 76977
Small enclosure attched to long hut 122865. Lies on W side of long hut and measures about 19m N/S by 13m wide. The boundary of the enclosure is defined by an internal scarp on the S, a bank with internal ditch on the W and a bank on the N, all up to about 0.5m high. Overall area 0.02ha.

122867 Pen-y-cerrig ridge and furrow II SN 92892 76749
Area of ridge and furrow visible on vertical aerial photography, sited on broad NNE/SSW ridge to SE of cultivation traces 17758. Width between furrows varies from 3m to 5m, their irregular nature suggests they were hand-dug. Area 0.45ha.

122868 Pen-y-cerrig long hut SN 92718 76921
Former dwelling, probably a long hut, situated on a terraced area within enclosure 17759. Measures about 8m NW/SE by 4m. Probably only intended for summer use owing to exposed location.

122869 Cwm y Saeson enclosure III SN 92676 76939
D-shaped earthwork enclosure on SE-facing slope of dry gully and facing a similar site (17759), about 30m distant on the opposite slope. It has similar morphology to its neighbour, being defined by a bank with internal ditch on its N and S sides and an internal scarp on its W, but with an external scarp on its E. The sections of bank and ditch are up to 3m wide and 0.3m high. Overall area 0.05ha. Contains platform 122870, also possible root vegetable clamp (122872) cut into the edge of the enclosure on its NNW.

122870 Cwm y Saeson platform I SN 92676 76946
Just to the N of the centre of enclosure 122869 is a possible platform. It comprises a scoop cut into the slope to a depth of about 0.7m on the WNW and with a faint apron, 0.3m high, at ESE. The platform measures about 6m WNW/ESE by 2.5m wide, internally, and 9m by 4m overall.

122871 Cwm y Saeson root vegetable clamp III SN 92624 76862
Possible former root vegetable clamp situated at SW end of cultivation traces 122875. It comprises a linear gully cut into the slope and aligned WNW/ESE, measuring 12m long by 3.5m wide and up to 0.8m deep. Flanking banks, 1.5m wide and 0.3m high. There is a slightly platformed area, about 5m in diameter at the lower (ESE) end.

122872 Cwm y Saeson root vegetable clamp VI SN 92668 76954
Possible root vegetable clamp cut into the NNW edge of enclosure 122869, from its interior. Measures 4m E/W by 2m wide and 0.5m deep.

122873 Cwm y Saeson root vegetable clamp IV SN 92760 77412
Possible root vegetable clamp about 40m NE of long hut 122860. Oval in shape and measures about 8m NW/SE by 4m wide, including slight banks to NE and SW. Open to SE (downslope).

122874 Cwm y Saeson root vegetable clamp V SN 92765 77420
Possible root vegetable clamp about 5m distant from 122873. Near circular, max 5m diameter and comprises a hollow with a lip to its SE (downslope).

122875 Cwm y Saeson ridge and furrow SN 92683 76986
This is the NW of two areas of ridging visible on RCAHMW AP (935123-41) and is potentially associated with platform 122870 in enclosure 122869. It comprises a series of slight and irregular furrows with no real evidence of ridges, running approximately NNE/SSW along a low ridge and probably hand-dug. The widths between furrows vary from 3m to 5m, and the features have a maximum depth or height of 0.2m. No evidence of the surrounding boundaries originally suggested in 17758 (the original record), the features running approximately with the contours on the AP are sheep tracks. Overall area 1.84ha.

Part 4: New corn drying kilns

122829 Llanelwedd corn drying kiln SO 04974 52672
Corn drying kiln excavated in anticipation of its loss to quarrying activities by CPAT in 2008-9. During the excavation of the second cairn at Llanelwedd the opportunity arose to look at another site set into the hillside just a few yards away. This turned out to be a much later corn-drying kiln of later medieval or post-medieval date belonging to a long-abandoned farmstead. The kiln proved to be a fairly large and complex structure with a stokehole at the lower end and a drying chamber at the upper end. Wet corn would have been placed on a wooden floor and slowly dried by hot air channelled through a stone-

lined flue. Samples of charred plant material from the stokehole should tell us about the kinds of crops that were being dried as well as the fuel that was used. An unusual feature of the corn-drying kiln was the remains of a circular bread oven that had been built on top of the flue. This would originally have had a domed top and an oven door opening from the stokehole of the corn drying kiln. At one time many remote farms probably had outdoor bread ovens. Straw and sticks were burnt inside the oven to heat it up. After the ashes were raked out the dough was placed inside for baking.

122838 *Wern-fawr corn drying kiln* *SN 9055 2949*
'Oat kiln' depicted on Edward Thomas' 1780 map (No 14 of the set) of Lord Camden's estates in Brecknock.

122840 *Nant-y-pistill corn drying kiln* *SN 8734 2847*
'Oat kiln' depicted on Edward Thomas' 1780 map (No 14 of the set) of Lord Camden's estates in Brecknock. Location approximate.

122842 *Cefn Crai corn drying kiln* *SN 8943 2841*
'Oat kiln' depicted on Edward Thomas' 1780 map (No 15 of the set) of Lord Camden's estates in Brecknock.

122844 *Pen-y-Wingon corn drying kiln* *SN 8784 2795*
'Oat kiln' depicted on Edward Thomas' 1780 map (No 16 of the set) of Lord Camden's estates in Brecknock.

122845 *Twyn-ceiliog corn drying kiln* *SN 8815 2722*
'Oat kiln' depicted on Edward Thomas' 1780 map (No 16 of the set) of Lord Camden's estates in Brecknock. The farm was named Llwyn-cilog on the map.

122846 *Bronydd-bach corn drying kiln* *SN 8800 3037*
'An old oat kiln' depicted on Edward Thomas' 1780 map (No 17 of the set) of Lord Camden's estates in Brecknock.

122847 *Ffynnon-oerfa corn drying kiln* *SN 8584 3368*
'Oat kiln' depicted on Edward Thomas' 1780 map (No 19 of the set) of Lord Camden's estates in Brecknock.

122848 *Troed-y-rhiw corn drying kiln* *SN 8486 3400*
'Oat kiln' depicted on Edward Thomas' 1780 map (No 19 of the set) of Lord Camden's estates in Brecknock.

122850 Blaen-y-cwm corn drying kiln SN 8424 3293
'Oat kiln' depicted on Edward Thomas' 1780 map (No 19 of the set) of Lord Camden's estates in Brecknock.

122852 Nant-y-beinon corn drying kiln SN 9163 3394
'Oat kiln' depicted on Edward Thomas' 1780 map (No 20 of the set) of Lord Camden's estates in Brecknock.

122854 Pen-twyn corn drying kiln SO 0634 2420
'Oat kiln' depicted on Edward Thomas' 1780 map (No 22 of the set) of Lord Camden's estates in Brecknock. Probably associated with the nearby grist mill (PRN 122853).

122855 Gelynos corn drying kiln SN 95726 29561
'Oat kiln' depicted on Edward Thomas' 1780 map (No 8 of the set) of the Vernon estates in Brecknock.

122856 Hay-on-Wye (Heol-y-dwr) corn drying kilns SO 23097 42539
Group of 5 stone-built corn drying kilns revealed by Border Archaeology excavations in 2005 (Border Archaeology report BA0434PHHYDP2). A date of 1250-1350 was attributed.

122857 Llandysilio corn drying kiln SJ 26837 19164
Corn drying kiln found during excavations in advance of the construction of the Four Crosses bypass. They revealed a small, pear-shaped, corn-drying kiln, measuring 3.5m by 1.55m overall, with a drying chamber at the north-north-eastern end, although there was no evidence for any roofed structure covering it. The base of the flue and drying chamber contained significant quantities of charred grain, which produced radiocarbon dates indicating a period of use between cal. AD 1450-1640 (SUERC 34227-9 and 34235). The kiln was sited near a rectangular post-built structure, measuring 9m north-north-west/south-south-east by 5m and founded on three pairs of posts. The post-holes contained angular packing stones which had previously been burnt and fire-cracked as well as charcoal which provided radiocarbon dates indicating a period of use between cal. AD 1460-1640, thereby suggesting that the structure was contemporary with the corn-drying kiln.

122858 Byllfa-uchaf E corn drying kiln SN 97233 42889
Possible corn drying kiln originally described under PRN 15613 as a possible crop or dairy store comprising two adjoining circular sunken areas each about 5m in diameter.

Part 5: New root stores and clamps

122881 Neuadd Ford I root clamp SO 1422 4436
About 6m to the S of platform 36977 is a scoop cut into the hillside, at a slightly lower point than the terrace. Including the side banks of piled spoil it is about 7m long and 4m

wide, and there is a sort of fan but no apron. Between the banks it is hollowed out slightly, and it may have had a storage rather than an occupation function.

122882 Camnant Platform root clamp SO 1014 5618
13m to the E of PRN 33922 is a sub-circular 'store', consisting of a bank of stone and earth terraced slightly into the hillside, its interior slightly sunken.

122883 Gwegil-hindda root clamps SN 83866 51261
Two circular embanked scoops to E of Gwegil-hindda (PRN 9540) with linear hollows to their NE may be crop/dairy stores. Scoops c.5m diam x 1.5m-1.0m deep, linear hollows 4m long x 2m wide x 0.5m deep.

122884 Byllfa-uchaf E root store SN 97219 42962
Ruinous walled structure to N of dwelling element of 15613 may have been a crop store.

122885 Cefn Trum yr Hwch NE root vegetable clamp SN 99384 40617
Possible root vegetable clamp or maybe a corn drying kiln, described as a small scoop dug into the natural W face immediately above and to one side of a platformed area to the S of the dwelling. In the small hollow are what looks to be fragments of badly fired brick.

122886 Pant-y-llyn farmstead root store SO 04085 46773
Oval embanked hollow in W corner of enclosures surrounding PRN 33962, where field boundary runs to NE from the outer boundary which is aligned NW/SE. Overall dimensions including banks 6.3m NE/SW by 3.3m and up to 0.7m high.

122887 Pant y Drain root store SN 91271 76360
Root vegetable store to W of Pant y Drain house. It consists of a passage in an earth mound, the passage lined by stone revetment walls and capped by stone slabs.

122888 Dernol Barrow root store SN 9147 7474
Stone-lined passage cut into S side of Dernol Barrow. Noted in original record (1660) as a potato store.

122889 Domen Fawr root store SH 891 026
Root vegetable store mentioned in the Cadw AM107 for Domen Fawr motte and bailey. Described as built of mortared river stone and with a slate slab roof covered by turf. Measured 1.5m long by 1.0m wide and 1.5m high, thought to have once been 3.0m long.

122890 Pentreuchaf root store SN 8743 2380
Potato store noted as lying 'just below farm buildings' at Pentreuchaf by CCW project officer.

122891 Gelli-dywyll root store SN 9535 7667
Root vegetable store noted by RJS at Gelli-dywyll. No details.

122892 Courthouse Farm, Mellington root store SO 26409 92322
Brick and stone built store, partially cut into bank and aligned WNW/ESE. Brick jambs of door, but mostly stone-lined. Wooden lintel with brick above. Interior limewashed. Measures 1.97m wide by 1.75m high and 3.75m long.

122893 Rhosdyrnog root store SH 8295 0040
A photograph of a root store, comprising a mound with passage, at Rhosdyrnog is held by RCAHMW. It is noted under the NPRN (29902) for the farm.

122894 Tal-y-Wern Fach root store SH 8267 0021
Site of root vegetable store reported by local resident. Possibly associated with house site 8305.

128001 Pennant root store SN 8794 9767
Root vegetable store noted just to the north of Pennant by a local resident. Apparently set in a bank by the side of the road and used until recently.

128002 Cil-y-winllan root store SN 8260 9959
Root vegetable store at Cil-y-winllan reported by a local resident.

128003 Yewtree root store SO 15248 94975
Root vegetable/potato store recorded by RJS in 1995. Stone built walls with a brick arch, floor probably of compacted soil but covered at time of visit. Original dimensions 1.1m-1.2m wide, over 0.8m high and originally 2.7m long although this was reduced to 1.43m when visited. Finds etc suggested that it was filled up by the late 19th century before being sealed behind a retaining wall.

128004 Llangedwyn Hall root stores SJ 18823 24320
Two 19th-century root vegetable stores at the north end of the kitchen garden. Each is a brick tunnel covered by turf.

128005 Llys Farm potato store SJ 1790 2060
Former potato store, used since WW2. Brick arch, 1.1m high, set in a mound 5.7m long by 3.7m wide.

128006 Cwmcalch Isaf root store SN 9129 9957
Possible root vegetable store comprising a stone lined and capped tunnel, 0.65m high and 0.95m wide, in a low mound. There is a vent at its rear and a narrow platform, 0.9m wide, in front. (RJS visit 17/6/1993)

128007 Slate House root store SO 11185 93850
Stone vaulted root vegetable store to NE of house. Mentioned in former listing description for PRN 31043. It may no longer be extant as the house seems to have been extended/redeveloped. Side walls of stone with a brick vault, measuring 2.6m long by 1.1m wide and 1.5m high. Covered with earth. Photograph included in text (Wiliam E, 1986. The Historical Farm Buildings of Wales)

128008 Plas Dolanog root store SJ 059 133
Potato store cut into the side of the valley above the Vyrnwy. Roofed over with soil and thatch. Used annually in the 1930s.

128009 Tyddyn root store SN 989 871
Possible root vegetable store mentioned by local resident. Not examined.

128010 Talwrn dairy/root store SJ 17096 19184
Room about 2.5m high apparently always used as a dairy, sunken into the slope to N of Talwrn house. Similarities to some potato stores, but has benches running along its sides. Door and window to front partially roofed in slate.

128011 Vaynor potato stores SJ 1740 0013
Two adjoining potato stores, the E is brick-built and cut back into the hillside, with a door 1.8m high and 1.2m wide. Internal length 4.3m. To its W is a hollow representing another stores where bricks and its roof have been removed. (RJS 9/5/1991)

128012 Pen-yr-herber root store SJ 13782 06333
Stone-built root vegetable store cut back into hillslope less than 10m N of the old part of the farmhouse. Used as wood shed and incorporated into enlarged farmhouse. Arched roof, 1.85m high.

128013 Maes-gwyn potato store SJ 0335 0925
Potato store reported within 10m of the house at Maes-gwyn. Built of wood and turf with pitched roof.

128014 The Cottage potato stores SO 15895 95417
Two potato stores, one demolished, reported at The Cottage.

128015 New House potato store SO 1698 9895
Possible potato store adjacent to dutch barn.

128016 Cwm Cae root store I SO 2786 9145
Root store recorded by RJS in approximately 1993. Roof formed of wooden rafters with stone slabs then earth above. Apparently about 3m long. Used in 1st half of 20th century.

128017 Cwm Cae root store II SO 2788 9148

Root store recorded by RJS in approximately 1993. Roof gone but measures 4.3m long and 1.8m wide. Filled with rubbish and overgrown. Another store was apparently located nearby but was destroyed during road widening.

128018 Carreg y Big root store SH 9932 0332

Site of former root store near Carreg y Big, lost to earthmoving associated with farm improvements. It comprised a stone built passage with slabs over, covered in earth.