
Proceedings of the Cambridge Antiquarian Society

(incorporating the Cambs and Hunts Archaeological Society)

Volume LXXXIX
for 2000



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for 2000**

Editor Alison Taylor

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A Taylor BA, MIFA, FSA
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**This volume is dedicated to Susan Oosthuizen,
Secretary of Cambridge Antiquarian Society, 1996–2000**

Editorial

After publication this Spring of the long-awaited report on the excavations of Roman Cambridge the Society is now able to issue its Proceedings within the correct calendar year, and as some celebration of this (and to have some respite from the Romans) we are pleased to have a themed volume, this time on the sort of landscape studies for which Cambridgeshire has become well known. In light of this subject and the contribution she herself has made to it (including co-authorship of one article printed here), this volume is dedicated to Sue Oosthuizen, who has just retired as our very hard-working Secretary after four quite difficult years.

As usual, this year saw a full programme of lectures and outings, and we also enjoyed the launch of Roman Cambridge and an exhibition by the University Museum of Archaeology and Anthropology on the same theme. As has also become customary, we organised two very different conferences. In November, the Fulbourn Conference, hosted by the County Council's Archaeological Field Unit, was a round-up of excavations that had taken place in the previous year, though the scale of work is now so great this now has to be quite selective (which is all the more reason why the Field Work section in this Proceedings is such an important contribution : it is the only source for those needing to know what is happening each year). As customary, most of the talks were given by those who had excavated the sites, a daunting task for many giving their first public lecture but enabling a lively appraisal of evidence that was still almost literally spattered with mud. The Spring conference is usually more traditional and this year followed our landscape theme. Entitled 'Two thousand years of Fen and Upland' and organised by Sue Oosthuizen it included a keynote speech from Harold Fox and talks by Oliver Rackham and David Hall on ancient woodland, fens and fields, topics which they have made so very much their own.

President's Address

A new millennium brings home the fact that CAS is overdue for some changes and new initiatives. In Spring 1997 Sue Oosthuizen wrote a letter to all members entitled "A Call to Arms". This action was in response to a decline in the level of heritage services from local authorities to which CAS and the general public had become accustomed. A very supportive response was given by members, which has succeeded in helping reverse this trend. Further issues have developed since then, however, in provision of expertise and facilities within both local authorities and the University, such as a reduction in research space at the Cambridgeshire Collection and a threatened closure of the Committee for Aerial Photography, to which CAS strongly objected. At present we are concerned about the way in which public consultation has been eroded and how interested parties such as CAS can become involved in ensuring, for example, that a proper record of archaeology is made prior to its destruction by development, and that such work is undertaken to the highest possible quality within an intellectual process which helps answer research questions. To tackle emerging areas of alarm CAS approved a Heritage Policy in 1998, and a strategy to deliver that policy has been adopted.

Membership is another area which we are concerned about. All societies need to attract new and younger members and so a number of initiatives are under way. A web page will be produced to publicize the society, and to keep people up to date with events and information. We hope to run workshops on specific topics so that areas of current research can be discussed in detail, and to have some meetings in other towns to provide better opportunities for those members who live outside Cambridge and cannot easily come to the evening lecture programme. I would also like to encourage active fieldwork so that some investigation is pursued that is not tied to the needs of development. Opportunities for amateur involvement in archaeology have become all too rare over the past decade and a lead from CAS in this area might help to encourage fresh membership, as well as giving a chance for many current members to get more involved. There are many ways in which we can give CAS added dimensions and with those I have suggested here I hope that we will see the Society continuing to flourish in the years to come.

Tim Malim

General View of the Rural Economy of the County of Cambridge

Margaret Spufford

When I wrote *Contrasting Communities* (1974) it contained a preliminary chapter to the agricultural section called a General View of the Rural Economy of the County of Cambridge. That chapter was modelled on Charles Vancouver's General View of the County of Cambridge of 1794. However, the Cambridge University Press desired a 10% cut and this chapter was the victim. It was a pity because the other two main sections on the 'Schooling of the Peasantry' and 'Parishioners and their Religion' were both headed by chapters giving 'general views'. Without the 'general view' of the rural economy the book was, in the author's opinion, unbalanced.

Extraordinarily, the work in that first chapter has not been done by anyone else in between, so I have been encouraged to publish it here in this journal which has been so welcoming and friendly to my articles before. Happily this number also contains a review of the reprinted *Contrasting Communities* (2000) so the book can at last, in some sense at least, be said to be reunited.¹

When I wrote in 1972, Cambridgeshire had then been ill served by the local historian, partially because it was so difficult to classify regionally, falling comfortably neither in East Anglia nor the East Midlands. Its very archaeology tells the observer this. It lay in the disputed land between the Saxon kingdoms of East Anglia and Mercia. The great parallel series of waditches that run from the fens on the one hand, up over the gentle rise of the chalk and across the great traffic artery of the Icknield Way to the woods on the boulder clay above it, bear witness to this. A certain hesitation about its regional classification has frequently, and unhappily, been resolved by leaving out any mention of it at all. Moreover, at the time I wrote, its records had been neglected. A full-time archivist was only appointed to the Record Office in the 1950s, and a Record Society was only formed in 1972.

There was an even more serious handicap to work on the economy of the county. Any study of rural life must necessarily be firmly rooted in knowledge of its agriculture. Cambridgeshire is not an ideal subject from this point of view. The type of work, first made familiar by Professor Hoskins² and Dr Thirsk³, which presents a detailed picture of farming based almost entirely on comparative analysis of the information

provided by probate inventories, is impossible. The surviving Cambridgeshire inventories, with a few exceptions, date from the 1660s onwards. It is only possible, therefore, to construct a very general survey of the county's earlier agriculture from scattered sources, and to use this as a backdrop against which to consider other topics in more detail.

Cambridgeshire extends from the old course of the Ouse on the peat fen in the north, to the chalk ridge on which the Icknield Way runs in the south. The county falls into the three natural regions of upland, valley, and fen. From Newmarket on the northeast to Royston on the southwest run the beds of the middle and upper chalk which give rise to freely drained, sandy or loamy drifts. To the southeast, along the Suffolk border, boulder clays overlie the upper chalk above the 300 ft contour, and form the highest area of the county. West of Cambridge is another deposit of boulder clay, known as the western plateau, which forms a second and less well drained upland area, between 200 and 300 ft above sea level.

The valleys of the Rhee and the Granta cross the exposure of the middle chalk and join south of Trumpington to become the Cam. This in turn is joined by the Bourn Brook which bisects the clay plateau to the west. Northeast of Cambridge, the loams and gravels of the Cam terraces give way to the peat of the fen. The generally low-lying nature of the county leads its historians, much relieved by the refreshment to the eye of undulating country rising to as much as 300 ft above sea level, to speak of the Cambridgeshire Uplands in a way which could very well delude the uninitiated into thinking the Highland Zone of Britain was under discussion.

The settlement pattern of the county is largely dictated by its geology and soils. The middle chalk is waterless and there is therefore a villageless belt in the southeastern half of the county, between the 50 and the 300 ft contours. The upland villages to the southeast lie at the junction of the boulder clay and the chalk, in positions where surface water is obtainable. The boulder clays were wooded at Domesday, and these villages therefore lie on the fringes of a formerly wooded area. This is the only part of the county in which the villages are not strongly nucleated. Hamlet settlements southeast of the main villages toward the

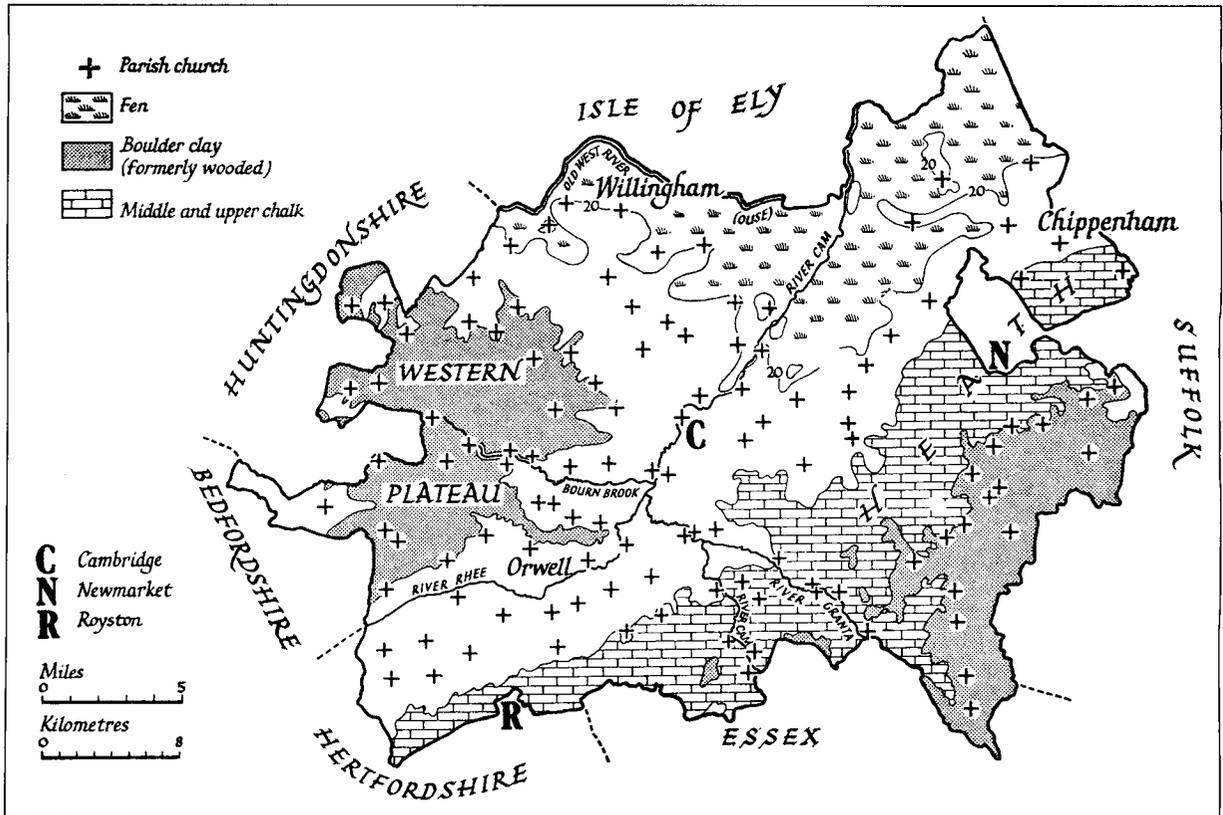


Figure 1. The location of Cambridgeshire villages in relation to the underlying geology. Reprinted from *Contrasting Communities*, Spufford 2000.

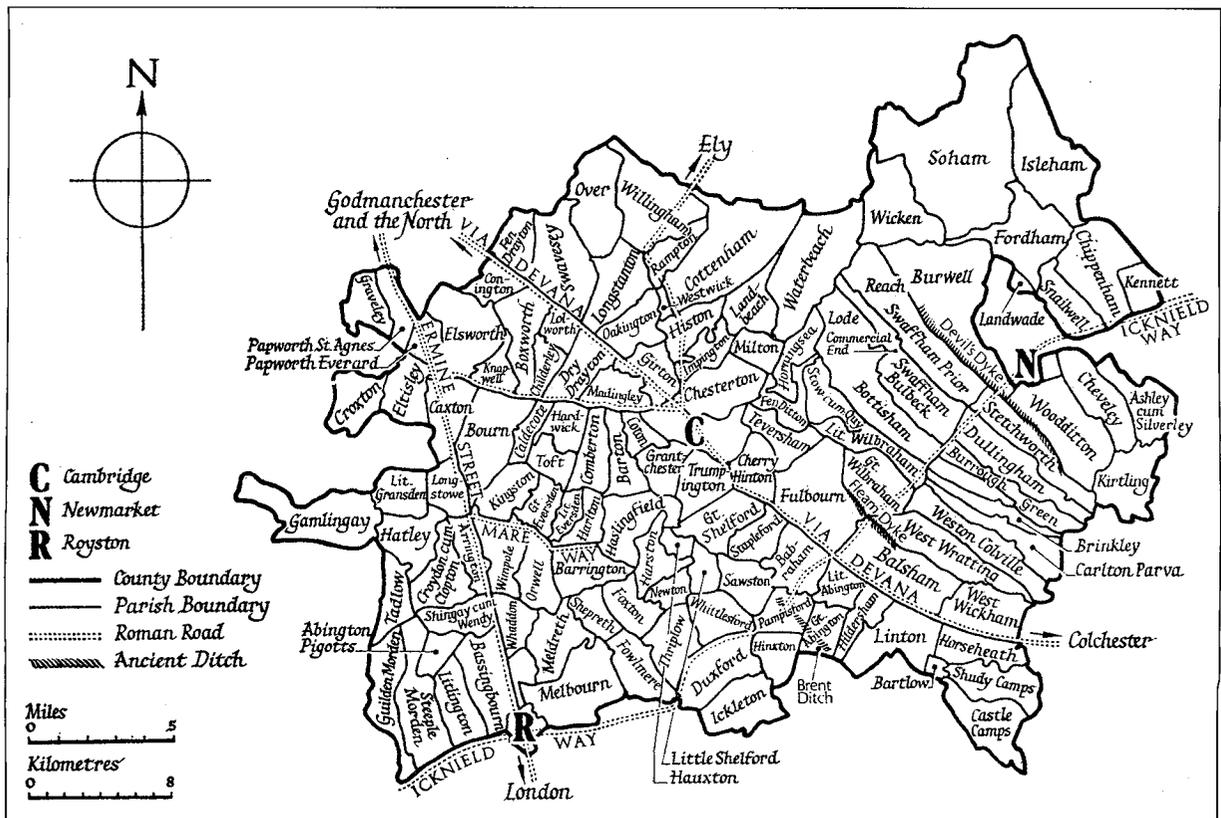


Figure 2. Cambridgeshire: county and parish boundaries. Reprinted from *Contrasting Communities*, Spufford 2000.

Suffolk border are numerous and are associated with the gradual extension of clearance. Very few houses existed outside the villages themselves until after the parliamentary enclosures of the 19th century elsewhere in the county, with the exception of the 'ports' to some of the fen edge villages, like Bottisham, Lode and Reach. The parish shapes of these upland villages are the familiar longitudinal ones associated with 'wold' areas. They run from the top of the wooded crest down to the Icknield Way, thus including areas of both boulder clay and chalk. The same parish boundary pattern is found in the southwest of the county, in the four parishes west of Royston which run from the upper chalk slopes down to the valley of the Rhee.

The upland villages of the western plateau are sited rather differently from those of the southeast. They lie either along the Bourn Brook or on the boulder clay, usually on subsidiary streams, or on the spring line at the bottom of the clay outcrop below the 200 ft contour. The tops of the ridges on each side of the Bourn Brook, above 200 ft, are bare of settlement. Again the early wooded character of the area is probably reflected by this absence of sites. The parish shapes in this part of the county are irregular and are dictated by the line of the Bourn Brook and the line of the Roman roads and earlier trackways rather than by considerations of land use.⁴

The river valleys are naturally thickly settled. The irregular parishes of the valley villages occupy the whole central portion of the county south of Cambridge. Apart from the alluvial gravels and sands along the line of the rivers themselves their lands lie mostly on the loams on the middle chalk, with the exception of those like Barrington and Haslingfield to the west of the Rhee which include areas of the ill-drained gault at the foot of the western plateau.

The settlements along the edge of the fen northeast and northwest of Cambridge fall into another category altogether. Most of them lie above the 20 ft contour, on the firm ground above the fen.⁵ The extent to which this contour represented an 'edge' before the drainage schemes of the 17th century, is shown on a map of the fens made in 1604 by William Hayward⁶

The fen-edge parishes to the northeast of Cambridge run up to the Icknield Way, as well as down on to the fen, and so include both chalk and fen. They therefore have similar longitudinal shapes to the wold parishes which they abut. The more irregularly shaped fen-edge parishes to the northwest, on the other hand, include areas of the poorly drained clays on the lower slopes of the western plateau.

In view of such diversity even within so small a compass, a treatment of the agriculture of the county in terms of land use illuminates the different regional characteristics within it as much as a 'conventional' analysis based on inventories. I have therefore first considered the areas of wood, heath, and fen to be found in Cambridgeshire, before discussing the amounts of meadow and pasture compared with that of arable, and the extent of ley farming.⁷

Woodland was found only on the two boulder clay

areas of the county at Domesday,⁸ and in 1794 Vancouver gave it only a thousand acres in the whole county.⁹ In all but these two areas there were negligible areas of wood in the 16th and 17th centuries. The picture is best illustrated by the report of the Parliamentary Commissioners at Burwell, on the fen-edge, who wrote in 1649:

'No woods, underwoods, nor Tymber Trees
within the said Mannor'¹⁰

The manor of Trumpington on the Cam a little above Cambridge had only two acres of wood in 1577/8.¹¹ Richard Bracken of Chesterton estimated an annual value of £3.6.8d. for the

'woodes yerelye to be felled of his hedgerowes
and wyllowes'

when his manor was surveyed in 1567,¹² and apart from this hedge-timber and cuttings from the familiar willows by the Cam, he only had a three acre close of pasture and wood 'being yong wiche elme of vi yeres groweth'. Provision was usually made in leases at Longstanton, also on the fen-edge, in the 16th and 17th centuries for the lessees to plant some timber, which might be two willow sets, 'six oaks ashes or elmes yerely', or as many as eight oaks yearly.¹³ This must have been hedge and close timber, and presumably reflects the need to maintain a supply of wood of some kind. Manorial rights over wood were jealously guarded. The surveyor of the royal manor of Orwell on the edge of the western plateau commented when he surveyed the place in 1627 that there was little timber about the town, and that the tenants 'pretended' they had a right to it.¹⁴

It is not without significance that the Royal Commission on Historical Monuments suggests that the period of greatest rebuilding in western Cambridgeshire in general,¹⁵ as well as Orwell in particular,¹⁶ may have been from the early 17th century onwards. The lack of good building stone led to the general use of timber as a domestic building material, even though the comparatively sparse use of the latter¹⁷ also suggests its scarcity, even in the comparatively well-wooded west of the county.

The woodland on the estates of the Bishop of Ely mostly lay in Suffolk and Essex, but there was also episcopal woodland in Balsham, towards the Suffolk border.¹⁸ There were considerable remnants of wood in the southeast of the county. Camden in 1607 described Horseheath as 'among the woods' and noted that the Devil's Dyke ended near Catling 'where the roads are obstructed with woods'.¹⁹ The map of Western Colville and Carlton Parva made in 1612 shows 152 acres of wood, all of which lay on the higher part of the parish towards the Suffolk border. It also shows closes,²⁰ which may well be 12th and 13th century assarts which were never absorbed into the open field system.

The 13th century grants of arable made to the Hospitallers in the small settlement of Silverley, right up on the county border, are quite differently described from the similar grants of single rood and half-acre strips made in open-field parishes. They consisted of blocks of from seven to twelve acres, the

largest of which lay in the mid 13th century in *antiquo assarto*.²¹ Another lay in a field called 'Woodcroft'. These crofts and fields sound very similar to those which appear in the 17th century on the map of Western Colville and Carlton Parva, at the southeast, and on the highest part of the estate, outside the normal open-field system illustrated on the rest of the map.

Two examples of the 17th century disappearance of remnants of woodland are found in the nearby parish of West Wrattling. The Master and Fellows of Peterhouse had held, in the manor of Scarletts, an enclosed pasture called 'Cadge's' containing 20 or 25 acres which was leased to various tenants, reserving to the Master and Fellows all timber trees and other trees, which in 1608 amounted to thirteen score.²² In the same year the Master of Peterhouse brought a bill in Chancery against two yeomen of West Wrattling whom he claimed

'have of late very wastfully not onely stubbed uppe mutche of the underwood, growing in or near unto the hedges belonging to the said pasture ground, but likewise have felled and stubbed uppe ... above an hundred tymber trees of Oake being above an hundred years of growth and further give forth in speeches that they will forth with fell and stubbe uppe the residue of the Timber being above four hundred oak trees growing in the said pasture.'²³

Peterhouse also leased out separately 'all that grove or woodgrownde' called Cheveley Grove which contained 12 acres of wood in 1636;²⁴ but in 1648 it had become an enclosed pasture 'being heretofore a woodgrownde.'²⁵

On the west of the county, woods were similarly found on the clays. Two examples give some indication of its extent. The two demesne woods of Little Gransden were said in 1648 to contain 160 acres, out of 500 acres of demesne,²⁶ and the map of the adjoining parish of Gamlingay, made for Merton College, Oxford, in 1601, shows considerable areas of wood.²⁷ Some original fragments of this woodland still survive, round for instance the medieval Kingston Wood Farm, which is shown, surrounded by its probably original closes, on a map of 1720.²⁸

Across part of the waterless area of the middle chalk from Newmarket to Royston ran a band of heath, which was thus shared by the upland chalk parishes, some of those on the fen-edge, and even by one or two in the upper valley of the Granta, like Babraham and the Abingtons. It made ideal grazing ground for sheep and would continue to do so well into the 20th century. The two 'Heath' farms in Great Willbraham which lie just below the heath shown on the 17th century map of West Colville, had a flourishing pedigree flock which was exported for Australian breeding. The sight of the shepherd there, swinging his lantern on a February night amongst his lambing ewes in their folds of straw bales in the 1960s, was a reminder that some land retains its immemorial use, even though further along the heath the trainers of Newmarket may gallop their strings below the beech-

es outlining the Icknield Way, on land the shepherds once worked.²⁹

Medieval population pressure had once affected the heath, but attempts to cultivate it were doomed to failure until modern methods of maintaining the fertility of light soils were adopted in the 18th century. The area of heathland had therefore first shrunk, then expanded, and this sometimes puzzled 16th century surveyors. Those who described the manor of Snailwell in 1560 recorded, when they came to the edge of the heath,

Patet per le fforowes quod quondam fuerent arrat,

but they were equally clear that the main part of the heath had never been cultivated, for they wrote:

*Non potest memorari nec videri quod unquam fuit major arrat ... bruer.*³⁰

This is not surprising, since the attempt to cultivate the heath in the neighbouring parish of Chippenham had been a seigneurial profitmaking enterprise which had failed in the 12th century.³¹ This area of heath often made up a considerable portion of the acreage of these parishes. At West Wrattling, which had five manors, the acreage of heath appertaining to only three of them, given in Elizabethan schedules and terriers, amounted to 610 acres,³² whilst a terrier, which purported to cover all the arable land in the township in 1607, only gave a total of 628 acres of arable.³³ This proportion seems incredibly high. In the adjoining parish of Weston Colville, the 223 acres of heath only formed 8% of the land surveyed in 1612³⁴, whereas at Snailwell and Chippenham the heath formed 20% of the parish acreages.³⁵ These heaths were normally a manorial perquisite, or at least, had become so by the end of the 17th century. The heath at West Wrattling was attached to specific manors; at Weston Colville it was divided between the three farms which also shared the wood and may therefore be assumed to have been those of demesne lessees. At Snailwell at the end of the 17th century it was divided between the lessees of the demesne, the rectory, and the farmer of two large messuages.³⁶ The heath at Chippenham, on the other hand, had been half common and half demesne in 1544, but a successful attempt was made during the century to make the heath a manorial monopoly. Not a single sheep appeared in the inventories of Chippenham men made after 1630.³⁷ These heaths were associated with considerable sheep walks. Exactly the same men who had rights over the heath at Snailwell in 1684 also held sheep walks in the same parish which amounted to a right of walk for 1040 sheep. The connection between rights over heath and rights of sheep walk was demonstrated even more clearly at West Wrattling where the survey of the manor of Charles estimated 300 acres to

'the Sheeppcourse to the same belonging, for the sum of iiij^d sheep, more or less, with the heath to the same.'

In 1544 the tenants of Chippenham noted that the previous farmers of the manor had never kept over 1140 sheep,³⁸ but that 'the ffarmor doth now kepe v or vij c of sheep over the number.' He was in fact running over 3000 sheep. At the end of the 18th century, the



Figure 3. Sheep folded on the fallow. Reproduced by kind permission of the Pepys Library, Magdalene College, Cambridge, Ballads, III, p 199 'The surpriz'd shepherdess'.

heath sheep walks noticed by Vancouver all lay along this belt. It was probably in this area that a general effort was made by the various lords concerned to monopolize the very considerable sheep flocks. The area was in many ways similar to the open field area on the light soils of Norfolk.³⁹

The parishes of the fen-edge and the fen itself also supported sizeable sheep flocks. If the little village of Landbeach began as a settlement for raising sheep it was a good choice.⁴⁰ In the 16th century Landbeach suffered from the attempts of the lord of one of its manors, an engrosser and gentleman grazier, Richard Kirby, to overstock the commons. He was said to have put in 1200 sheep belonging to strangers, whereas the manor had customarily grazed six or seven hundred sheep.⁴¹ Kirby was not alone; men like Sir William Hinde of Madingley operated on a very large scale over the county. The increase in the number of sheep kept was particularly menacing to the villages with fen common because the close cropping of sheep militated directly against the keeping of cattle. The principal interest of the villagers was normally, although not always, in the latter either for fattening, or for cheese-making. Many of the fen communities were therefore struggling in the 16th century against the ambitions of men like the Hindes. At Cottenham, in Mary's reign, it was agreed that Sir Francis Hinde, lord of two of the manors, should have two 'several' sheepwalks and that his flocks should be excluded from all other customary sheep pastures.⁴² This limitation by agreement of the area of the lord's fold-courses was to set the pattern for similar limitations in other fen parishes in the 17th century to defeat the gentlemen graziers, and to clear the way for the development of dairying which was to become the specialisation of Cottenham⁴³ and its neighbour Willingham by the end of the century. In 1808, the Lysons wrote of these two parishes in their *Magna Britannia, II*, that each ran herds of 1,200 'milch cows' and that much of the 'celebrated cheese' of Cottenham was made in Willingham. In the 1960s, the story was

still current that Stilton 'stole' the recipe, and the marketing, from Cottenham. However that may be, cheese making on the fen edge was vital to its economy and prosperity. It is easy to miss the importance of cheese in the seventeenth-century inventories, because it was valued low, and so does not appear predominant. But cheeses weighing about five and a half pounds in the 1670s were only priced a 1s each, so a 'parcel' of cheese priced at thirty shillings would weigh over 150 pounds. I only fully appreciated the way the importance of cheese is camouflaged in the inventories much later than this paper was originally written, when I was working on a parish, also in the seventeenth century, in Staffordshire. There I became aware that a hundredweight of cheese was only valued at £1/6/0. In that Staffordshire parish to make a real impact on his inventory, a farmer had to be a large-scale producer, as was Thomas Hadderton, whose 23 hundredweight of cheese was valued at £23, and therefore stood out in the inventory.⁴⁴ Only in Landbeach, which was topographically more suited to sheep farming, was the predominance of sheep over cattle maintained. Over two hundred inventories survive for the three villages of Cottenham, Waterbeach, and Landbeach, made between 1660 and 1710. The ratio of sheep to cows was only 19:10 in the cheesemaking centre of Cottenham, 24:10 in the true fen village of Waterbeach, but 38:10 in Landbeach.⁴⁵

However, less important sheep walks existed all over Cambridgeshire, and the same intimate connection existed between sheep walk and arable as existed in other open field areas where the prime function of maintaining the fertility of the arable was carried out by these means.⁴⁶ The survey of Orwell made in 1627 listed the right of foldage, which each tenement and half-yardland carried, with great care.⁴⁷ The right of fold was clearly a prized prerequisite at Chesterton where 'compassing of certayne landes with the common foldes' for a week or a fortnight was listed as a separate item with various leased parcels of the demesne. Here too, there was a common sheep

course, as well as the lord's sheep course for 600 sheep.⁴⁸

At Kingston, on the western clays, the right of 'folding to his farm' was a privilege to be lost in 1666 by any incoming tenant if he refused to abide by the terms established in that year between the tenants and the lessees of the demesne and its sheepcourse. The series of court orders at Kingston, which runs from the 1660s to the 1680s, stunted the sheep of the tenants to six for every twenty acres and six for a commonable cottage. The demesne sheep flock was not to exceed 250.⁴⁹ At Longstanton in the 1650s the tenants' sheep were stunted to seven per house and fourteen for every twenty acres of land, and the demesne flock was limited to 600 sheep.⁵⁰ The strict stinting of tenants' contributions to the common flock, opposed to the manorial privilege of running large flocks, explains the great division in the sizes of sheep flocks found in the inventories of the 1660s.⁵¹ Forty-four out of 50 men who died owning sheep in the decade had under 45 sheep, one had 68 and the remaining five had over 130. These men were very substantial yeomen and were not primarily graziers. William Wickes of Bourn, who ran 260 sheep, had crops worth £350 in his barns after harvest in 1662. John Clarke of Little Wilbraham who had 300 sheep, and 'hurdles for ye fold' amongst his gear, had corn on the ground worth £288 when he died in June 1662. It seems quite evident that these men were lessees of demesne sheep walks.

Only a few of the Cambridgeshire parishes, as opposed to those within the Isle of Ely, had an acreage of fen which was sufficiently considerable for their economy to be based on pasture rather than on arable farming. Willingham, and Soham, amongst others, were of this type. Ravensdale's detailed study of the development of the landscape and field systems of three villages lying next to each other on the edge of the fens, Cottenham, Landbeach, and Waterbeach, has shown that the single most important feature in each parish was the amount of land below the 8m contour, which was immediately vulnerable to flooding. In Waterbeach, which 'in the wetter historical periods was a true fen island', only the settled land lay above this contour; the rest was frequently flooded, and there was relatively little arable. This topographical difference found immediate expression in the social structure of the villages concerned. The perquisite of the fen, fishing, fowling, and maintenance of stock on its commons, could support men with very little arable. As a result, at Domesday, 41% of the tenantry recorded in Cottenham were cottars and bordars, whereas the extraordinarily high proportion of 94% of Waterbeach men were smallholders of this kind.⁵² Similarly, at the end of the thirteenth century, 32% of the tenantry at Cottenham held under five acres, but 91% of Waterbeach men lived on minute holdings. The fens were ideal ground for squatters, and in times of population explosion, the villages within them could cope with very rapid expansion. In these parishes, fen-grazing, and the stock kept on the fen, was the villagers' chief interest.

The handful of inventories which survive for

Fordham Deanery in the Archdeanery of Sudbury for the 1570s⁵³ illustrate the variety of farming that Dr Thirsk made familiar in the Lincolnshire fenland.⁵⁴ The amount of stock recorded in these inventories was not necessarily very high; the significant feature was the number of beasts kept in relation to the amount of land farmed. John Dovantes, a labourer of Soham, had in 1575 no land at all, but ran three mares, two foals, two bullocks and a pig. At the other end of the scale, John Kidd of Soham, whose moveables were worth £93.3.0 when he died in 1576, had 28 cattle, 11 horses, and 9 pigs, a considerable herd by the standards of upland Cambridgeshire in the 1660s,⁵⁵ but all his land amounted to twelve acres. Most of the fen-edge parishes, as opposed to the true fen parishes, had a comparatively small area of fen. The survey of Chesterton made in 1567 showed that the common fen there 'which is good ground' amounted to 200 acres lying all together by the river side.⁵⁶ Snailwell had 214 acres of fen in 1684 compared with 1355 acres of open field arable. In 1544, Chippenham had about 200 acres of fen compared with just under 2000 acres of open field arable. At Milton the proportion was rather higher. The field-book of 1599 gives a total of 1122 acres of arable, and a settlement of 1615 ascribes 400 acres of marsh to the manor. Most of the fen-edge parishes were then predominantly arable, but the common fens were highly prized as pasture grounds. In the 1560s an attempt was made by Sir Thomas Rivett, who had bought the manor of Chippenham, to appropriate the common fen. The tenants brought a suit against him, claiming that by digging turf he had spoil the common and that he had also attempted to enclose the fen by means of a ditch.⁵⁷ Judging from the map of 1712 the tenants were successful, since the Chippenham fen and the common by it contained 284 acres, although from the disappearance of two lakes mentioned in the 1544 survey and the greater extension of the demesne closes around the fen, some degree of enclosure may be compensated for by fen drainage.

Away from the fens, where stock-keeping dominated the economy, meadow and pasture formed only a low proportion of the acreage of Cambridgeshire farms. The entire parish of Snailwell had 85 acres of meadow and pasture in 1560, under 7% of the arable area. On three leasehold farms in Longstanton between 1597 and 1629 the meadow and pasture of each amounted to between 12 and 16%.⁵⁸ On three farms at Little Abington in 1613 the meadow and pasture amounted to between 2 and 10%.⁵⁹ It is most noticeable that when a complete parish survey exists an extremely high proportion of pasture and meadow is in the hands of the lord or his farmer. On the demesne of Orwell in 1601 permanent meadow and pasture formed 10% of the demesne, and it was this small acreage that the tenants chiefly coveted, for it formed almost the whole of the parish permanent grazing. The glebe of Toft and Comberton in 1638 included only 2 and 3% of permanent pasture.⁶⁰

Apart from the fen, the only area of the county where the proportion of meadow and pasture appears



Figure 4. Reproduced by kind permission of the Pepys Library, Magdalene College, Cambridge, Ballads, III, p 63 'The bonny milk-maid'.

to have been much more considerable was on the southeastern uplands on the Suffolk border, where the patterns both of settlement and of land use were in many ways quite distinct from the rest of the county.⁶¹ The glebe terrier of Carlton-cum-Willingham and Weston Colville made in 1615 shows that almost half of the fifty acres of glebe land was in pasture closes. The map made of the manors owned by Mr Sampson Lennard in Weston Colville and Carlton Parva in 1612⁶² shows the completely different pattern of agriculture round the village of Weston Colville itself and its hamlet of Weston Green. North of the village the strips of three open fields ran down towards the fen-edge and accounted for some 1082 acres of the parish. The village lay almost at the upper extremity of these fields, and to its east, above the 300 ft contour and the edge of the boulder clay, the strips were replaced by small unevenly shaped fields of anything from nine to forty acres, accounting for a further 1200 acres. There is no documentary evidence to go with the map and it is impossible to tell whether common rights were extinguished over these fields, but some of their names, 'Pycrofts', 'Goldcrofts', and 'Hall fyld', suggest that they were predominantly meadow and pasture. Only two 'Oat Fieldes' imply otherwise. This throws a certain amount of light on the description which Vancouver gave in 1794 of the villages of Shudy and Castle Camps and Stetchworth, all of which lie on the chalk ridge. In all three of them he noticed that half, or over half, of the acreage was enclosed arable or pasture and in all three cases he seems to imply that the enclosed land lay south of the villages on the clays towards the Suffolk border. These differences in land use reflect the fundamental settlement patterns of these villages, with their open fields on the chalk loams, and later scattered hamlet settlements and enclosed clearings on the clays.

Great emphasis has been laid on the use of ley farming in the 16th century to increase fertility, to add to the available pasture, and to promote flexibility. Professor Hoskins first pointed out the existence of ley

strips scattered amongst the arable of Wigston Magna⁶³, and showed that such an arrangement was typical of Leicestershire⁶⁴ where, he noted, between a third and a quarter of the whole acreage of a farm was likely to be under grass in one form or another. Work on Lincolnshire has shown the existence of leys on the clay lands there in the early 17th century. The practice of convertible husbandry spread there during the century.⁶⁵ The spread of ley farming is also found in Oxfordshire at the same time.⁶⁶ The evidence is, in general, used to support arguments illustrating the possibility of progress within open field systems.⁶⁷ However, the material available on the fen-edge parishes of Cambridgeshire suggests that land described as ley there was not necessarily convertible land let down to pasture for a few years only, but was probably permanent pasture in the open fields. Of thirty-eight strips listed in four terriers at Longstanton between 1581 and 1613, only five were isolated in the arable. All the rest lay in blocks in furlongs next to the meadow. Throughout the 17th century leys were found in the same furlongs, and a late 18th century terrier places them there too.⁶⁸ They were obviously permanent, and, in general, occupied lands too wet for arable. Yet Longstanton lay on heavy clays which, Dr Thirsk has pointed out, were likely to benefit most from convertible husbandry. The field books of Milton of 1599 and 1707 list a negligible number of ley strips, almost all of which were on the demesne. They did not amount to more than a dozen acres in the whole parish. Two blocks of leys had been permanently enclosed before the field book of 1599 had been drawn up.⁶⁹

The ley at Chippenham and Snailwell was differently situated. In both parishes it was found only on the edges of the heath on the very light soils which were presumably unable to stand permanent cultivation. Certainly at Chippenham the existence of this ley was not evidence for agricultural improvement in the 16th century.⁷⁰ It is most likely that the existence of this ground was related to the late medieval shrinkage

of the village. At Snailwell the lord had 105 acres of ley ground in 1560, in blocks by the heath, and this bore more evidence of purposeful cultivation than that at Chippenham for, in that year, various small amounts of the ley were described as ploughed up and sown by the farmer, and the whole amount was described in the summary at the back of the survey as 'newly arryed up and sowen'. For all that, most of this land returned into the heath by 1648 and the field sizes shrank. In these four parishes, ley farming was not an improvement but simply a method of using land too wet or too light to be successfully cultivated. The amount of extra pasture provided by it was not very considerable. It was greatest at Longstanton where it amounted to between 2 and 16% of the acreage of two tenants' farms.⁷¹ In the other three villages the tenants hardly participated in the ley farming at all.

I have found no surveys of the western clays which give as full a picture of agricultural conditions as the fen-edge surveys, but glebe terriers from Boxworth, Comberton, Kingston, Toft and Elsworth give impressions which are fortified by cases brought in Exchequer on Little Gransden and Orwell.⁷² Judging from parsonage farms alone, there was no question of a wholesale or even a large swing to pasture in these parishes. They remained with the rest of the county, in predominantly arable cultivation. The parsonage farms at Toft and Comberton were 98% and 93% arable in 1638. But ley farming was practised. There were seven acres, or 4% of ley at Comberton. The rector of Elsworth had eighteen leys and 270 arable 'lands' in 1662, and the rector of Boxworth had 22 ley 'lands' listed in 1632 among his 276 arable 'lands'. At Kingston, where there were three acres of ley amongst the forty acres of arable of the glebe in 1615, the same three acres were ley in 1663, but as well, one of 13 lands which had been arable in 1615 was down to ley in 1663, and three roods of grass sward not previously listed had appeared.⁷³ The proportion was not high, but many of the arable lands at Boxworth had 'grasse endes' and references to adjoining blocks of leys were frequent in all these parishes. Moreover they were often described as common leys,⁷⁴ and it seems most probable that ley farming in the western uplands was related to shortage of common, since there were no natural areas for waste for this purpose. The rector of Boxworth had common rights for cattle in 'Gallor leys, Whitepit layes and all other layes, common wayes and havens whatsoever', as well as for sheep in the fields and for bullocks in the bullock pasture usually called 'the Downe'. No town common was mentioned. The general impression of shortage of pasture and common is strengthened by a series of Exchequer depositions, about the village of Little Gransden, on the western clays, made in 1607,⁷⁵ 1648⁷⁶ and 1649⁷⁷.

The basis of the case was simple. Gransden had been an episcopal manor, and from the fifteenth year of the reign of Richard II to the forty-third year of Elizabeth's reign the bishops of Ely had leased the demesne to the tenants. In the latter year the manor

was sold, and disputes between the purchasers and the tenants began, as the purchasers attempted to re-establish the bounds of the demesne which for two hundred years had been in the hands of the town. The method adopted was remarkably prophetic of that used by modern local historians when they choose to combine field work and documentary evidence. The whole case makes fascinating reading as an early example of the use of 'boots' to reinforce historical argument.

A local gentleman, Christopher Meade, who had formerly been steward of the manor, was the principal expert witness of the plaintiffs in 1607. He had made an apparently extensive search of the episcopal records at Ely and had discovered there 'one olde booke about Henry the thirde tyme, Called the Bishops Coucher' which was a survey sworn by twelve of the tenants. The demesne had then contained either 508 or 518 acres of arable, 14½ or 13 acres of meadow, and 25 acres of pasture. Meade set out to re-identify this land from a combination of the description given in the survey and other documents and 'archaeological' evidence. For instance, he deposed that a piece of ground called Dryhurst which contained about forty acres was listed in the Bishops Coucher and

'that it Cannott be lieing in the said Mannor Unless it be that peece of ground nowe called the great graves as he supposeth, because there is not any other peece of ground in the sayd Mannor of soe great contente and that all the sayd groundes before menconned lieth with ridge and furrow And further he saieth that in the sayd grounde nowe called great graves he dothe finde the foundacon of a howse and bye the Reves Accomptes of the said Mannor made between the fourteenth year of Edward the second untill the fourteenth of Richard II he dothe find that the said Reves did demand an allowance for the reparacon of a howse called the grange howse and that the sayd deponent dothe not finde any foundacon of an howse within the said mannor but onnlie in the sayd grounde now called the great graves and in the Berrie close.'

Apart from the methods used in the case, which drove the unfortunate judge to say testily that 'noe more such old bookes should be brought in, unlesse they wer bookes not above 40tie or 60tie yeres Continuance', its relevance lies in the information it gives about the commoning customs of Gransden. The town common of Langlands contained between 160 and 200 acres, and the main controversy concerned pasture land next to it which the tenants also claimed as common. It contained another 160 acres. As well as these blocks of pasture it seems that a considerable part of the demesne in the fields was ley and was used as common, for it was described as 'lyinge dispersedly in ye comon fieldes ... parts thereof laid in great peeces in Swerd ridge and furrowe'. Richard Knight, yeoman, deposed that not only a great part of the land tilled and called Berry Land was taken by

| Number of animals | Cattle owners | Horse owners | Pig owners | Sheep owners |
|-------------------|-----------------|-----------------|---------------|-----------------|
| 1-5 | 58 | 61 | 77 | 11 |
| 6-10 | 29 | 17 | 12 | 9 |
| 11-20 | 26 | 3 | 5 | 11 |
| 21-30 | 3 | 1 | 1 | 8 |
| 31 and over | 4 | 1 | - | 11 |
| total | 120 | 83 | 95 | 50 |
| median | 6 cattle | 4 horses | 2 pigs | 16 sheep |

Table 1: Stock in Cambridgeshire Inventories 1661-70.

himself and others to be their copyhold land but also that all the leys in the same field were taken to be their common and that the latter 'lyeth ridge and furrow intermingled in the sown feildes'. The tenants were quite clear that Langland Common was 'not sufficient pasture for ye Cattell in Gransden without helpe of other pasture groundes'.

The Exchequer ruling made in the earliest case is apparent in various information given in the last two cases. The commissioners certified that 160 acres of pasture by the common were demesne and they were enclosed by the new lord, Sir Allen Apsley who, in return, gave up his rights of common on Langlands and also sold a hundred acres of land to the tenants. He apparently recovered his open field land as well, for the depositions of 1649 record 'there were sett forth for Sir Allen Apsely divers other landes which laie dispersedly in the common feilds which from that time to the present are employed in tillage'.

In spite of the lord's concessions the enclosure was much resented, and three times in the next forty-two years the hedges of the new closes were pulled down and the town herd of 160 beasts⁷⁸ let in. The whole case shows how the villagers had come to depend on the existence of extra grazing acquired when arable was let down to pasture, presumably at the end of the 14th century. Deprivation of this extra grazing affected them severely when the level of population had somewhat recovered.

All this material tends to suggest the overwhelming predominance of open-field arable in upland Cambridgeshire compared with relatively small amounts of meadow, pasture and ley. This suggestion is reinforced by the figures given for stock in the probate inventories of the 1660s, which suggest little agricultural diversification.

As can be seen from Table 1, the median herd of six cattle was much smaller than that in any area of Lincolnshire during the same period, where the median herds ranged from eight to thirteen beasts in different parts of the county.⁷⁹ It was, however, about the same size as that in Oxfordshire.⁸⁰ Regional variations in the number of cattle kept certainly existed in Cambridgeshire also, but even the twenty-five owners of cattle who came from the true fen parishes had a median herd of only eight cattle. The really significant difference between the fen parishes and others was not the slightly larger size of the median herd but the relatively large number of beasts which could be kept on fen commons by men with only a small acreage of

arable.⁸¹ John Brasier of Willingham, who was described as a fisherman at his death in 1669, had eight cows, a horse, and two pigs, but only half an acre of wheat on the ground. The number of horses on these farms was not markedly different from that found elsewhere, and the median herd did not rise above five horses, even in the fen, although there were examples of people obviously indulging in horse breeding, like William Salt of Chesterton on the fen-edge, who had forty-two horses in 1669. The median Cambridgeshire sheep flock was smaller than that in any but the Lincolnshire marshland; elsewhere in Lincolnshire the size of the flock ranged from twenty to fifty beasts at the same date. In Oxfordshire, Mr Havinden based his theory of agricultural improvement in part on the raising in size of sheep flocks from fourteen to sixty in the periods between 1580-1640 and 1660-1730.⁸² In Cambridgeshire the median number of beasts kept in the 1660s still lay between fifteen and sixteen. Extension of private flocks in a manorial sheep-course area can not in any case have been possible.

A sample of roughly 150 probate inventories for the 1660s produced only nineteen which differentiated crops adequately to indicate the acreage of each. The sample covered under 350 acres. This is an utterly inadequate number and little reliance can be placed on the results (Table II).

The parishes of the fen and the eastern upland were well represented within the sample, with over 100 sown acres apiece, but there was little evidence from the western upland and from the valley parishes. However, it was most noticeable that, in every single inventory, barley formed over half of the sown acreage. Cambridgeshire's reputation as a malt producer⁸³ was thereby maintained. Meslin and wheat together made up just over a quarter of the crops sown, although the proportion rose to nearly a third in the fens and on the fen-edge, and fell to rather less elsewhere. Wheat appears to have been sown by itself in comparatively small quantities however. Rye and oats each accounted for under 5% of the acreage. Apart from the predominance of barley, the main feature of the arable farming of the county was the lack of fodder crops. Peas covered little more than 5% of the sown acreage, although they were much more important in the fens where they formed nearly a fifth of the crops.

An even stronger impression of the predominance of barley is provided by an examination of the

| Winter Grain | Acreage | Percentage |
|-----------------------------------|-------------------------------------|------------|
| Meslin (inc. 23a 'wheat and rye') | 54a | 16% |
| Wheat | 16a 2 ¹ / ₂ r | 5% |
| Wheat and Meslin | 20a | 6% |
| Rye | 9a 2r | 3% |
| total winter grain | 100 1/2r | 29% |
| Spring Grain | Acreage | Percentage |
| Barley (inc 1/2a 'horsecorne') | 190a 1/2r | 55% |
| Peas | 24a 1r | 7% |
| Oats | 14a 2r | 4% |
| Bullymong | 13a | 4% |
| Lentils | 5a | 1% |
| Total Spring Grain | 246a 3/2r | 71% |
| <i>Total acreage of sample</i> | <i>347a</i> | |

Table II: Crops in Cambridgeshire Inventories, 1661–70.

surviving 16th century wills of Longstanton. Longstanton was one of those villages on the fen-edge with only a couple of hundred acres of fen-common. Sixteen men left bequests of crops from their barns measured only in bushels during the century. Between them, they left 849 bushels of barley together with 312 bushels of malt, but only 30 bushels of wheat and rye with eight bushels of peas.⁸⁴

Cambridgeshire farming was thus mainly devoted to the production of barley, and the land was kept fertile by the folding of the lord's sheep, together with the strictly stinted tenants', sheep upon it. This traditional system apparently produced results, in the shape of large marketable surpluses.⁸⁵ But even if the number of livestock kept was low, the most enlightened men in the county were not slow to adopt new fodder-crops in the 17th century. The inventories show that clover was being grown by half a dozen men in the 1660s, including some husbandmen, like John Affield on his twenty one acre farm at Harston. Sainfoin had made its appearance in the demesne closes at Snailwell and appeared on the map of Chippenham of 1712. John Bennett, lord of the manor of Great Abingdon, was growing turnips when the village was mapped in 1687.⁸⁶ No turnips nor turnip seed appear in the inventories, but this is not evidence that the practice was not generally adopted. Hops appeared in one inventory from the chalk uplands.⁸⁷

Cambridgeshire was comparatively very little touched by enclosure. Of the 'lost' villages in the county, only Clopton, which was depopulated and laid down to grass about 1500, and Childerley, which was emparked in the reign of Charles I, disappeared in the 16th and 17th centuries.⁸⁸ Childerley had in fact been depopulated before 1525, for only three persons were assessed there in that year.⁸⁹ The little parish of Caldecote is another candidate,⁹⁰ unfortunately the relevant part of the 1524 subsidy is missing; but in 1664 there were only nine houses there, two of which were empty.⁹¹ Malton, Whitwell, and Barham had lost their separate identity in taxation lists as early as the 14th century and were thereafter linked with Orwell,

Barton and Linton.⁹² Landwade had only five inhabitants assessed in the Great Subsidy and ten in the Hearth Tax, against forty-four in the Poll Tax of 1377, so there again the decline had taken place by the beginning of the 16th century. The village of Wimpole which was moved in an emparking during the period, was shrunken rather than lost, and had obviously already suffered by 1525, for at that date it had 48 taxpayers, compared with 173 in the poll tax. The number continued to drop to 27 in 1664.⁹³ Most of the damage on all these sites had therefore already been done by 1524.

Only returns made by the first two commissions to enquire into enclosures in the 16th and 17th centuries survive and even these are incomplete. The first, for 1517–8,⁹⁴ covers only five of the fourteen hundreds of the county and is unreliable even for these, for the enclosure at Clopton in Armingford Hundred, which is covered by the return, is not mentioned. Only nine villages in these five hundreds were affected, amongst them Shingay, where Camden noticed the existence of some of the best meadow land in the county,⁹⁵ in the upper valley of the Rhee which Vancouver later described as 'the Dairies'.⁹⁶ In all only 1422 acres were enclosed, or 1.39% of the acreage of these hundreds. This was on a very much smaller scale than the ten thousand acres of enclosures in Norfolk at the same date. The returns for 1549⁹⁷ only cover Cambridge itself and part of the Isle of Ely. The enclosures which they list are mostly, although not all, small-scale enclosures from arable to pasture, of between one and seven acres. Their main disadvantage appears to have been their irritant value, like the one and a half acres which John Cooles enclosed at Littleport in the Isle in the middle of the field, which was 'greatly to the annoyance of the whole township of Littleport'.

It is quite evident that, in spite of the paucity of returns, Cambridgeshire was very little affected by large-scale enclosure. In 1794, eight-three of the ninety-eight parishes described by Vancouver were still open, but independent 16th and 17th century evidence does show that little enclosures of the type



Figure 5. Reproduced by kind permission of the Pepys Library, Magdalene College, Cambridge, Ballads, I, p 149 'A looking-glass for corne-hoorders'.

described in the 1549 return for the Isle of Ely were quite common, and that, all over the county, it was possible to add to the core of pasture closes round the village sites themselves. The enclosers of these closes varied from manorial lords to very humble men. Sir Allen Apsley, whose enclosure of 160 acres caused so much trouble at Little Gransden⁹⁸ was not alone. At Longstanton Sir Fulke Greville, Lord Brooke, enclosed a considerable area of the town common. Sir Fulke Greville was Sir Philip Sydney's friend and himself wrote charmingly of the scornful Caelica, and her shepherd Philocell, who wandered together 'through enamelled meads'.⁹⁹

His action caused alarm and distress to the more genuine agriculturalists of Long Stanton who wrote to him, in much less polished style, that his agents were going about threatening to enclose the common under cover of his wishes,

'which we all hope will prove frustrate ... otherwise ... it wilbe to the utter undoing of most, or all of us, and our posterities for ever, with an endlesse curse to light upon the offenders'.¹⁰⁰

Despite Sir Fulke's poetic pastoral sympathies, the appeal apparently failed.¹⁰¹ Not altogether surprisingly, he was also engaged in despoiling a large part of Cannock Chase, Staffordshire for ironworking at the time.¹⁰²

Sir Fulke Greville was not the only encloser in Longstanton. In 1614, Robert King, ropemaker, who was not particularly well-off judging from his bequests and furnishings, left a will providing that 'the cloase which lately I enclosed' should be sold to provide stock for his son when he came of age.¹⁰³

When Thomas Wibrowe, a yeoman of West Wrating, sold the interest he had acquired in a manor there to Andrew Perne, later Master of Peterhouse, Perne agreed that

'ye said Thomas ... shall peaseably and quyetlye ... possesse and enjoye tow closes in westwrattinge ... the one callyd Ashewell peece lyinge in

Millfeld and the other callyd Grovecroft peece lyinge in Ewesonfeild lately enclosed by the said Thomas Wybrowe'.¹⁰⁴

At Kingston the existence of some closes in the fields seemed to be taken for granted by the homage, who ordained in the court orders in 1666 that no persons should keep cattle unstaked on 'their owne several Grounds in the ffeilds (unless it be inclosed)'.¹⁰⁵

At Snailwell, between the surveys of 1560 and 1684¹⁰⁶ there was a considerable re-organisation of the five open fields. The smallest, West Field, which lay between the village and the common fen, contained just over one hundred acres in the mid 16th century but had disappeared altogether by 1684. Even in 1560 there were signs that it was being encroached upon. The lord had two blocks of ten acres of pasture enclosed at the end of two furlongs. The initiative was not only seigneurial, for a freeholder, William Hill, had three roods 'modo inlaus' and planted 'pro le saffron grownde'. Howe Furlong, next to the town itself, was mostly enclosed as crofts to the messuages behind it, but some of the open strips survived, intermingled with them. By 1684, the acreage of enclosed meadow and pasture had increased from 89 customary acres to 141 stature acres and it seems quite likely that the new closes mainly replaced West Field.

Richard Bracken's manor in Chesterton had in 1567 a parcel of twenty acres of meadow, previously half-yearly common, 'newly enclosed'. Not all lords extending their demesne closes were of Sir Fulke Greville's type, as the agreement made granting the tenants of Milton concessions in return for the abolition of their rights of common in some demesne pastures in 1591 shows.¹⁰⁷ In that year, the lord of the manor, Henry Cooke, wished to extend his demesne closes. The tenants agreed to the extinction of their common rights of pasture in the Dry Close, Mareplot Close, Leverdole Leys, Bush Leys and 'every other Close and ground att anie tyme heretofore inclosed or kept in severaltie by the said Henrie', or his brother,

or father. Unlike the indeterminate 'diverse gratuities and leases of good value' granted by William Brocas of Theddingworth in Leicester,¹⁰⁸ the privileges granted to the tenants of Milton in exchange for the right to enclose the demesne pastures are known. The tenants were permitted to enclose 'the ffennes, marishes, and moore groundes within the manor of Milton ... which are fedd in comon by the said parties' in proportion to the size of each tenement 'for the more benefitt quiet & ease of the said parties'. Any tenant who preferred to continue feeding his beasts in common and not 'be att the charge of his fence' might do so as long as this did not interfere with those who preferred to enclose. Part at least of this enclosure seems to have taken place, since in 1683 an agreement was drafted by which the tenants agreed to re-enclose sixty acres of common which 'hath been formerly ploughed', but lapsed out of cultivation during the Civil War.

As well as the permission to enclose the common, the lord agreed that all customary tenants were to hold by fine certain of one year's rent, and to cut any wood or underwood growing on their tenements which they desired.

The lord and tenants of Milton seem therefore to have been harmoniously carrying out improvements in their closes and commons. An entry in the Milton field-book of 1599 gives some indication of how small enclosures could also be carried out without conflict developing. Half an acre of town land was listed which was 'given and granted from Simon Harris for the inclosing and keeping Severall of a Close contayning by estimacion 5 acres'.¹⁰⁹ There is no doubt that most of these enclosures were on a very small scale and did little to change the predominantly arable open field landscape. The maintenance of this landscape throughout the 16th century remains to be accounted for.

East Anglia and Cambridgeshire and part of Lincolnshire remain to this day the main region of the British Isles where the raising of crops, supported by some stock, predominates over mixed and pasture farming. Even in the 1930s, at the end of the agricultural depression caused by the import of cheap foreign wheat, more than half the cultivated land in East Anglia was producing cereals.¹¹⁰ This is undoubtedly related, at least in part, to climatic factors. The area principally devoted to crops coincides roughly with the area of the British Isles which has the lowest rainfall and also a high average number of hours of sunshine during the year. It is therefore a region of the country with one of the longest seasons during which the temperature is above the minimum necessary for cereals to indulge in active growth. Many of those with a longer season, particularly on the west coast, have unsuitable relief for arable farming.¹¹¹ Under these circumstances both wheat and barley thrive. Barley is ideally suited to the light easily-drained loams over chalk which cover so much of Cambridgeshire. Wheat does well on heavy clay soils, which tend to be described as ideally suited to pasture farming, but in fact are simply less easy to cultivate

and only better suited to pasture farming in in wet areas,

This inherent suitability for arable farming must have been one of the factors which meant that Cambridgeshire was relatively unaffected by the swing to pasture which left village after village deserted and blanketed in grass. The protagonists in the *Discourse of the Common Weal* were agreed that the cause of enclosure was the higher profit of grazing than of tillage. An attempt to improve on Thorold Rogers's index of wool prices has been made,¹¹² and has shown that the protagonists in the dialogue had some justification for their opinion. Wool prices were at a higher level than wheat prices until 1552; the two then alternated until 1581, when the price of wheat rose above that of wool and remained there. Enclosure and conversion to pasture was therefore profitable until the mid 16th century, although Professor Beresford has shown that in many cases the bulk of depopulating enclosure took place before 1458. In Warwickshire for example, of the Domesday villages which disappeared, ninety had been 'lost' by 1485, compared with only twenty-four afterwards.¹¹³ The first peak period of Leicestershire enclosure was from 1490 to 1510¹¹⁴ and the minor Cambridgeshire enclosures recorded in 1517–8, together with the disappearance of Clopton, can be ascribed to the same causes. Even if the majority of depopulating enclosures had taken place in the period claimed for them by Professor Beresford there is good evidence that the process of enclosure continued. Seventy-five Leicestershire villages saw their first hedged fields between 1540 and 1607.¹¹⁵ Although Cambridgeshire had been influenced in a small way by the profitability of pasture at the end of the 15th century, I have come across no trace of major open field enclosure in the 16th century. The small enclosures which have been discussed simply represent the extension of closes immediately around the villages.

The reason for this is not far to seek. Cambridgeshire was conveniently situated for the growing London market. Malt from the county had been sold in London as early as 1393–4,¹¹⁶ and the shire was producing a considerable surplus of corn for export through Lynn in the 14th century,¹¹⁷ when Gras singled it out for special comment as a supplier of corn. In spite of this, corn prices in producing areas were strongly differentiated from those in consuming areas like London, from 1269 to 1500.¹¹⁸ Those of Cambridgeshire were amongst the lowest.¹¹⁹ In the 15th century the tendency to differentiation increased. The average prices of wheat in the Cambridge region were from 1/1d. to 7d. per quarter lower than those of the lower Thames. Gras linked these greater 15th century differences with the breakdown of inter-manorial marketing, and postulated the existence of self-sufficient marketing areas contributing very little to other districts.¹²⁰ In the 16th and 17th centuries the position was radically altered. Gras¹²¹ and Fisher¹²² have portrayed the growth of the London food market, with its volume of trade increasing tenfold and its demand for corn multiplying threefold by 1600, and

the tentacles of the market spreading further and further afield until in the 17th century they reached Berwick and cut into the corn trade down the Severn. Fisher showed how this increased agricultural specialisation; Sussex became a source of dairy products, and Kent of cereals. He also produced evidence to show how the total marketable surplus of corn must have risen, since the volume of corn imported coastwise into London rose, and the rise was not offset by a fall in foreign exports. Cambridgeshire was one of the counties much affected by the market. By 1691–1702, when Houghton's price-averages were drawn up, the figures for the area, instead of being amongst the lowest, as they had been, were amongst the highest, and were obviously dominated by the metropolitan market.¹²³

There is abundant contemporary information on the export of Cambridgeshire grain to London. It was transported either through Royston and down the Lea, or by Lynn, coastwise. The trade through Royston was already flourishing in Henry VIII's reign, for Leland reported

'The market at Royston on the wennesday is marvelously frequentid, espetially with corne'.¹²⁴

Fisher made a specific example of Royston as a town which made its livelihood in catering for the London brewing industry. Camden wrote of the Cambridgeshire uplands that they were

'not one continued plaine, but moderately level, for the most part ... laid out in corn-fields yielding plenty of excellent barley which ... is made into large quantities of Byne or as we call it malt, which is used for brewing beer; of which the inhabitants make a considerable profit by selling it in the neighbouring counties.'¹²⁵

The State Papers Domestic of Charles I reveal that 'a very great parte of the corne of the county' was sold in Royston where it was malted for London. Over a hundred wagons of malt left Royston for London every week. Defoe, at the beginning of the 18th century, told the same story 'Cambridgeshire is almost wholly a corn county; and of that corn five parts in six of all they sow, is barley, which is generally sold to Ware and Royston, and other great malting-towns in Hertfordshire and is the fund from whence that vast quantity of malt called Hertfordshire malt is made, which is esteemed the best in England'.¹²⁶ The trade through Lynn also flourished. In the mid 16th century Lynn sent only about 6% of its total shipments of corn to London. By 1600 the proportion had risen to 40% and it had reached half by the second half of the 17th century. In 1565, the University of Cambridge complained to the Privy Council of the extent of the export of corn through Lynn and received in return permission to restrain export unless it was for the London market or for foreign export.¹²⁷ The Lord Mayor's Corn Book for 1573–4 showed that Cambridgeshire made the largest number of shipments to London ale-brewers in that year.¹²⁸

The reason then why Cambridgeshire remained arable in the 16th century is quite clear. As well as its inherent suitability for cereal production, it lay within

reach of an expanding metropolitan market greedy for grain, on two routes which provided easy transport to it. Even if the price level of wool was higher than that of wheat during the first half of the 16th century, the existence of a steady and expanding market for the traditional produce of the county was a strong disincentive to change. The importance of easy communications with London should not be underestimated. The justices of the peace for Leicestershire wrote in 1620 that the provision of a storehouse for corn in the county was unnecessary 'the county being remote from any means of exporting grain'.¹²⁹

The reason why the county remained unenclosed is perhaps less obvious; but there is very little evidence to suggest that until the mid 17th century at least enclosure was popularly thought of as a means of improving arable, as opposed to creating new pasture.¹³⁰ Unless the intention of enclosing was to maintain fertility by introducing convertible husbandry there can have been little advantage in the enclosure of arable until the introduction of improved drainage, especially when, in a sheep course region, the maintenance of fertility depended on the folding of the common flock on the tenants' lands. The chief disadvantage of the open-field cultivation of arable must, in such circumstances, have been the scattered nature of the strips of each farm.

Even at the end of the 18th century, Cambridgeshire farmers thought more of the convenience of amalgamated blocks of open-field arable than of the advantages of enclosure. Vancouver reported in a number of cases that the 'laying of the intermixed property together is much desired', although he sometimes added 'no enclosure of the open fields is proposed or wished for'. More significantly, he wrote on Boxworth 'the whole lies in large pieces'¹³¹ and on Madingley 'the whole of the lands in the open fields lie in large pieces; as such no enclosure in meditated or desired'.¹³²

The consolidation of holdings was one of the most important improvements that could be carried out in an open-field area. It is not a topic that has received much attention; enclosure, and ley farming and the consequent increases in stock kept, bringing about increased yields, have had much more notice from historians. As this survey shows, Cambridgeshire was apparently not advanced in this way, and it is something of a mystery how, without such advances, the fertility of the arable was maintained. Yet the county was apparently producing large grain surpluses to feed a flourishing market, and the very fact that it was one of the last counties in England to be enclosed suggests forcibly that open-field farming was sufficiently profitable for there to be little inducement to change. It therefore seems well worthwhile examining the degree to which farming in the open-fields was made more efficient by the consolidation of strips, particularly since engrossing, the laying-together of farms, ranked as a bogey with enclosure to the Tudors themselves.¹³³

When Professor Hoskins looked at the size of strips in Wigston Magna in Leicestershire in the last quarter

of the 16th century he was able to describe the farms as 'still largely conventional farms of one rood strips'.¹³⁴ In Longstanton, on the other hand, nearly two thirds of the 152 strips covering 84 acres in the 1580s¹³⁵ were of half an acre or more. A fifth were of an acre or more. The 'conventional' rood strip was already fast disappearing. In Snailwell, between 1560 and 1684, the process of engrossing was still continuing. There was a decrease of 17% in the number of strips through amalgamation.¹³⁶ The neighbouring parish, Chippenham, provided an even more dramatic example of the same process.

The survey of 1544 describes in detail some 2600 strips and parcels of land. The map of 1712 illustrates and gives the acreage of only some 820 strips covering the same area within the same boundaries. In just over 150 years the number of individual parcels in the fields had been reduced by over two-thirds. A comparison of the sizes of strips in the survey with those on the map show that where half those of the mid 16th century had been of a rood, a rood and a half, or half an acre, in the early 18th century over half were the equivalent of more than one customary acre. The open fields were much altered by the changing pattern of land-holding, as they had presumably already been altered by similar amalgamations before 1544.

The high number of large strips was not accounted for merely by the activities of the largest farmers, and the reorganisation of the land which came within their hands. Each of the other farmers with over 100 customary acres had approximately two-thirds of his parcels of land in units of more than one acre, and illustrated the general change. No sign of the traditional predominance of the rood and half-acre survived.¹³⁷ The economic situation which made the work of the engrosser possible, and the means he took to achieve his ends, as well as the effect he had, is therefore a vital theme to be examined in Cambridgeshire.¹³⁸ But the size of the communities supported by a corn-growing area of this kind, and the degree to which they grew and developed between the 1520s and the 1660s, must be considered before the effect of engrossing on their social composition can be understood. These are questions I tried to address in *Contrasting Communities*, against this essential agricultural backdrop.

Endnotes

- I am very grateful to the Editor, Alison Taylor, for her kind encouragement and help. I should state that I have not attempted to update the article in the light of subsequent insights, advances, and changes of fashion, in agricultural history. In the main, therefore, it stands as it was written.
- W G Hoskins 1950 'The Leicestershire Farmer in the 16th Century,' *Essays in Leicestershire History* Liverpool, pp 123–183. This was the first pioneering article on which such a monumental edifice of agricultural history has been based.
- J Thirsk 1957 *English peasant farming: the agrarian history of Lincolnshire from Tudor to recent times*; 1967 (ed) *The agrarian history of England and Wales IV, 1500–1640*, Cambridge, and her volumes on *The agrarian history of England and Wales V, I and II 1640–1750*, all of which use probate inventories to delineate the boundaries of agricultural regions.
- The topography of this whole area has been studied in great detail in *An Inventory of Historical Monuments in the County of Cambridge, I, West Cambridgeshire* (RCHME, 1968). The preface forms a useful brief guide to the settlement pattern. Henceforth referred to as RCHM.
- Contrasting Communities* (Cambridge, 1974, reprinted Sutton 2000) Chapter 5, particularly pp 129–133.
- CRO, Bedford Level Collection, R.59.31.40.1. This is a copy made in 1727.
- Those examples used in this chapter drawn from the parishes of Chippenham and Snailwell have not always been given separate documentary references, since material from these villages has been used extensively elsewhere.
- H C Darby 1957 *Domesday Geography of Eastern England* p. 299
- This is probably a gross underestimate, since he did not visit many of the parishes which still had much wood in the 17th century.
- PRO, E.317 (Cambs) 1, 1649.
- PRO, Wards 4/3. This class is in need of repair and therefore unindexed.
- Bury St. Edmunds and West Suffolk Record Office, E3/15.104/1.
- Northamptonshire Record Office, Finch Hatton Collection, 2342, 2339, 1184.
- CRO L63/58/2
- RCHM p. xlix
- Contrasting Communities* pp 25–6, 100
- RCHM p. xxxi
- I am indebted to Dr Felicity Heal for this information.
- W Camden, *Britannia* (ed. R. Gough, 2nd edition 1806), ii, 213 and 214
- ULC, MS Plans 550 (R.)
- B M Cotton MS. Nero C.IX, fos. 49v to 50, grants of Reginald Arsik of Silverley. Reginald Arsik was alive in 1243, and by 1279 had been succeeded by his son or grandson. W Farrer 1920 *Feudal Cambridgeshire* pp 47–8.
- Peterhouse Manuscripts, West Wrattling H.4
- Peterhouse Manuscripts, West Wrattling /=/ (sic.)
- Peterhouse Manuscripts, West Wrattling, H.5
- It also lay next to another pasture which had previously been wooded. Peterhouse Manuscripts, West Wrattling H.8
- PRO, E.134 24 Car. I Hil.2.
- Merton College Records 6/17
- RCHM pp 153, 158–9, Plate 29
- Contrasting Communities* pp 63–4
- Conclusive evidence exists to show that the presence of ridge and furrow was taken in the 16th and 17th centuries to prove the existence of former arable. The series of cases on the demesne of Little Gransden (PRO, E.134/5 Jas.I/Hil 26; E.134/24 Car.I/Hil.2; and E.134/1649/East.1; and see below p 76) sought to re-establish the boundaries of the ancient demesnes, and did so in part by examining the extent of ridge and furrow. Thomas Cage of Long Stow deposed in 1649 that 'The towne Comon called Langlands ... doth lie flatt and probably was never plowed whereas the growndes thereunto adioyning containing Three score acres

- being part of the groundes now claimed for Comon ... doe lye Ridge and furrowe.
- The inhabitants of Milton were equally clear about the matter in 1683 when they said that two pieces of common 'have beene formerly enclosed and converted to Tillage, As appeares by the plowed Lands and fforrowes therein' (CRO, L.11.137).
31. Margaret Spufford *A Cambridgeshire Community: Chippenham from Settlement to Enclosure* (Leicester Occasional Paper 20, 1965, reprinted in *Figures in the Landscape*, Ashgate, Aldershot, 2000) pp 12–13. Henceforth Chippenham.
 32. Terrier of the manor of Charles, II Eliz. Peterhouse Manuscripts, West Wrattling F.9; Schedule of the manor or messuage of Hammonds 1575, CRO, L.66.2.; Terrier of the manor of Paris 1589, CRO, L.66.10(B).
 33. CRO, L.66.4.
 34. ULC, MS Plans 550 (R).
 35. 19.6% at Snailwell in 1684/5. CRO, R.55.7.43.5; 19.7% at Chippenham in 1544. CRO, R.55.7.5.1(15).; and 20.3% at Chippenham in 1712. CRO, R.58.16.1
 36. CRO, R.55.7.43.5
 37. *Contrasting Communities*, pp 63–4
 38. 22 score wethers, 19 score ewes and 16 score sheep hogs.
 39. Compare K J Allison, 1957 'Sheep Corn Husbandry of Norfolk in the 16th and 17th Centuries', *Agricultural History Review* v: 12–30
 40. I am much indebted to my friend, the late Dr J R Ravensdale, for many discussions and much fieldwork done together. It is a sorrow that his completed PhD, which later appeared as *Liable to Floods* (Cambridge, 1974) was not available to me as I wrote, since we were so much academic contemporaries. I benefited from his company instead. For the origins of Landbeach, *Liable to Floods*, pp 14–16, 101.
 41. J R Ravensdale 'Landbeach in 1549: Ket's Rebellion in Miniature' ed. Lionel M. Munby (Cambridge, 1968) p. 110.
 42. J R Ravensdale, *Liable to Floods*, pp 81–2.
 43. *idem*, pp 59–60.
 44. *Contrasting Communities*, p 65, 98–9, 132–3 and Margaret Spufford, 'Eccleshall, Staffordshire: A Bishop's Estate of Dairyemen, Dairy Wives and the Poor.' *The English Rural Landscape*, ed. Joan Thirsk (Oxford, 2000) pp 298–299.
 45. *idem*, pp 61–2.
 46. E Kerridge, 'The Sheepfold in Wiltshire and the Floating of the Watermeadows', *Economic History Review*, 2nd Ser, vi (1954), 282–289.
 47. *Contrasting Communities*, p. 99.
 48. Bury St. Edmunds and West Suffolk Record Office, E3/15.104/1.
 49. CRO, R.52.12.1.10.
 50. CRO L.1.112.
 51. The Cambridgeshire Probate Inventories, in year bundles beginning in 1662, are housed, with the University Archives, in the University Library, Cambridge (ULC). No detailed references to them are possible, since they are unindexed. Some inventories of the 1570s also survive for the Deanery of Fordham in the Archdeaconry of Sudbury, and are in the Bury St. Edmunds and West Suffolk Record Office.
 52. *Liable to Floods*, pp 151–2.
 53. Bury St. Edmunds and West Suffolk Record Office.
 54. Joan Thirsk 1953, *Fenland Farming in the 16th century* (Leicester), and 1957 *English Peasant Farming*.
 55. Margaret Spufford, 'Rural Cambridgeshire' (unpublished MA thesis, Leicester, 1962) pp 14, 26–7. See below, p 77.
 56. Bury St. Edmunds and West Suffolk Record Office, E.3/15.104/1. The survey of Chesterton, which lies just outside Cambridge itself, is there since it forms part of a collection.
 57. CRO R.55.7.5.1.(4)
 58. Northamptonshire Record Office, F.H. 2342, 2339, 1184
 59. ULC Maps bb 53 (1). 93. 58–61
 60. ULC, Ely Diocesan records (henceforth EDR) H/1
 61. Another exception is probably found in the group of parishes including Shingay and Clopton, which suffered from enclosure in the early 16th century. I have found no suitable material on these parishes.
 62. ULC, Manuscript Plans 550 (R) and see above, p 71.
 63. W G Hoskins 1957 *The Midland Peasant*, p 152
 64. W G Hoskins 1950, 'The Leicestershire farmer in the 16th Century', *Essays in Leicestershire History*, pp. 138–145
 65. Joan Thirsk 1957 *English Peasant Farming* pp. 95–6 and 179–185
 66. M A Havinden 1961 'Agricultural Progress in Open Field Oxfordshire', *Agricultural History Review* ix: 73–83
 67. Eric Kerridge 1967, *The Agricultural Revolution* 181–221, gathers together a great deal of other evidence on convertible farming, or 'up and down husbandry' particularly on his 'Midland Plain' which includes parts of Western Cambridgeshire. This, to Dr Kerridge, is one of the great advances which made up the backbone of the agricultural revolution, which can so be re-dated to the 16th and 17th centuries. Dr Kerridge has also pointed out very conclusively that terriers, which I use here, cannot be relied upon to show whether land described as 'ley' at different dates was in fact permanent, since terriers were frequently copied (*ibid*, 105). However, in the case of Chippenham at least, land described as 'ley' was in the same position, on the light soils, in the charters of the 13th century, the detailed survey of 1544 and the map made after emparking in 1712. (Chippenham pp 19, 43 and map CRO R58/16/1). Those sources were totally independent of one another, and the leys of Chippenham were certainly permanent. The descriptions of leys at Little Gransden on the western clays also strongly suggests that they were used as permanent common (see below, p 76).
 68. CRO, R.56.84.; R.52.18.85; R.52.18.94.
 69. CRO, L.35.1, 'Rural Cambridgeshire', pp 108–110.
 70. 'Chippenham', *Figures in the Landscape* (Aldershot, 2000) p. 111.
 71. CRO R.56.5.84; R.52.18.85
 72. For Orwell, *Contrasting Communities*, pp 97–8
 73. EDR, H/1.
 74. Dr Kerridge produces, as well as a monumental amount of evidence for convertible tillage on his 'Midland Plain' a certain amount of contrasting evidence showing the prevalence of permanent ley common within the 'rigid' field system of this area (*ibid*, 101–2). My evidence on the western plateau of Cambridgeshire mainly seems to fall within the latter category. It is only fair to state, however, that despite the fervent anxiety of the tenants of Orwell (*Contrasting Communities*, pp 97–8) to obtain the permanent meadow and pasture of the demesne, the terrier of the arable of the demesne was headed 'arable and leis' though not a single selion was actually

- differentiated as ley (PRO E.178/485 43 Eliz.) This would support Dr Kerridge's view that up-and-down husbandry was practised; yet it does not seem to have changed the inhabitants of Orwell's chronic hunger for provision for their cattle.
75. PRO, E.134.5 Jas I. Hil. 26.
 76. PRO, E.134.24 Chas I. Hil.2.
 77. PRO, E.134.1649. East. 1.
 78. The herdsman deposed that there were 160 beasts, but other witnesses gave differing numbers ranging from 140 to 180 beasts.
 79. Joan Thirsk 1957 *English Peasant Farming* 139, 153, 175, 189
 80. M A Havinden, art. cit: 80
 81. Table I.
 82. M A Havinden, art. cit: 79–80
 83. 'Rural Cambridgeshire, 1520–1680' pp 39–41.
 84. Registered Wills Consistory Court of Ely, ULC
 85. See below, pp 81
 86. ULC, Manuscript Plans, 614(R)
 87. Professor Everitt tells me that hops do not usually appear in inventories since they were excluded by a legal technicality, so there is no means of knowing how widely they were cultivated. The same technicalities apply to root crops. Margaret Spufford, 'The Limitations of the Probate Inventory' (1990) reprinted in *Figures in the Landscape* (Ashgate, 2000) pp 52–54. For a recent survey of thinking on agricultural history of the period, updating this article, see Susanna Wade Martins and Tom Williamson, *The Roots of Change: Farming and the Landscape in East Anglia, c.1700–1870*, Agricultural Hist.Rev. Supplement Series 2 (Exeter, 1999) Ch. One.
 88. This paragraph is based on the list of sites and possible sites of lost villages in M W Beresford 1954 *The Lost Villages of England*, pp. 343–345, brought up to date in *Deserted Medieval Villages*, ed. M Beresford and G Hurst 1971 pp. 184. The map on p37 shows Cambridgeshire was one of the areas least affected by depopulation in the whole of England. In fact it was even less affected than the new county list of deserted sites on p. 184 would suggest. Neither Caxton nor Croxton were deserted.
 89. PRO, W.179/81/163
 90. This does not appear in Professor Beresford's lists.
 91. PRO, E.179/84/437
 92. M W Beresford, loc. cit.
 93. PRO E.179/84/437
 94. VCH Cambridgeshire and the Isle of Ely, ii 72–74
 95. W Camden 1806 *Britannia* ed. R Gough ii
 96. Vancouver op. cit. p. 87
 97. 'Presentments of Enclosure in the raigne of Henrye the 8th' ed. W M Palmer 1936 *Transactions of the Cambridgeshire and Huntingdonshire Archaeological Society*, v: 369
 98. See above p 76–77
 99. 'Caelica', quoted in *The Oxford Book of 16th Century Verse* (1932), 211
 100. Northamptonshire Record Office. F.H. 1382
 101. Northamptonshire Record Office. F.H. 1386
 102. Personal communication from Dr C J Harrison of the University of Keele.
 103. Registered Wills, Consistory Court of Ely, Y.fo.355. ULC
 104. Peterhouse Manuscripts, West Wrating, f.11
 105. CRO, R.52.12.1.10
 106. CRO, R.55.7.43.2.8, and 5
 107. Articles, Covenants and Agreements between Henry Cooke, Lord and Tenants, 10th Oct. 33 Eliz. CRO, L.3.17.3
 108. Joan Thirsk 1959 *Tudor Enclosures* Historical Association p. 7
 109. CRO, L.35.1
 110. Land Utilisation Map of Great Britain (1944) from material collected 1931–9 and J A Steers and J B Mitchell, 'East Anglia', *Great Britain: Geographical Essays*, ed. Jean Mitchell (Cambridge, 1962): pp 92–94
 111. For the facts on which this paragraph is based see A Austin Miller, 'Climate, Vegetation and Soils', *Great Britain: Geographical Essays* (Cambridge, 1962), pp 20, 22, 26–28
 112. P J Bowden 1952, 'Movements in Wool Prices 1490–1610', *Yorkshire Bulletin of Economic and Social Research*, iv : 110–124. Bowden's conclusions were criticised by Wright and Pollard in vol. vii (1955), 156–161, and Bowden replied in vol. ix (1957), 134ff.
 113. M W Beresford, *op.cit.* 154
 114. R H Hilton, 'Medieval Agrarian History', *VCH Leicestershire* ii
 115. Joan Thirsk, 'Agrarian History 1540–1950' *VCH Leicestershire* ii. The reason for this second wave of enclosures is interesting, since it cannot be accounted for by the profitability of wool as that of the earlier period can. Dr Thirsk has shown that enclosure is likely to be induced by increasing population when there is urgent need for more efficient and productive farming. *Tudor Enclosures* Historical Association, 1959, p. 9. Prof. C T Smith has shown a population increase of some 58% in Leicestershire between 1563 and 1603, *VCH Leicestershire* iii, 137–145, and it therefore seems that there must have been considerable population pressure there just at the time of this second wave of enclosures.
 116. N S B Gras 1915 *The Evolution of the English Corn Market*, p. 104 n.3
 117. N S B Gras, *op.cit.* pp 62–3
 118. N S B Gras, *op.cit.* p 41
 119. N S B Gras, *op.cit.* p 121
 120. N S B Gras, *op.cit.* pp 43–5
 121. N S B Gras, *op.cit.* pp 73–7 and 95–129
 122. F J Fisher 1934–5 'The Development of the London food market, 1540–1640' *Economic History Review* v : 46–54
 123. N S B Gras, *op.cit.* pp 121–2
 124. *The Itinerary of John Leland*, ed. L Toulmin Smith, i (1907), 328
 125. W Camden, *Britannia*, trans. from 1607 ed. by Gough (1806), ii 211
 126. D Defoe, *Tour thro' the Whole Island of Great Britain 1724, 1725 and 1727*. He was in fact probably wrong in his proportion of five parts in six, for the probate inventories of the 1660s reveal that barley formed only just over a half of the crops grown. In 1741, the fifth highest sum collected in the county on the excise of malt came from the Cambridge region, which thus revealed its position as a specialised producer for the brewing industry. Peter Mathias, *The Brewing Industry in England, 1700–1830* (1959), pp 393–4
 127. N S B Gras, *op.cit.* pp 108–9, especially p. 109 n.1.
 128. *idem*, p. 105
 129. W G Hoskins 1950 'The Leicestershire Farmer in the 16th Century' *Essays in Leicestershire History* Liverpool, pp. 172–3
 130. Fitzherbert's treatise on Husbandry is ambiguous on

the point, although he definitely recommends several pastures, but the treatise on surveying, also attributed to him, recommends the exchange of arable strips and their enclosure, as well as that of pasture (Ch. 40) Shotbolt did think of enclosure as a means to improve arable in the early 17th century. Cited by M W Beresford, 'Habitation versus Improvement: the Debate on Enclosure by Agreement', *Essays in the Economic and Social History of Tudor and Stuart England*, ed. F J Fisher (1961), p 54

131. Vancouver, p. 109

132. Vancouver, p. 104

133. Agrarian History, p. 206

134. W G Hoskins 1957 *The Midland Peasant* pp 151-2. I have used the term 'strip' for a unit of tenure in the open fields, as I defined it (as H M Clark, 'Selion Size and Soil Type', *Ag. Hist. Rev. VIII*: p. 91) in 1960. Professor Hoskins was using the term in the same sense in his discussion of Wigston Magna.

135. CRO R.56.5.84, R.52.18.85

136. CRO R.55.7.43.2 and R.55.7.43.5

137. Chippenham, pp. 49-50

138. An essential improvement in arable farming which I did not consider was the development of underdraining, since I knew cheap tile drainage was a 19th century development. Susannah Wade Martins and Tom Williamson, *The Roots of Change* (see above, n.87) introduced me to the development of 'bush' drainage, where the infill of drainage ditches was brushwood. They date this to the 1760s-1790s (pp 61-67) on heavy soils in East Anglia. An investigation of the origins and development of such drainage in Cambridgeshire when so much of the arable land lay in large 'pieces' before enclosure, 'as such no enclosure is meditated or desired' (above, p. 15) is therefore of paramount importance. It is the improvement that could have brought about dramatic rises in yields in this open-field country.

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