

RE-DEFINING FARMING PRACTICES ON THE HAMPSHIRE AND WILTSHIRE CHALKLANDS, 1250–1850

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ABSTRACT

Joan Thirsk suggested that the complex history of English agriculture has sometimes been misunderstood through the misreading of documents, generalisation, and a lack of practical knowledge. In such a vein, this article offers a study of the evolution of arable sheep farming on the Hampshire and Wiltshire chalklands between the fourteenth and nineteenth centuries, bringing a local and nuanced perspective to more general histories of farming in pre-modern England. The article traces developments specific to this region across the longue duree. It interrogates documentary evidence in combination with a detailed knowledge of agricultural practice in order to qualify widely-held assumptions about sheep farming in this region specifically, and the more general idea of an English 'Agricultural Revolution'.

INTRODUCTION

This paper explains the practical management of the arable sheep farming system on these chalk uplands during six centuries. Documentary sources deployed here raise questions about the validity of some historiography in the area and these will be addressed in the course of this examination. Sheep were the main type of livestock kept on these dry chalks. They could survive on the scantiest of feed and pasture, needed only a fraction of the water required by cattle, and could be overwintered outside, except in very inclement weather. There really was no viable alternative to sheep on these marginal upland soils. It is also difficult to exaggerate the importance of sheep manure as a fertiliser. This fertiliser was delivered by means of a movable fold of

sheep in the arable field, and the subject will be referred to frequently in the text. Topping (when the rams were let in with the ewes) was usually organised for October, just after Michaelmas, so that the ewes lambed early in spring. Cattle were more expensive to keep than sheep as they required better summer forage and winter feed than sheep, and had to be kept indoors at night between the beginning of November and the end of March. Generally speaking, only enough cattle were kept to maintain the functions of the farming system; these were dairy cows and their followers, and oxen for working the arable fields. However this can be recognised as a mixed-livestock system as the oxen provided beef at the end of their working lives.

The evolution of the sheep and corn system on these chalk uplands can be best understood if divided into three phases. The first phase, from the early thirteenth century to the late-seventeenth century, corresponds with the late medieval and early modern periods. The early modern period is combined with the late medieval period because, as will be explained, during this time the farming system remained essentially unchanged. Key factors for an understanding of arable sheep farming during the first phase are considered here. The underlying theme of this phase is flock management in open field farming. Aspects of it have either been misinterpreted or not described in sufficient detail before and these are, therefore, explained in five related sections. The second phase is in two sections focused on changes and developments during the period 1670–1770, beginning with the impact of the introduction of a new range of fodder crops towards the end of the seventeenth century. The third phase, 1770–1850,

considers the impact of the main period of private and parliamentary enclosure on the south central chalks, together with the farmers' responses to the need to feed an increasing and urban population.

FLOCK MANAGEMENT ON THE WINCHESTER ECCLESIASTICAL ESTATES IN THE LATE MEDIEVAL PERIOD

Most of the historical evidence for arable sheep farming on these chalklands in the late medieval period comes from the annual Michaelmas audit records of the Winchester ecclesiastical estates. The Winchester ecclesiastical estates consisted mainly of the bishopric manors, but also included those of St Swithun's Priory, which serviced Winchester Cathedral. The manors and granges of both organisations were concentrated on the Wiltshire and Hampshire chalks. These two ecclesiastical estates maintained both a large number of flocks and particularly large individual manorial flocks. Both estates were characterised by significant numbers of sheep throughout the late medieval period, and these peaked in the late fourteenth century. The bishopric demesne flocks averaged 33,000 sheep between 1388 and 1397 and, in 1390, the priory had twenty demesne flocks with a total of over 20,000 sheep. The priory sheep numbers alone were far greater than any other estate in southern England (Hare 2006, 203–5). It is difficult to estimate the size of the peasant 'common' flocks at this time, but evidence from the priory estates on the Wiltshire chalks indicates that such flocks were as large, if not larger, than their respective demesne flocks (Harrison 1995, 6). The functions of the demesne flocks on these ecclesiastical estates were to provide manure, a wool crop, and a surplus of lambs. A feature of both estates was the production of 'summer' cheese; output was increased by supplementing the milk from the ewes with cows' milk (Page 2003, 137, 153; Broad 2004, 96).

The flock structure which prevailed in the region at this time had evolved to support the working of common open field farming. It is

best described in terms of a three part or a three flock flock, and its characteristics are as follows.

Breeding ewes: kept to produce replacement ewes and replenish the wether flock. Aged between 15 months and 5 years, they needed and received the best feed and treatment. Even older ewes were retained within the flock provided their udders were sound and they had kept their teeth.

Wether flock: castrated males kept for up to 7 years. They were tough and hardy and could survive on the scantiest of feed. They were also the mainstay of the flock, providing manure, wool and meat.

Hogasters/hogastres (or hogs for short): these were ewe and wether lambs which had been weaned at about 4 months, and would join their respective flocks at about 15 months old (that is, after their first shearing as an adult). The male lambs that were not required for breeding stock were normally castrated soon after birth, but occasionally it was left until late summer. The hogs were sometimes referred to as lambs right up to the time they joined their adult flocks.

The main disadvantage of keeping wethers was that they had to be managed separately from the other sheep in the flock. If mixed they would drive off the ewes and the young sheep and secure the best feed for themselves. It will be shown that separate and distinct wether flocks were a feature of this farming system.

The pasturing arrangements for flocks appear to have been fairly rigid. The breeding ewes and wether hogs were kept on common arable fields, sheep downs and enclosures as appropriate and convenient, and wether flocks were restricted to the common arable fields and sheep downs. The ewe hogs were kept only in enclosed fields. They were looked after in this way because they required the highest plane of nutrition (Oschinsky 1971, 277; 44 M 69, E4/2/14). The hogg flock was not generally regarded as strong or mature enough to withstand winter conditions on the chalk hills, and the usual practice from at least the late fourteenth century was to agist (move and graze) them on lowland pasture, off the chalks, between early November and the end of March. This also helped to ease the problem of the chronic shortage of winter fodder on these uplands (Drew nd, ref year 1384). A

typical large three flock flock was kept on the bishopric manor of Twyford on the Hampshire downs. At Michaelmas 1410 the flock had 606 ewes, 421 wethers and 547 lambs. By this time 100 hogs had been added to the ewe flock, 72 to the wethers and 7 to the rams in order to sustain the flock structure, and the lambs had become the new hogg flock. It should be noted that sheep were not only bought and sold in local markets, but also traded between bishopric manors. The surplus hogs were sold to three other bishopric manors: 200 had been sold before shearing to the sergeant at Waltham St Lawrence, and 193 sold after shearing, 163 to the reeve at Merdon, and 30 to the reeve at Marwell. Meanwhile 185 lambs had been bought from the reeve at Merdon (Page 1999, 363, 369).

Flocks were also managed on an inter-manorial basis. For example, there is detailed evidence for the management of a large three flock flock on the southern edge of the Hampshire chalks between 1248 and 1325. The flock consisted of about thirteen hundred sheep, and was kept on the priory manors of Michelmersh and Houghton. The ewe and hogaster flocks were kept at Michelmersh, and the wethers at Houghton, three miles to the north. The wether flock at Houghton varied between 350 and 400 wethers during the period. Michelmersh provided the replacement hogasters, and the surviving 5–6 year old wethers were sent to the priory itself (presumably for mutton) or to other priory manors. Few were sold on the open market. It has already been explained that wethers were tough and hardy and such a wether flock incurred minimal labour costs. No salaried shepherd is mentioned at Houghton after the entry for 1299, and it is probable that a customary tenant did the job in return for a reduction in rent or labour services (Drew December 1943, 63–7; Drew March 1943, 41–2).

ASSESSING RISK IN LATE MEDIEVAL ARABLE SHEEP FARMING ON THE HAMPSHIRE AND WILTSHIRE CHALKS

There is a current view that sheep management in late medieval England was a high risk

business activity, an interpretation expressed about sheep farming in southern England in a recent publication (Aberth 2013, 157–8). The author claims that sheep-rearing was a ‘risky business’ in the late medieval period, and that ‘the biggest threat to the wool trade was the devastating sheep murrains, especially among large flocks’. Furthermore it is claimed that lamb mortality rates in southern England in the late medieval period were such that it was ‘nearly impossible for flocks to be self-reproducing’. This is emphasised by Aberth who suggests that ‘even on the well-run Winchester bishopric estates the entire flock of ewes and wethers needed to be replaced every five years’. This interpretation may be appropriate for other parts of southern England, but is not supported by documentary evidence from the Winchester ecclesiastical estates.

To begin with there is no evidence, periodic or otherwise, for the restocking of flocks with sheep bred away from these chalk hills. The assertion that ‘the entire flock of ewes and wethers needed to be replaced every five years’ is also incorrect. It will be understood from the description of flock structure in the first section that this five year period was actually just the average age at which the old wethers and ewes were replaced as part of normal flock management. The emphasis on ‘devastating sheep murrains’ in the late medieval period should also be treated with caution. It is also unwise to exaggerate both the incidence and the overall impact of infectious diseases on the Winchester ecclesiastical flocks. A preliminary study suggests that flock mortality rates actually reflect a more complex situation. This is illustrated by available figures for the Winchester priory manor of Silkstead, Hampshire downs between 1267 and 1384. The Silkstead demesne flock can be regarded as a typical three flock flock of about six hundred sheep. The average mortality rate during this period was 6.5% for wethers, 7% for ewes, 20.5% for hogs and 15.5% for lambs before weaning. It is not known why the hogg losses were so high. It is evident that the only year that the flock was ‘practically wiped out’ by an infectious sheep disease was in 1280. The wethers suffered losses of 68%, the ewes 81%, the hogs 96%, and the lambs 85%. It would appear that

the flock was gradually built up again over a number of years using the surviving ewes.

It can be shown that normally only one part of the Silkstead flock suffered serious losses in any one year, and that generally a different part of the flock was affected in the succeeding year. In 1314, for example, the ewe and hogg losses were below average, the wethers slightly above average at 10% and the lambs 60%. In 1315, the wether and ewe losses were below average, the lamb losses about average and the hogs 41%. Such heavy losses that affected only one part of a flock could be accommodated within the system. Assuming a five year replacement cycle the critical annual losses percentage for each part of the flock would be about 55%. With a percentage below that the surviving stock would be sufficient to sustain the overall flock structure. It was only rarely that more than one part of the flock suffered critical losses in the same year at Silkstead, and even these crises appear to have been managed effectively. One of these years was 1335 when wether losses were 19%, ewes 10%, hogs 67% and lambs 66%. Such high hogg and lamb losses in the same year threatened the flock structure, and 44 lambs were bought in as replacements. Another such year was 1381 where ewe losses were 34%, hogs 38%, lambs 63%, and wether losses below average. The remaining hogs, however, were still sufficient to provide the replacement stock necessary for the ewe and wether flocks, and the flock recovered its structure and numbers in less than two years (Drew 1947).

There appears to be no evidence for unmanageable lamb mortality rates at Silkstead between 1267 and 1384, nor is there evidence for an ongoing crisis in flock numbers afterwards. The demesne farm was leased at Michaelmas 1384, but the priory kept the sheep flock in hand. Sheep numbers were sustained, with only short-term fluctuations, until 1434. Thereafter the flock was reduced to about 400 sheep, and in the late 1460s handed over to the care of the demesne tenant farmer. There is no evidence for instability here, and the decline in the size of the flock after the 1430s can be largely explained by less favourable market conditions for sheep products (Drew nd). Furthermore

sheep rearing on the Winchester ecclesiastical estates does not appear to have involved an unusual element of risk. Business or contextual risk is particularly difficult to assess, being dependent on the state of external markets and the necessity to make a profit from the sale of the sheep products. In any case the records necessary to study this have not survived. However internal risk (in this case the limitation of risk with regard to the maintenance of livestock) is easier to appreciate. Practical and fairly simple strategies were adopted to reduce the risk of managing such a large number of sheep.

Take for example the management of flocks on four adjacent bishopric manors in the early years of the fourteenth century. It is evident that a system was planned and developed here to provide maximum productivity and labour efficiency. Each manor had its own demesne flock of about five hundred sheep, which is about the maximum number of sheep one shepherd could look after provided that he had assistance at lambing, weaning and tugging, and the four flocks were managed as one three flock flock. The ewes, rams and lambs were kept at Highclere and Burghclere, the hogs and wethers at Ecchinswell and Ashmansworth. All the lambs bred at Highclere and Burghclere were sent after weaning to Ecchinswell or Ashmansworth, where they were overwintered as hogs. After shearing the next year, the ewe hogs and young rams were sent back to join the two breeding flocks, and the wether hogs added to their own stock (Page 1996, 110, 117, 120, 131). Risk would be contained here because all the famuli (salaried staff) involved had clearly defined responsibilities, which varied little from year to year, and also formed part of a team which had simple and clearly defined objectives. With such a staff structure in place, an organisation would normally be capable of responding promptly to crises such as sheep murrains as and when they arose. The ultimate expression of the adopted management strategy is evident in a comprehensive audit of livestock on the Winchester priory estate in 1390. This shows that there were about 21,000 sheep kept on the various granges and manors with groups of about 7,000 breeding ewes, hogs and wether

sheep respectively. This was simply the normal three flock flock made large, whereby the individual manorial flocks were managed on a whole estate basis (Hare 2006, 206).

The evidence from the Winchester ecclesiastical estates does not support the contention that there was a chronic instability in sheep farming during the late medieval period. On the contrary, the dry chalk country of these Winchester ecclesiastical estates provided an appropriate environment for breeding lambs, and it has been shown that, far from requiring 'periodic re-stocking', these demesne flocks generally produced both sufficient lambs for replacement stock and a surplus of lambs for disposal at Michaelmas. It is also evident that there was a buoyancy in the management system that belies the idea that sheep farming on the Winchester ecclesiastical estates in the late medieval period lurched from crisis to crisis.

WALKING AND WORKING FLOCKS: THE PRACTICE OF THE MOVABLE FOLD

The practice of walking and working sheep is generally regarded as the vital element in open field sheep and corn farming, but historians have given scant attention to how the system actually worked. However it is possible to establish what is likely to have happened, and what could not have happened, with regard to farming these chalk uplands during the review period. The current confusion about the practice is understandable because the sheep management system which came to replace it during the course of the eighteenth century was also described as 'folding' by contemporaries, and similarly involved moving wooden hurdles around a field in order to confine and control the stock. The later system can best be described as strip grazing where sheep were no longer walked and worked, but instead lived more or less sedentary lives feeding off arable fodder crops in enclosed fields. Hence the system to be described here predates the introduction of arable fodder crops for green feed in the late seventeenth century, but continued well into the eighteenth century where common field farming prevailed.

This movable fold system can be defined as pasturing the sheep on permanent downland, rough grazing and other pasture available during the day and then at night walking them to, and intensively folding them on, a portion of arable land that was being prepared for growing a crop. The movable fold itself was a temporary enclosure made of hurdles and, according to the few surviving references, appears to have been moved to a new location each night. However it is not known how the movable folds were actually managed or arranged in the common arable fields. What is clear is that the system was about feeding off the pasture in one area, and depositing the manure in another. It is also evident that the system as practised on the south central chalks depended on maintaining between 30% and 50% of the total farmed land as permanent down pasture. In the late medieval and early modern periods the movable fold system was only practised in the spring and summer months (Thirsk 1967, 188). The practice of walking and 'working' the sheep generally started on about May Day (the first of May) each year and finished by about the end of September. By the latter date a combination of the cooler weather and diminishing daylight caused a slow-down in the growth of herbage which meant that it was 'not worthwhile to carry it on longer' (Ellis 1749, 284).

It is probable that the movable fold was principally carried out on the full fallow which preceded the sowing of the winter wheat crop. This was a 'bare fallow' in the sense that very little grass was allowed to grow on it. It was normally ploughed twice between about the beginning of May and mid-August. This ploughing buried some weeds and encouraged surface weed seeds to germinate and grow; these would be weeded by hand or fed off by livestock. Such attrition with the plough, combined with the movable fold, had the potential to provide a weed-free and manured soil by the time of the third ploughing. Here the furrows were made shallower and closer together than with the first two ploughings, so as to provide a seedbed (Oschinsky 1971, 265, 315, 321; Chalkin 1965, 82-3). A reasonably abundant supply of daytime feed was essential to make the night fold worthwhile. In the mid-

eighteenth century William Ellis stated that without a ‘bellyful’ of feed a sheep’s ‘dung and stale will prove a poor dressing’. Furthermore in Master Fitzherbert’s 1534 *Book of Husbandry*, the shepherd is advised that ‘in the morning when he cometh to his fold, let not his sheep out anon, but raise them up and let them stand still awhile, that they may dung and piss’ (Skeat 1882, 28). The fresh herbage required to provide the energy and protein necessary for an effective fold would normally be available on permanent downland pasture and rough grazing during spring and summer, and this is the key to the system (Ellis 1749, 220). Winter wheat is much more demanding than spring sown barley and oats in terms of the plant nutrients it removes from the soil. Nitrogenous fertiliser requirements are in the proportion of ten for winter wheat, five for spring barley and three for spring oats and, because the nitrogenous fertiliser requirements are low for the spring-sown crops, they do not need the same specific fertiliser input that an autumn-sown crop does (Young nd, 6, 48,72). It can be understood that the best way of providing the nutrients for the wheat crop was with the controlled application of sheep manure in the movable fold. Sheep manure provides a balanced organic fertiliser, the urine contains nitrogen and the dung contains phosphates and potash. Also the nutrients in sheep manure were instantly available to the following crop, and provided a manure that would sustain the wheat crop through the winter (Hale 1756, 23).

It should be noted how flocks were managed for the spring and summer folds. The breeding ewes of a flock had a time-limited role in the system, as they could only be folded between midsummer and the beginning of September, a total of about 10 weeks. They were not folded in spring while they were suckling their lambs, and were only available for the fold after weaning (when their lambs were sorted out, and either retained or sold). This occurred before they were drawn out of the fold to be prepared for being put to the rams in October. It should also be recognised that the wether sheep of the flock were the mainstay of this folding system. It has already been explained that such wethers were tough and hardy, could

survive on the scantiest of feed, and provided an annual wool crop at minimum cost. Perhaps more importantly, these wethers were the only sheep available for folding throughout the spring and summer months. Firstly, wethers alone provided the spring fold and, secondly, they were the only part of the flock available for the late summer fold for the autumn-sown wheat crop. A theory has been current for many years that the movable fold was carried on ‘with the whole flock all the year round’. This theory was proposed by Eric Kerridge (1954, 284–5; 1967, 45) in the early 1950s and repeated in the late 1960s. Recent examples of historians who have adopted this idea as part of their interpretation include Edward Newman (2002, 165, 172) and Joseph Bettey (2005, 158). However it has been shown above that this could not possibly have happened in practice: it would have been impractical given the demands put on, and the limitations of, the sheep farming system at this time (Bowie 2014, 2–3).

THE PROVISION OF WINTER FEED AND THE SIGNIFICANCE OF PULSE CROPS

An enduring problem for arable sheep farmers on these marginal chalk uplands was the shortage of winter feed for livestock. In particular there was a shortage of suitable meadow land from which to make hay. Sheep were expected to survive on what scant herbage was available, supplemented by additional feed that was intended to be just enough to keep them alive. In the late medieval and early modern periods this feed consisted of meadow hay, chopped straw (wheat, barley, oats) and hay made from pulse crops. Hay was in chronically short supply, and most of it had to be bought or brought in from where it was made on adjacent lowland pasture (Harrison 1995, 5). The practice of agisting hogg flocks on lowland pasture during the autumn and winter months in order to ease this winter feed problem has already been described. A paper written in 2003, however, has caused confusion about the role of pulse crops in this arable sheep farming system, and this section will explain how these crops were cultivated

and their actual significance in the farming system (Stone 2003, 7–9).

Nowadays such pulses are described as grain legumes. The pulses available to the late medieval farmer were beans, peas and vetches. Beans grow better on heavier loams, and peas and vetches perform better on medium and light loams (Sheldrick *et al.* 1995, 66). Peas and vetches were being cultivated as an innovative crop on some of the Winchester bishopric estates on the south central chalks in the early years of the thirteenth century (Campbell 1988, 196). Peas were usually denoted as lenten vetches. These pulses were innovative in that they were the first of such crops that were grown on fallows especially for livestock, and can be regarded as the precursors of a range of new fodder crops introduced in the seventeenth century. Vetches and peas were grown either as part of the open field arable acreage, alongside the winter and spring sown cereal crops, or as small acreages in the fallow field (Harrison 1995, 10). These pulses usually constituted 5–15% of the total sown acreage on the Winchester ecclesiastical estates. Winter vetches were sown in September, and peas were sown between late February and mid-March, depending on weather conditions. The seed was initially broadcast and this was followed by a shallow ploughing to bury the seed and try and avoid the depredations of pigeons and crows; in such ploughing the furrows were made shallow so that most of the seed did not end up more than two inches deep, and also close together so as to make a fairly flat seedbed (Oschinsky 1971, 321; Chalkin 1965, 82–3).

Both winter vetches and spring peas have a peak nutritional value for only about two or three weeks around harvest (Young *nd.*, 15). In the late medieval and early modern periods they were converted into a dry crop, and not used as a green feed. Hence they were treated in the same way as a meadow hay crop, that is, cut and air dried on the ground in about June, and then stored in the rick for late autumn, winter, and early spring feed. Peas and vetches appear to have been treated primarily as cash crops on the Winchester ecclesiastical estates before the early fourteenth century. Sufficient seed was kept back for sowing the next crop,

but most of the rest of the yield was threshed and sold off-farm as seed as, for example, on the bishopric manors of Crawley, Droxford and Merdon at the very beginning of the fourteenth century (Page 1996, 83, 90, 265). Vetches were also used for human consumption at this time, as for example on the priory manor of Silkstead in 1299 when the whole of the net yield (14.5 qtr.) was threshed and mixed with barley as part of the wages of the famuli (salaried staff). Meanwhile all of the net peas crop (12 qtr.) was threshed and sold (Drew *nd.*, ref year 1299). It is evident, however, that the feed value of these pulses crops for livestock (as a function of nutritive value, trace elements and digestibility in the rumen) was appreciated only a few years later in the fourteenth century. At Silkstead in 1315 the winter vetches yield was 16 qtr. of which 3.5 qtr. was kept back for seed, 9 qtr. were sold, and 3.5 qtr. fed as hay to the manor's sheep (Drew *nd.*, ref 1315). Thereafter there is an increase in references to these pulse crops being fed to a manor's livestock, particularly after the Black Death.

It is significant that the pulses hay at Silkstead in 1315 was described as being 'in husk' or 'in the pod' (that is where the seed pods were left adhering to the crop when it was harvested), which would further increase the protein value of the hay (Frame *et al.* 1998, 1, 5). It is also evident that by the early fifteenth century very little of these pulse crops were sold, and most of the net yield was kept back as a hay crop in husk for a manor's own livestock. This shift is clearly evident on the bishopric manors of Crawley, Droxford and Merdon mentioned above (Page 1999, 198, 377, 384). It can also be shown that such hay provided a high protein feed supplement that was used for the treatment of ailing or feeble farm animals. A detailed study of the Winchester bishopric manors in the early fifteenth century shows this. At Overton, North Waltham and East Meon manor, the whole of the net pulses yield was given as dry feed to ewes, young sheep and 'other feeble cattle'. Similarly at Bishops Sutton the pulses were reserved for 'sheep, cart horses and other feeble cattle' in winter. At Beauworth five percent of the arable had been sown with

pulses, and the whole of the net yield devoted to 'feeble plough horses and sheep' (Page 1999, 218, 250, 270, 322, 352–3).

Furthermore it is evident that peas hay in husk was particularly valued at lambing time. This would be partly because it was a high protein feed but also because it acted as a vermicide to help prevent the young lambs from being infected with intestinal worms. Peas contain about 20% protein, and the tannins in the seed coat act as a vermicide (Younie *et al.* 1996, 56). There is plentiful evidence for this practice. For example at Twyford the peas crop (estimated 8 quarters in husk) was devoted to 'supporting the ewes at lambing time, and the vetches (8 qtr. in husk) used 'in supporting sheep in winter'. It was similar at Merdon, though in this case the 8 qtr. of vetches were used in supporting calves as well as sheep during the winter. Finally at Crawley the peas crop (5 qtr.) was used 'in supporting ewes at lambing time', and the vetches (10 qtr.) in 'supporting sheep, horses and other cattle in winter' (Page 1999, 367, 377, 384). The use of pulses hay was probably only limited by its high cost. It was three to four times the price of meadow hay in the late-fourteenth and early-fifteenth centuries as, for example, on the priory manor of Chilbolton, Hampshire downs, in 1406 where a cartload of meadow hay was valued at 2s. 4d. and a cartload of vetches hay at 9s. 2d. Pulses were more expensive than meadow hay because of cultivation costs, because they were difficult crops to grow and their seed was difficult to thresh (Drew 1945, 37).

It has been shown that, by the late fourteenth century, peas and vetches hay provided for the specific needs of a flock. This can be demonstrated when extra feed rations had to be bought in on the bishopric manor of Crawley, Hampshire downs, during the very severe winter of 1434–35. These rations consisted principally of thirteen cartloads of meadow hay and twenty of straw, both of which were intended to provide sufficient bulk, fibre and nutrients to help keep the sheep alive during the exceptionally severe weather. However only three cartloads of peas and beans hay were purchased, and it is clear that just enough of the expensive pulses hay

was acquired to provide for the anticipated need of the flock (Stephenson August 1988, 383–4). It has also been shown that the hay in husk made from pulses crops was recognised by contemporaries as superior in feed value to meadow hay. Modern analysis proves this: the protein value of the pulses grown at the time was probably in the range of 20–25% whereas that of the meadow grasses was 5–10%. This research thus challenges a theory postulated by David Stone in 2003. He proposed that a decline in sheep productivity after the Black Death was due to a shift in emphasis from meadow hay to pulses hay for winter fodder. This cannot be correct as pulses hay is superior in feed value to meadow hay, and there is no evidence for a relative increase in the cultivation of peas and vetches after the Black Death (Bowie 2013, 1–2).

CONTINUITY AND INNOVATION IN THE ARABLE SHEEP FARMING SYSTEM IN THE EARLY MODERN PERIOD

There was little change in flock structure and in the way that the sheep and corn system was practised on these chalk uplands during this period. Arable crops continued to be cultivated with the same limited variations of the basic three-course rotation in the sixteenth and seventeenth centuries as they had been in the late medieval period. Changes took place in the early modern period, but the principles of agriculture were still firmly rooted in the late medieval period. This is evident in the probate inventory of Robert Hurlle of Kingston Deverell, Wiltshire downs, dated 25th September 1696. He farmed in the traditional way, growing the usual arable crops (winter wheat, spring barley and oats and vetches and peas) in the rotation. The farm's tractive power was provided by two ox plough teams and five carthorses, as would have been the case in the late medieval period. He also kept a conventional three flock flock which consisted of 360 wethers, 310 ewes, and 340 hogg sheep. 100 old wethers and ewes remained to be disposed of in the October sheep fairs and sales (Betty 2005, 111–2).

It should also be noted that some forms of

enclosure would not have had a significant impact on the prevailing farming system. Both enclosure and the consolidation of strips in the open fields may have simplified the organisation of farming activities, but it should be remembered that much of what is described as enclosure during the period was actually an extension of open field farming, where only the boundary of the area involved was marked by a hedge or fence. There is a good example of this process on the southern edge of Salisbury Plain, Wiltshire, where, at the Brimmerston and Milston manorial court held on 20th March 1610, permission was granted to fence off 64 acres of common downland. Every customary tenant was to be granted one acre for every right of cattle pasture held on their existing holdings, and the demesne farmers, freeholders, and other tenants were to have 'such an estate of the said land as they now have in their several tenements'. Here the 64 acres were to be worked as common open field (Betty 2005, 79). The policies of Sir Richard Paulet, lord of the manor of Herriard, Hampshire downs, show what changes might be made in estate management and farming in the early modern period. During the last years of the sixteenth and the first few years of the seventeenth centuries he created a new manor house and parkland, and carved one enclosed farm for lease out of former open field and common down pasture. The farming system on the rest of the estate, however, remained unchanged.

The Herriard Estate at this time consisted of the Manor of Herriard and the Tithing of Southtrope, divided north-west to south-east by a through route now known as Bagmore Lane. It would appear that the Herriard part of the estate was enclosed during the last years of the sixteenth century. Part of the evidence for this is provided by two early seventeenth-century estate maps (44 M 69, P106 & 107). Most of the former open fields were converted into parkland and managed woodland. The tenants' village of Herriard probably ceased to exist at this time and some of the remaining land was enclosed. This was enclosure as it is normally understood to be, as a new farm of just over one hundred acres was created immediately to the north of Bagmore Lane.

The lease is dated 27 June 1599 and, as well as the usual farm buildings, the farm consisted of a field of pasture called Hawkersdowne, 24 acres, part of a former arable open field, 57 acres, and part of another former arable open field, 'commonly called Furthereastfield', 27 acres (E2/25). There was little change in land management in Southtrope tithing which contained the tenants' hamlet, three common arable fields, and the common sheep down. Sir Richard does not appear to have wanted to change the system here. In an agreement regarding the redistribution of land in the common fields, dated 25th June 1606, three tenants were to have an acre each in each field, and Sir Richard Paulet was to have 13 acres in one field, 10 acres in the second and 9 acres in the third (E8/2/15).

The Herriard demesne flock in the late sixteenth century consisted of about six hundred sheep which was managed as a three flock flock, the same flock structure that had characterised sheep management on ecclesiastical estates in the late medieval period. At Herriard the wether flock was described as the 'common flock', probably because it was kept mainly on the common downland, the ewe flock was called the 'ingroundes flock', because it was based on the demesne's fallow arable, dry pasture and meadow, and the hogg flock was called the 'lambe flock' for obvious reasons (E4/2/14). There is evidence of innovations in flock management elsewhere on these chalk uplands in the early modern period. For example, an interesting variant of the three flock flock was being worked with a demesne flock at Rockbourne, Hampshire downs, between 1620 and 1623. The flock consisted of 800–850 sheep, half of which were ewes and the other half wethers. Flock management, here, centred on midsummer (21st June) rather than Michaelmas. By the end of June the flock's lambs had been sold, the old ewes and wethers disposed of, and the replacement ewes and wethers bought in. This would have been cost effective as about eight hundred adult sheep were available to provide the summer fold and there was no hogg flock to be sent away for agisting over the coming autumn and winter.

There also appears to have been an

increased emphasis on lamb production on these chalks at this time. The Rockbourne accounts above, for example, show that selling lambs for rearing elsewhere made more profit than that from the wool crop. By the end of June 1621 the profit from the lambs sold was £82 while profit from the wool crop, including lock wool (broken wool) and lambs' wool, was £47, a ratio of 8:5. Here the wool crop was still important, but the emphasis appears to have shifted to producing lambs for rearing and finishing elsewhere (Bettey 2005, 159–63). Innovative industrial or alternative crops were tried on the Hampshire and Wiltshire chalks in the late-sixteenth and the first half of the seventeenth centuries, but were only grown in small acreages, and contemporaries recognised that they could be more trouble than they were worth. The principal crops were oil-seed rape, which was used as a machinery lubricant and in cloth finishing, woad, which was made into a blue dye for the textile industry, and hops which were used in making beer. These crops did not fit in with the prevailing open field farming system because they needed high fertiliser inputs which had to be brought in. Hence woad was usually grown by cultivating it on the same ground for three or four years, and then abandoning the plot as exhausted of all natural fertility (Bettey 2005, 276–91). Woad cultivation was also subject to government interference and obstruction in the late sixteenth century because it threatened the customs revenue from imported woad (Hoyle 2004, 56–73). In the event, the only alternative crop to survive these experiments on the south central chalks was hops, and even then cultivation was limited to closes and small enclosed fields in the early modern period.

Another innovation was bedwork watermeadows, which were constructed in the vales of the south central chalks from the early seventeenth century. The construction process involved converting the boggy parts of floodplains, which could otherwise be only used for summer pasture, into drained and irrigated meadow land (Bettey 1977, 37–9). Note for example the conversion of Twyford Moors (immediately to the south of the village of Twyford in the Itchen valley, Hampshire)

into bedwork watermeadows in the late seventeenth century. Here Henry Mildmay of Shawford was making a major investment in order to improve the value of an existing boggy summer pasture. Work started in autumn 1670, and was completed at the end of 1672; about one hundred acres of the Itchen valley flood plain was converted into watermeadow in this project (46 M 72 E2/ff 93–4). The investment was usually paid for in seven years, because of the increased rental value of the water meadow as pasture (Boswell 1790, 108–9). Such watermeadows provided both a reliable hay crop in mid-late June, and an early spring grass growth, or 'bite', during March and April. Where farmers were fortunate enough to have access to them, they had a significant impact on the grazing and fodder aspects of the farming economy (Smith 1806, 30–1). However their importance should not be exaggerated. It will be explained that the connection between bedwork watermeadows and the sheep fold for spring barley that has been postulated as a feature of the early modern period did not actually take place until the late eighteenth century.

THE IMPACT OF INNOVATIVE FODDER CROPS ON THE HAMPSHIRE AND WILTSHIRE CHALK UPLANDS, 1670–1770

Reliable secondary sources are few in this region for this period. The most useful are Eric Jones's 'Eighteenth century changes in Hampshire chalkland farming' in the *Agricultural History Review* for 1960 and M. C. Naish's unpublished MA thesis (1960) *The Agricultural Landscape of the Hampshire Chalklands, 1700–1840*. This section explains that major changes in the arable sheep farming system in this area did not begin until the very end of the seventeenth century. This second phase was characterised by the cultivation of innovative fodder crops on a field scale from the last years of the seventeenth century. The underlying theme of this phase is the change in flock management during the transition to enclosure.

During the period 1630–1680 a range of new fodder crops were introduced into

Britain from Friesland, Flanders and northern France. The impact of these crops on farming on the south central chalks will be explained here. Such crops had already been grown on a small (garden) scale, but were now cultivated on a field scale. They facilitated a shift to what was described by contemporaries as alternate or ley farming. The latter was particularly suited to medium and light soils, and was characterised by the lengthening of the traditional three-course rotation cycle to four and five or more courses, and the cultivation of fodder crops in the extra courses (Lane 1980, 29). A principal aim of this development on the south central chalks was to grow fodder crops for sheep. Root crops were tried, but there was no particular emphasis on their cultivation. Instead there was an emphasis on growing 'artificial grasses' (seed mixes based on ryegrass or clover) both for grazing (green feed) and making into hay. It should be noted that before this only the grasses from dry meadows and bedwork watermeadows, and the hay made from pulse crops, had been available to make into hay for winter feed.

As an example, Edward Lisle, a progressive farmer who farmed at Crux Easton on the northern edge of the Hampshire downs at the beginning of the eighteenth century, kept a detailed diary. He describes experimenting with the cultivation of a range of the new fodder crops on a field scale. He also incorporated the traditional pulses (the grain legumes, peas and vetches) in the ley farming system established (Lisle 1757). Similar innovations to those at Crux Easton were also being made at Ansty Farm on the Wiltshire chalks, the home farm for Breamore House in Hampshire. At the end of 1700, 72 bushels of hop clover and ryegrass were bought at 2s.5d. per bushel, and the two crops were cultivated on a field scale from 1701. This venture must have been successful as cleaned clover and ryegrass seeds were both being sold as cash crops in 1703. A sainfoin ley was established in 1702. By the summer of 1702 fodder crops, including the traditional peas and vetches, occupied nearly one third of the farm's 150 arable acres (Betty 2005, 38–44, 48, 50). Sainfoin was particularly suited to dry chalk soils, but was not suited to open field

farming because it was a delicate plant which took time to become established. Sainfoin translates as 'holy hay' and was said to be in 'common use' in French limestone and chalk country in the mid seventeenth century. Seed was first imported into England at about that time (Hartlib 1652).

It was to become an important crop, particularly on the Hampshire chalks. In a survey made of the manor of Stoke Charity in 1742, for example, there were 50 acres of watermeadow, 30 acres of dry meadow and 150 acres laid down to sainfoin. The sainfoin represented 10% of the land in arable cultivation (63 M 84 /108). Sainfoin seed was generally undersown with a grain nurse crop, which was normally spring-sown barley. The first year the crop was just mowed for seed. Thereafter the ley was normally grazed, and at the end of March laid up for a hay crop. It was said to be easier to make hay from sainfoin than from clover, 'the leaves and stalks not being so juicy'. The crop came to be grown as a three to four year ley as part of a seven to ten year rotation, and was best refreshed with a top dressing of ashes (potash) in the spring of the third year in order to maintain its vigour. It was also grown as a crop separate from any rotation. In this case the ley was made to last longer, and grasses allowed to take over and replace the sainfoin in the pasture. The practice on poor land that was at a distance from the farmyard was to pare and burn the ley, take a couple of grain crops off it and then sow again with sainfoin (Hale 1756, 437).

On a tour through England in the early seventeenth century, Daniel Defoe described a 'novel method of husbandry' that was being practised by farmers on the chalk hills between Winchester and Salisbury, and his observations may now be put in context. This novel husbandry was based on the movable fold and fodder crops grown especially for sheep, and can be recognised as the same system that was being worked at Crux Easton and Ansty Farm a few years before (Defoe 1724, 187). The way that this system was worked on severalty farms (farms with land that was mainly composed of enclosed fields) was that after a night fold on one fallow field the flock was pastured on another in order to "eat and keep down the

growth of weeds and so get near a fourth part of their living". Then at 2 or 3 pm the flock was put into a field of clover, ryegrass, sainfoin and the like where it stayed until taken to the night fold. In open field or tenantry farming (farms with arable land that was principally held in patches in the open fields) the common flock was pastured during the day on down pasture or any available rough grazing, and shifted onto a crop of mixed grasses in mid-afternoon before being taken to the night fold (Ellis 1749, 219–20, 284). Such a mixed grass crop was viable as a two year ley in the common arable field, and was adopted in the open field rotations practised by some parishes on these chalklands in the eighteenth century. Here winter wheat was followed by spring barley, and the spring barley was undersown with the grass crop. The first year the crop was only mowed for hay and the aftermath pastured, and in the second year the ley was just pastured (Davis 1811, 57–60).

This four-course was also used as a means of expanding arable farming onto common permanent pasture as, for example, with the tenantry inspired 'enclosure' of Micheldever Sheep Down in November 1736. Here nine leading tenants were given leave to fence the perimeter of about four hundred acres, and jointly work it four-course with a two year ley. The lease was for twenty one years, and the tenants also had to provide a bond of £100 to secure the agreement. This enclosure appears to have failed, as the land had been returned to permanent pasture by 1755 (149 M 89 R4/6039/6063). These developments had an impact on flock structure and management. The three flock flock remained appropriate where farmers had to share common pasture with other farmers, and also had to fold some of their sheep in common on arable fields. However a new type of flock management was being introduced at this time, in which the wether flock was dispensed with. Such a flock was described by contemporaries as a 'breeding flock' and the emphasis was on lamb production, with the aim of selling lamb in a 'forward' condition at the Michaelmas sales. Here most of the surplus ewe and wether lambs were reared and finished for mutton by lowland farmers off the chalks.

Breeding flocks can be directly linked with severalty (enclosed) farms. A good example of this is the flock kept by James Edwards who leased Manor Farm, Silkstead, on the southern edge of the Hampshire downs, between 1739 and 1760. He farmed about 560 enclosed acres, and also had the sole grazing rights on 238 acres of the adjacent Silkstead Down. He ran a typical breeding flock of about 400 ewes. He tupped the ewes (417 ewes and 11 rams in 1753) from about the tenth of October to lamb in March. In an inventory made on 19th September 1757 he had 415 stock ewes, and 134 stock replacement ewe lambs; 155 wether lambs, 51 surplus ewe lambs and 102 old (draft) ewes remained to be sold. The 134 stock ewe lambs had just been sent for agisting on lowland pasture, and would return to the farm in early spring the following year (2 M 37/338). The Stratton Park Estate provides an example of an estate in transition in the second half of the eighteenth century. The estate was inherited by the Duke of Bedford in 1730 and sold in 1800. The main part of it straddled the Winchester – Basingstoke road from the hamlet of Bradley in the east to the hamlet of Weston in the west. The estate's administrative centre was Stratton Park and its economic centre was the village of Micheldever. The estate also had land at Abbotsworthy to the south. The total acreage in the mid-eighteenth century was about five thousand acres, and about one-third of this was maintained as common down pasture. Attention will be focused on land management on the estate in the 1750s and the 1760s, particularly the period 1755–1761 when a Robert Butcher was its chief steward (149 M 89 R4/6039/6047).

Robert Butcher had to deal with a crisis on the estate when he arrived in 1755 in that there was an acute shortage of local farmers able or willing to lease farms. In 1755 there were nine farms in hand. Farms in hand were those which could not be let and had to be managed as demesne (this is farmland that is farmed directly by an estate). These nine farms comprised some eleven hundred arable acres (about 20% of the estate's arable land) and an unspecified acreage of associated rights of common down pasture. This crisis had abated somewhat by 1761, though there

were still four different farms in hand at that time. Despite this crisis, or possibly because of it, detailed proposals and estimates were made for the enclosure of the common fields and downlands of the estate between 1755 and 1756. These proposals were not carried out. There were only two severalty farms on the estate in 1755. These were Sheep House Farm (245 acres which had been created in about 1734) and Warren Farm (about 470 acres which had been made between 1736 and 1742). The only new severalty start during the period was New Down Farm (453 acres made between 1757 and 1760). These three farms represented at most only eight percent of the farmed acreage of the estate (R4/6048/6051/6063). There were clearly problems with trying to create severalty farms on the estate at this time as the only other new farm built can be regarded as a hybrid at best. This was Borough Field Farm and its farmhouse, buildings and stockyard were built in 1759–60. When advertised to be let in the *Gazette and Reading Mercury*, 19th September 1763, it had 362 farmed acres consisting of 20 acres of watermeadow, 8 acres of sainfoin in a close and 129 acres of ‘inclosed several ground’. The new farm, however, had 203 acres of common field arable, and pasture rights for 20 cows on Micheldever Cow Down and 400 sheep on Micheldever Sheep Down (R4/6051/6063).

The rest of the farming on the estate at this time was based on traditional tenantry holdings – that is farms with a mix of enclosed meadow and pasture, enclosed arable, common field arable, and rights of common down pasture. This is illustrated in the lease of a farm with four hundred arable acres at West Stratton in 1759 which had 25 acres of enclosed meadow, 140 acres of enclosed arable, 268 acres in arable common field, and the right to graze 500 sheep on West Stratton Sheep Down, 150 sheep on Woodfields Down, and 25 cows on West Stratton Cow Down (R4/6047). On a smaller scale Northbrook Farm had four acres of enclosed pasture and 67 acres of arable land ‘lying disposedly in the three common fields in Micheldever’ (R4/6048). Also note the typical holding in East Stratton in 1764: as well as the usual farm buildings it had

nine acres of closes, three acres of coppice woodland, 39 acres in common arable and the right of 42 sheep commons (R4/6076).

It is evident that there were just too many stakeholders with vested interests in the traditional farming system to allow the landowner to implement the change in land management that he desired. In fact the enclosure of the whole estate was not to take place until the last few years of the eighteenth century, as will be described later. The demesne flock kept on the Stratton Park Estate also reflects the traditional open field and common down pasture farming system which prevailed on the estate in the mid-eighteenth century. In 1755 Robert Butcher inherited a poorly managed three flock flock in that it had insufficient sheep to provide an adequate spring and summer fold for the arable land of the farms in hand. In June 1755 there were about 1400 two to four year old breeding ewes, 200 five year old ewes (which normally would have been disposed of the previous Michaelmas), and 1230 lambs although there were only about 500 wether sheep instead of the 1100–1200 required for the movable fold. Two decisions were made to deal with this problem. Firstly 629 wether sheep were bought in immediately to make up the wether flock numbers, and then used with the existing wethers to underpin the summer fold. Secondly it was decided to tup the five year old ewes ‘early’ so as to lamb in January or February; 173 of these old ewes were tugged with the aim of fattening them and their lambs together for the June markets of 1756. From Michaelmas 1756 to at least 1761 the demesne flock size was kept at about 3000 sheep – that is about 1400 breeding ewes, 1200 ewe and wether lambs at weaning and 1000 wethers (R4/6039/6051).

ENCLOSURE IN THE LATE EIGHTEENTH CENTURY AND THE FINAL ADAPTATION OF THE SHEEP AND CORN SYSTEM

There was a surge in both private agreements to enclose, and parliamentary enclosures on, the Hampshire chalks after about 1770. Such wholesale enclosure, and the reorganisation of the layout of farms, was the major

feature of arable sheep farming in the late-eighteenth and early-nineteenth centuries. Such enclosure meant that the three flock flock no longer had a place in the arable sheep farming system, and by 1810 there were hardly any of these flocks left on the downland farms (Stevenson 1812, 406). A drive to enclose the Stratton Park Estate took place during the last eighteen years of the eighteenth century. By the time the estate was sold in 1800 nearly all of the estate had been enclosed. The sales catalogue shows that farming operations had been consolidated in 11 large leased units. The smallest farm was over 400 acres and the largest over 1000 acres; the latter farm consisted of four-fifths of the tithing (hamlet) of Weston, together with all of its former common pasture (R4/6011).

Just at the time when the traditional form of sheep and corn husbandry was in terminal decline, however, the practice of walking and working sheep was adapted for a new function in the late eighteenth century. Here the aim was to provide manure to promote the establishment of the spring barley crop, and the main feature of this development was that the sheep were intensively folded on both the bedwork watermeadows and the spring barley ground. It has been generally assumed until now that this practice of folding ewes and their lambs on watermeadows during the day, and on the barley fallows at night, had existed since the introduction of bedwork watermeadows in the seventeenth century (Kerridge 1954, 287–8; Bettey 2007, 8–21; Williamson 2013, 38–39). However wether flocks actually provided the spring barley fold for most of the eighteenth century. Edward Lisle who, it will be remembered, farmed at Crux Easton on the northern edge of the Hampshire downs in the first few years of the eighteenth century, explained how the system worked. He wrote that the ‘principal value’ of the wether flock was for folding on the fallows in preparation for sowing spring barley, continuing ‘You may have the benefit of the fold for barley when it does most good ... on the fallows between the latter end of February and the middle of April, when the ewes cannot be folded’. He reminds us that the ewes needed a ‘clean layer at lambing time, which the fallows do not

provide’, and also that the lambs needed fresh pasture and feed rather than be pastured on stale arable fallows (Lisle 1757, 179, 181–83).

Whatever the origins of the watermeadow-spring barley fold system, it can be shown that the connection between the early spring grass ‘bite’ and the arable barley fold was not made generally until the late eighteenth century (Bowie 2010, 5–7). This involved folding 500 ‘couples’ (500 breeding ewes and their lambs, about 1,000 sheep) to the acre on a watermeadow during the day, from about mid-March to the end of April. The couples were then walked to, and folded on, an acre of barley fallow for the night, and returned to a new fold on the watermeadow the next morning. Usually the barley seed was broadcast and harrowed in the same day, and the adjacent acre of fallow prepared for the next night fold. The activity was continued until the barley acreage was sown (Wilkinson 1861, 289–90). Thomas Davis snr. makes the first published reference to this innovative practice in the area around Salisbury, Wiltshire, in the first series of the county General Views. He advised that ‘when folding the water meadows the sheep are penned on the barley land’ (Davis 1794, 17). The authors of the General Views ... of Dorset, 1793, and Hampshire, 1794, simply describe the traditional practice of grazing just four to five couples to the acre on watermeadows, and do not connect this with the fold for spring barley (Claridge 1793, 34–5; Driver 1794, 19). In the General View... of Hampshire (second series, dated 1810) Charles Vancouver describes the close-folding of four hundred couples on the watermeadow during the day and on the winter fallows, for spring barley, at night. He also explains that this system ‘was generally continued from the last week in March until the first week in May, both inclusive’ (Vancouver 1810, 269–70). It would appear that the watermeadow/spring barley fold system originated in south Wiltshire and spread from there.

The couples provided a better quality of manure than wether sheep, principally because they were fed on lush watermeadow pasture during the day, and such flocks replaced wether flocks in the provision of the spring barley fold. The couples provided

more urine than wether sheep, the source of the nitrogen in sheep manure, and it was claimed that such couples fed on watermeadows provided eight bushels extra of barley per acre compared with a wether fold (Davis 1794, 38–9). It has already been explained that the usual practice on these chalks was to lamb between mid-March and mid-April. The change to using ewes and their lambs to provide the spring barley fold, however, necessitated a shift to lambing between Christmas and the end of January. This was because the lambs had to be at least six weeks old when the early bite became available, thus strong and sturdy enough to withstand being folded on and walked between the two folds. In practical terms this meant tupping between mid-August and mid-September so that the last lambs born were six weeks old by the end of the second week in March, the time when most watermeadows were available for pasture or folding. Thomas Davis explained that the flock was put into the watermeadows ‘as soon as the lambs are able to travel with the ewes’ (Davis 1794, 68–69). It is probably no coincidence that the development of the watermeadow-spring barley fold system took place during the main phase of enclosure on the south central chalks (c. 1770–1810), as it would be impractical to work it in an open field and common pasture system. An enclosed farm was needed where the farmer and shepherd had complete control over land use and the management of the flock (Jones 1960, 10–11).

The management of lambing in mid-winter necessitated both the cultivation of winter fodder crops in enclosed fields to support the ewes’ nutritional needs, and the construction of a temporary lambing fold to provide shelter and protection for the flock during the period of lambing. The farmer simply could not risk lambing in the open as was the usual practice with the traditional spring lambing. Such lambing folds could be novel as there is no evidence for their construction on the south central chalks before this period. The lambing fold was square or rectangular in shape and generally contained one-quarter to one-third of an acre. It had walls of solid wooden hurdles and thatched roofed pens

were made on the inside of these walls in the manner of a cloister. The fold was built on fresh ground each autumn, and the lambing activity provided manure on surrounding land. It was usually supported by a mobile shepherd’s hut which provided off-the-ground storage and accommodation for the shepherd. The ‘early’ lambing was turned to advantage, the aim being to rear a single fat lamb that was in a forward condition to sell in June or July, so that only the flock’s stock lambs remained to be looked after for the rest of the summer. This was not always achieved, but at least such lambs are likely to have made a good weight and price at the Michaelmas sales.

Butchers’ requirements were also changing. This was first highlighted in the mid-eighteenth century when the ‘smaller sort’ of the native West Country Down breed of the west Hampshire and east Dorset chalks was said to ‘furnish the butcher with the joints of mutton that best answer the service of a private family [for a] hot joint of meat every day’. This shift to smaller joints was as a result of social changes; more disposable income for the middle classes and fewer servants living and eating with the family (Ellis 1749, 41–2). A new breed of sheep was developed to take maximum advantage of both the new system and the changing market for sheep meat. The native West Country Down sheep were noted for their ‘hardihood of constitution’, for possessing ‘early maturity of growth’, and for the ewe’s ability to take the tup from about July onwards (Squarey 1869, 50; Hale 1756, 224–5). However the Southdown sheep breed, which was being introduced on the south central chalks in the late eighteenth century, had a better conversion rate (feed to lean meat) than the native breed, made smaller joints, and had a higher stocking rate per acre, that is a ratio of three Southdowns to two of the native sheep (Bowie 1987, 16–17). Contemporaries clearly recognised that the Southdown breed was the way forward. The problem with the Southdown was that the ewe would not take the tup until late October or early November, which gave lambs much too late for the new system. In Sussex the tupping of the Southdowns was organised from 25th October ‘to continue with the ewes about five weeks from first to last’ (Young 1808, 308). This

led breeders to try and fix a cross-bred sheep which retained the desirable characteristics of both the native West Country Down sheep and the Southdown. The Hampshire Down breed that was eventually established by the 1840s can best be described as a modified Southdown suited to the needs of the watermeadow-barley fold system, namely 'early' lambing, the ability to walk the distances between folds and tolerate close folding, and the characteristic single lamb which matured rapidly when properly fed (Squarey 1869, 48–9; Bowie 1987, 20–21).

The prevailing farming system on the Hampshire and Wiltshire chalklands remained a low input one, with a minimal need for off-farm purchased fertilisers. Take, for example, the fodder crops grown by Thomas Edwards, who farmed near Broughton on the Hampshire downs during the last years of the eighteenth century and the early years of the nineteenth century. His farm was a fully enclosed consolidated holding (parliamentary enclosure act for the parish, 1790), and consisted of arable fields, bedwork watermeadow and some downland pasture. He can be regarded as a progressive farmer. It should be noted that he put far more resources into grass, legume and hay crops than on roots. Between 1802 and 1805 nearly 100 acres were maintained annually in sainfoin alone, whereas only a fifth of that acreage was sown with roots each year. It is probable that the roots grown were regarded as a reserve or standby crop for use if there was a shortage of other winter fodder (2 M 37 / 340). This low input system can be compared with the development of high input systems in other English regions at the time. The best known is the Norfolk system of husbandry with its emphasis on the cultivation of root crops, short term grass leys, and intensive grain crop production. High input systems were also developed on the chalk hill country of northern England. For example, a system was developed on the Lincolnshire and East Yorkshire wolds in the late eighteenth century where tenant farmers bought huge quantities of bonemeal to provide the phosphates essential for the reliable cultivation of root crops. This in turn facilitated the development of a more intensive system of sheep husbandry and also provided higher grain yields (Bowie 1990, 121–3).

Such high input systems were generally based on proximity to the expanding working populations in the new industrial towns and cities. Unfortunately the south central chalks were in a much less favourable location. Traditional industries were in decline and there was a surplus of agricultural labour (Bowie 1990, 117). Moreover the major towns in the region were either stagnating or not developing. For example Portsmouth went into a long decline in the second decade of the nineteenth century at the conclusion of the Napoleonic Wars, and Southampton was only a small spa town during the period. Southampton did not really begin to grow until the completion of the railway line from London in 1841, which allowed it to function as an outpost of London. Hence it can now be understood why a low-input farming system was retained on the south central chalks. It gave downland farmers an acceptable income with rather less capital outlay, running costs and operating risk than a high-input system.

CHANGES IN THE FARMING SYSTEM ON THE HAMPSHIRE AND WILTSHIRE CHALKS AFTER 1850

There was rapid change on this chalk hill country after about 1850, a change that was triggered in part by growing prosperity in the farming sector and also because of the introduction of relatively cheap inorganic fertilisers. What developed can be recognised as 'high farming' (Dodd 1979, 258–9; Jones 1962, 219–21). The practice of agisting ceased at this time, and the ewe lambs were kept on the farm for the autumn and winter instead (Wilkinson 1861, 286). What contemporary agricultural writers still confusingly described as 'folding', was actually strip grazing with hurdles where flocks were not walked and worked but simply shifted from one arable feed crop to another as the farmer deemed appropriate. Uncultivated downland might remain, but such land rarely retained common pasture rights and was generally regarded as just a convenient place to park sheep.

With regard to fodder crops, superphosphate, which was introduced in 1843 and initially

produced by dissolving animal bones in dilute sulphuric acid, facilitated the more reliable cultivation of turnips and swedes for autumn and winter feed. There is clear evidence for a major increase in the cultivation of root crops on the Hampshire chalks between about eighteen fifty and eighteen seventy (Morgan 1978, 136, 270). Superphosphate was especially important for sustaining the swede crop. The swede crop was generally fed off between February and April, which filled the last gap in the aim to provide green feed throughout the year. Hence the green feed cycle was complete, and sheep flocks fully integrated into the arable farming system on the south central chalks.

CONCLUSION

The main aim of this paper has been to explain in practical farming terms how the sheep and corn system actually worked. Three periods of rapid change have been identified in the evolution of the system. The dating of the first is uncertain, but it probably took place between about 1170 and 1250. The second was between about 1670 and 1720, and the third between about 1770 and 1810. The latter phase can be equated with the traditional concept of an 'Agricultural Revolution' in England in the sense that this was the main phase of private and

parliamentary enclosure on the south central chalks, and also a period when arable farmers in England had to respond more or less to the need to feed an increasing and urban population. Accepted theories and ideas have been challenged during the course of the paper, and most of these have been shown to have been incorrect simply in terms of the laws of practical agriculture. In all of the theories and ideas that have been challenged here, the necessary primary source evidence is either missing or has been misunderstood. The late Joan Thirsk made this point in a letter dated May 2010. She wrote 'how very complex are good systems of farm management; it is often difficult for their subtlety to be fully understood if too cursory a reading is made of the documents'.

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