Agricultural Progress in Open-field Oxfordshire

By M. A. HAVINDEN

IT is customary to regard open-field agriculture as backward and static, and consequently it is difficult to believe that any serious farming progress can have been made within the confines of such an unwieldy system. It is true that by modern standards progress was slow. But progress is a relative concept, and although the pace of development within open-field agriculture may seem snail-like to us, when it is seen in its historical context it is less unimpressive. Particularly is this so when it is realized that many of the most important advances in open-field farming were made before the idea of agricultural progress became fashionable in the mid-eighteenth century.

In recent years the crucial importance of the seventeenth century as the germinative period for agricultural improvement has become appreciated.[1] While the most distinctive changes took place in enclosed regions, like East Anglia, improvement was not confined to such regions. There was an advance along the whole agricultural front in the seventeenth century, on open-field as well as on enclosed farms. Indeed, it may well be, as H. L. Gray was the first to suggest, that this early progress on open-field farms was one of the chief reasons why enclosure was delayed for so long in Midland counties like Oxfordshire.[2] As late as 1809 Arthur Young was complaining that there were still nearly a hundred unenclosed townships in the county.[3]

In the seventeenth century Oxfordshire was, with the exception of a small area of Chiltern country in the extreme south, an almost entirely open-field county; but this does not mean that it was an isolated backwater of subsistence farming. On the contrary, the fertile lowland area between the Cotswolds and the Chilterns had long been supplying London with wheat and malt, which was shipped down the Thames on barges; while the whole of the

[1] See for instance J. H. Plumb, 'Sir Robert Walpole and Norfolk Husbandry', in *Econ. Hist. Rev.*, 2nd Ser., v, 1952, pp. 86–9; E. Kerridge, 'Turnip Husbandry in High Suffolk', *ibid.*, VIII, 1956, pp. 390–2; and A. H. John, 'The Course of Agricultural Change, 1660–1760', in *Studies in the Industrial Revolution*, ed. L. S. Presnell, pp. 125–55.

[2] See H. L. Gray, *English Field Systems*, pp. 122–37, where farming improvements in the open-field parts of Oxfordshire are discussed from the point of view of field redivision. Gray was a pioneer in the study of improved husbandry practices on the open fields.

[3] A. Young, *General View of the Agriculture of Oxfordshire*, 1809, p. 88.

upland region in the north of the county swarmed with livestock. Cattle were important as well as sheep, and the cheeses of Banbury were as prized in London as the celebrated Cotswold fleeces.[1] Oxfordshire farmers were thus in the fortunate position of serving an ever-expanding metropolitan market, and therefore had an incentive to improve their methods.

The progress which was made in open-field farming was twofold. Production was both diversified and increased, the two processes being intimately connected. The growing demand for meat and tallow, as well as for wool, broke down the predominantly arable character of the husbandry and made it more balanced. This, in turn, raised the fertility of the land so that the increase in livestock production was accompanied by an increase in the acreage of wheat and of fodder crops, and a decrease in the area of fallow land. Since the basis of the whole improvement was the diversification of production through the development of livestock husbandry, it is most convenient to consider this aspect first.

Opponents of the open-field system, like Arthur Young, naturally emphasized the rigid features in its use of land. An exaggerated picture was drawn of a system in which land was permanently divided between arable, meadow, and pasture, and within which no adaptability to changing market demands was possible. This picture has tended to obscure the variety of practice which was followed in different open-field regions, and to over-simplify the whole question of the relationship between improvement and enclosure. Detailed studies of open-field counties, such as that of Leicestershire by Dr Hoskins and that of Lincolnshire by Dr Thirsk, have shown that considerable flexibility and variation had already been introduced into open-field husbandry before the end of Elizabeth's reign.[2] The farmers did not all grow the same crop in the same field, and, more important, a measure of convertible husbandry had been introduced by the practice of sowing leys in the open fields. This useful device had become widespread in Oxfordshire by the early seventeenth century, as can be seen from the terriers of three unenclosed farms in north Oxfordshire, selected at random from the records of New College. At their farm at Hempton in 1624, 25 per cent of the land was described as leys; at Adderbury in 1628 the proportion was 16 per cent; and at Shutford in 1655, 34 per cent.[3]

[1] See Daniel Defoe, *A Tour thro' the whole Island of Great Britain*, ed. G. D. H. Cole, 1927, II, p. 430; A. Beasley, *History of Banbury*, 1841, p. 586.

[2] W. G. Hoskins, 'The Leicestershire Farmer in the Sixteenth Century', in *Essays in Leicestershire History*, 1950; and *The Midland Peasant*, 1957; Joan Thirsk, *English Peasant Farming*, 1957.

[3] New College, Oxford, book of MS. Terriers (pages unnumbered).

Because of the problem of common grazing rights on the stubbles and fallow fields, leys were usually sown by all the farmers as part of a general agreement. In this way nobody gave his neighbour unrequited free grazing, and the value of the stubble and fallow grazing was enhanced for all. A good example of such an agreement was that made in the parish of Middleton Stoney in north-east Oxfordshire, near Bicester, in 1638. Nicholas Harmon, the lord of the manor, and Edward Fitzherbert, "his farmer of the desmesne there," agreed with the parson and the tenants "to lay down for every yardland of the said farm and demesne, six acres of grass for every second year in North field, and that every one of the said tenants shall lay down for every yardland which they hold five acres for grass yearly in the Cornfield."[1] The yardlands at Middleton Stoney were of about forty acres each and lay in two open fields, which means that each tenant would have had an average of about twenty acres per yardland in the cornfield each year. By putting five acres down to leys each year in the cornfield, the tenants were converting about a quarter of their non-fallow arable land to temporary pasture. The length to which the leys were left down could be varied according to need. When crops were growing nearby livestock could be tethered on the leys, or penned in with hurdles.

It used to be argued that the existence of the right of fallow grazing on the open fields prevented the introduction of new and improved crops, particularly the clovers and turnips, since no one could be expected to grow these crops for the benefit of his neighbour's livestock. This argument is however no longer capable of general application, even though it may have been true in certain cases. In fact, a variety of new and improved legumes and grasses were introduced on the open fields in Oxfordshire in the seventeenth century. These included ryegrasses, clover, trefoil, and lucerne; but by far the most important was sainfoin, a deep-rooting legume which is particularly suitable for use on the thin, dry soils which occur in limestone country. It was therefore widely adopted in Oxfordshire, and especially in the northern, Cotswold part of the county. The growing of sainfoin represented an important advance, for it was both more productive and more nutritious than the indigenous grasses. Trow-Smith has said that "the increase in food value of a stand of lucerne or sainfoin, either pure or in association with some of the improved grasses, over a permanent pasture of indigenous species was one of roughly 100 per cent considered as hay."[2] Secondly, and perhaps even more important, the nitrogen-fixing mechanism in the root nodules of the legumes increased the fertility of the land on which they were grown.

[1] *The Victoria County History of Oxfordshire*, VI, 1959, p. 247.
[2] R. Trow-Smith, *A History of British Livestock Husbandry to 1700*, 1957, p. 257.

Sainfoin was introduced into Oxfordshire in the second half of the seventeenth century, and was being grown on the open fields as early as 1673, when it is referred to in a legal document belonging to St John's College, Oxford. This document was drawn up to legalize a private agreement to enclose some common pastures in East Chadlington, but it incidentally reveals the importance of sainfoin. It seems that the lord of the manor of East Chadlington, who was a London vintner named Sir William Rollinson, had sown certain of his strips in the open fields with sainfoin. His tenants agreed to give him right of way to move his sheep and cattle from his enclosed pastures to be tethered on these strips whenever he wished. He, in his turn, agreed to let the tenants' livestock graze his sainfoin from 1st August until the following 20th March, when it was to be fenced off with hurdles and allowed to grow for hay.[1]

It is probable that sainfoin was first grown by the more enterprising lords of manors on their demesne lands, but by about 1700 tenants were also growing it. This can be seen from agreements which were drawn up between tenants and their landlords, somewhat similar to the earlier agreements to grow leys. These agreements were made because it was more convenient if everybody agreed to grow sainfoin on all the strips on certain furlongs rather than on odd strips scattered about the fields. Thus certain furlongs were withdrawn from the arable rotation and sown with sainfoin. They were sometimes temporarily fenced off from the rest of the open field and referred to as enclosures in the agreements, but they lacked the most important feature of a genuine enclosure, the extinction of common grazing rights.

Such agreements were made in several townships of the large parish of Spelsbury, near Woodstock. In one of these townships, Taston, the twenty-two tenants signed an agreement on the 4th of January 1700 with the consent of the earl of Litchfield, who was lord of the manor, to "enclose" (in the sense mentioned above) one part of the open fields consisting of five furlongs, and to sow it with sainfoin. It is made clear in the articles of agreement, however, that there was to be no enclosing of individual strips within this area, but that each tenant, or owner, would agree to sow his own land with sainfoin. Common grazing rights on the sainfoin continued but their extent and duration were limited. Those with common rights were allowed to graze two cows for every yardland they held in Taston. The cows were not allowed in until the first crop of sainfoin hay had been removed. Sheep were not allowed in until October 13, when six sheep and ten lambs per yardland were permitted. On January 2 the sainfoin was closed to all grazing animals until the following summer. The problem of drinking-water for the stock was solved by a stipu-

[1] St John's College, Oxford, Muniments, VI, 56.

lation that all persons having rights of common on the sainfoin must contribute towards digging a pond. Finally, three fieldsmen were appointed to supervise the carrying out of the regulations and to collect fines for non-compliance. Any one ploughing up his sainfoin could be fined £10 per furrow ploughed.[1]

The details of this agreement indicate that it was intended to leave the sainfoin down for a considerable period, but a similar agreement made by seven yeomen with lands in the common fields of the nearby township of Fulwell in 1715 shows that these agreements were not permanent. In this case an agreement was made to sow sainfoin on a portion of the field which had been temporarily enclosed for that purpose before, but which had later reverted back into the ordinary common-field rotation. The tenants had found that their previous stand of sainfoin had been, in their own words, "advantageous," and they agreed to sow it again.[2]

Although sainfoin was the most commonly sown of the legumes it was not the only one. For instance, in 1728, when the manor of Chesterton was surveyed for the earl of Abingdon, the surveyor, Robert Whittlesey, noted that there was an acute shortage of meadow. He suggested that this should be relieved not by enclosure but by sowing a third of the arable land with legumes. He recommended clover for the wettest land, sainfoin for the stoniest, and trefoil for the driest.[3]

Turnips however do not seem to have been much grown in Oxfordshire at this period. "I introduced turnips into the field," says Jethro Tull, "in King William's reign; but the practice did not travel beyond the hedges of my estate till after the Peace of Utrecht."[4] In fact Tull left his Oxfordshire property of Howberry, just across the Thames from Wallingford, in 1709, when he moved to Prosperous in Berkshire; but he is probably more or less correct, since the earliest references to turnips which I have come across in examining thousands of probate inventories for Oxfordshire is in 1727, when John Deane, a cordwainer of Brize Norton, had 20 bushels of turnip seed worth 10s. a bushel.[5] Of course I have not examined every Oxfordshire inventory, and there were probably some farmers growing turnips earlier than this, but they were certainly not common before 1730, nor is there any evidence that they were grown on the open fields. However, this absence of turnip husbandry is not necessarily a sign of backwardness, for, as Trow-

[1] Oxfordshire Record Office, Dillon MSS., DIL/II/n/1. [2] *Ibid.*, DIL/II/t/2.
[3] Bodleian Library, MSS. Top. Oxon. c. 381,102.
[4] Quoted by Lord Ernle, *English Farming Past and Present*, ed. Sir A. D. Hall, 5th ed., 1936, p. 135.
[5] *Ibid.*, p. 170; Bodl. MS. Wills Oxon., 164/3/13.

Smith has recently pointed out, the turnip has been historically somewhat over-valued. Its nutritive value, weight for weight, is less than that of barley straw, and it has never been such an important source of fodder for livestock as clover, sainfoin, or improved grasses like ryegrass.[1]

The introduction of new crops is only one aspect of agricultural progress, but it is an important one because it sometimes stimulates and makes possible the reorganization of an old system along more advanced lines. This was certainly the case with the introduction of sainfoin in Oxfordshire. For instance, when the farmers of Spelsbury made an agreement to grow sainfoin in 1708, similar to the ones already cited for Taston and Fulwell, they took the opportunity to reorganize their arable rotation by a redivision of the open fields.[2] It was decided that the land left over after some had been set aside for sainfoin should be divided into three new fields, two to bear corn crops and one to lie fallow each year. Spelsbury lies in the northern upland part of Oxfordshire which was, according to Gray, traditionally a two-field region; thus the two original fields were redivided into four new ones, one of which was always under sainfoin. This redivision of two-field systems into four or more fields was common all over Oxfordshire in the seventeenth century, and Gray has cited several examples of it.[3] The terrier of the New College farm at Adderbury, previously referred to, shows that there were five fields there as early as 1628.

The primary object of field redivision was to reduce the area of fallow land. Clearly fallow grazing was one of the least efficient ways of feeding livestock, although it served a useful purpose in manuring and consolidating the arable land and also in keeping it free from weeds. It could therefore not be abandoned altogether; but as the fallow land could produce more food for the livestock if it were sown with fodder crops such as peas, beans, or vetches, than it could by growing weeds, the object was to reduce the fallow area to the smallest possible amount. These reductions were possible because the fodder crops which replaced the fallow were legumes, and therefore did not exhaust the land.

The practice of growing fodder crops on the fallow field was called 'hitching'. It was probably first practised in a small way. Perhaps one or two furlongs would be temporarily fenced off from the fallow field and sown with pulses. For instance, in 1612 Robert Loder, who farmed in the two-field parish of Harwell on the edge of the Berkshire Downs, not far from Oxfordshire, had "17 landes hitched with poulse and fatches" (i.e. vetches).[4] The

[1] Trow-Smith, *op. cit.*, p. 256. [2] Oxford Rec. Off., DIL/II/n/2b.

[3] Gray, *op. cit.*, pp. 493–4.

[4] *Robert Loder's Farm Accounts, 1610–20*, ed. G. E. Fussell, Camden 3rd Ser., LIII, 1936, p. 39.

practice spread throughout the seventeenth century, and such small, temporary hitches were gradually replaced by large, permanent fields as the old open fields were divided.

By the early eighteenth century field division had become complex, particularly in the north of the county. An example of this is provided by the parish of Shenington, which was surveyed for Oriel College in 1732. At the end of the survey there is a section headed "Customs of the Parish" which reads as follows: "Shenington Field is called Townside Land, Farmside Land, and Cotmanside Land. The Townside is divided into four Parts, and three of them are ploughed and sow'd every year, with wheat, Pease and Barley; the fourth part lies fallow; or when it is Sow'd with Pease, it is called Hitch. Part of Townside is every other Years Ground.

"Farmside is ploughed as the Townside.

"The Cotmanside being divided into four parts, one is sow'd with wheat, and one with Barley every year; sometimes the other two parts lie fallow, and sometimes both are hitch, or as the parish agree."[1]

The open arable land was thus divided into twelve parts in which the tenants' lands lay in intermixed strips. In fact not all these strips were used as arable, since the survey makes it clear that some of them were leys; but excluding the leys, the apportionment of the crops was roughly as follows: a quarter of the land (three of the twelve parts) normally grew wheat, and another normally grew barley, while a sixth (two of the twelve) normally grew peas. The remaining third of the land (four of the twelve parts) was either fallow or hitched with peas, or divided between the two, "as the parish agree."

The noteworthy point is the flexibility of this system. The area of pulses could be varied from a sixth to a half of the arable land, and the fallow could be eliminated entirely in seasons when it was felt to be unnecessary. The same degree of flexibility was perhaps not to be found everywhere, but the example of Shenington shows the extent to which the more advanced open-field farmers could vary and improve their system without enclosure.

It is now time to consider what effect the growing diversity of the open-field system had in raising production. We have examined various ways by which the quantity of livestock fodder was increased, and its quality improved; and as we should have expected, these developments were reflected in a growth in the size of flocks and herds during the seventeenth century. This growth can be roughly measured by analysing random samples of farmers' inventories.

Thus, in a sample of 226 inventories relating to the limestone upland region of Oxfordshire, taken between 1580 and 1640, the size of the median

[1] Oriel College, Oxford, Muniments, S II.I.19, p. xxxii.

average sheep flock was 14; whereas in a sample of about the same size for the years 1660–1730 the median average flock was 60, or more than four times as large. It is true that the proportion of farmers who kept sheep fell slightly between these two periods (from 66 per cent to 56 per cent), but even so it seems clear that the sheep population had considerably increased. Of course, some of the increase must be ascribed to the effects of enclosure, and particularly piecemeal enclosure within open-field parishes; but as nearly two-thirds of this region was still unenclosed in 1730 it seems reasonable to assume that most of the increase occurred in open-field parishes.

In the Thames valley region, between the limestone uplands and the Chilterns, where there is a wide variety of clay and loam soils, and where conditions are less favourable for sheep, the increase was naturally less pronounced. But even here a comparison of the size of the median average flock, taken from two samples containing over 400 inventories each, shows that it more than doubled over the same period, rising from 24 to 51 sheep.

The increase in the numbers of cattle was not of a similar magnitude, but they seem to have made a modest advance. Herds were not generally large; the average size was under five, but there was an increase in the proportion of herds containing more than five cattle during the course of the seventeenth century, and this increase was not accompanied by any decline in the proportion of farmers keeping cattle, which remained over 80 per cent during the whole period. In the samples relating to the limestone uplands herds containing over five cattle rose from 33 per cent in the period 1580–1640 to 46 per cent between 1660 and 1730, and the corresponding figures for the lowlands were similar (39 per cent to 45 per cent). However, herds containing more than 20 cattle did not amount to more than 5 per cent of the herds in either region in 1730, so that the increase in dairy products and beef took the form of a slow but steady advance over a wide area, rather than that of a dramatic increase in specialized production.

From the evidence of the inventories, then, it seems clear that open-field townships were able to improve their livestock husbandry.

A swing to livestock also reacts upon arable husbandry. It is probable that the acreage of corn crops was reduced, but on the other hand the remaining arable land was given the advantage of better rotations and more manure. This meant that there was an opportunity for the reduction in the arable acreage to be offset by an increase in quality of the corn grown and also possibly in the yield per acre; although detailed evidence for the latter is not available. The evidence of the inventories, however, strongly suggests that the acreage of the inferior bread cereals, like rye, barley, and oats, was reduced while that of wheat was increased. This development was subject to

regional variation. The upland areas, which had hitherto been behind the more fertile vale in this respect, showed the greatest rate of advance. The evidence for this comes from a comparison of the crops grown by groups of farmers in the same periods which were used in the comparison of the livestock numbers. For this purpose it is only possible to use inventories which were made in the summer before harvest, and which therefore show the complete acreage of the different crops. Such inventories are not numerous, and the samples used are not as large as I should have liked, but I have used all the surviving Oxfordshire inventories which were available.

On the limestone uplands the crops grown by a group of 23 farmers in the period 1660–1730 showed the following changes when compared with those of a group of 26 farmers in the period 1590–1640. The proportion of wheat had almost doubled, from about 14 per cent to 27 per cent; the pulses had risen from 15 to 20 per cent, the barley had fallen from 61 to 49 per cent, the oats from 7 to 4 per cent, and the rye, which had only been 4 per cent before 1640, had disappeared altogether. Practically every one of the farmers used in these samples lived in open-field parishes, and although a few of them may have had some enclosed land, there seems no reason to doubt that most of the improvement took place on the open fields. It has to be remembered that this was naturally sheep and barley country, and that the thin 'stone-brash' soil was not well suited to wheat. In the circumstances a doubling of the proportion of land devoted to wheat was an important achievement.

In the more fertile clay vale the advance of wheat was less pronounced (from 25 per cent to 32 per cent) in two similar samples, but it will be noticed that farmers in the vale were already growing twice as much wheat as upland farmers in the early seventeenth century.

Rye, like wheat, was also subject to considerable regional variation. It seems to have lingered longest in the small upland region around Banbury, where a thickly settled peasantry cultivated a useful red soil derived from a localized outcrop of the marlstone, or ironstone, of the middle lias. The farmers' inventories for this region show that before about 1630 the winter-sown cereal was almost invariably rye or maslin (which is a mixture of rye and wheat), and that wheat was seldom sown as a separate crop; but that after about 1630 the position was almost reversed, most of the farmers preferring wheat to rye or maslin. This was true of large as well as small farmers. For instance, William Alcocke, of Epwell, was a substantial farmer who died in 1612 leaving a personal estate of £127 14s. 10d. His crops were worth £44, of which rye and barley accounted for £36, and hay, peas, and oats for £8; but he had no wheat.[1] Neither had Robert Calcot of Burdrop, who died in

[1] Bodl. MS. Wills Oxon. 1/3/5.

March 1610 leaving crops worth £50 2s. 8d. Rye was his only winter-sown cereal.[1] This is in marked contrast to the situation twenty years later, when farmers like John Lovell, a yeoman of Bloxham, were more typical. His only winter-sown crop in 1633 was wheat, of which he had 28 acres growing in November.[2]

The way in which the supply of pulse crops was increased by the new rotations has already been indicated from the survey of Shenington, as well as from the comparison of probate inventories. The type of pulses grown depended to some extent on the soil. In the upland regions beans and vetches were rare, and peas almost universal; but in the Thames valley farmers sometimes grew quite a variety of pulses. For instance, Thomas Reading, a husbandman of Shirburn, a parish at the foot of the Chilterns, whose inventory was made on the 1st of August 1700, had 12 acres of beans and peas, apparently growing together, 9 acres of peas on their own, 2 acres of vetches, and 2 acres of dills, or lentils. In all he had 25 acres of pulses, which was just over a third of his 73 sown acres.[3]

The increase in the production of wheat and pulses took place largely at the expense of barley. This was one of the improvements which agricultural writers like John Worlidge were calling for early in Charles II's reign, when they complained that an excessive acreage was devoted to barley on many open-field farms.[4]

Although there is no reliable evidence that this improvement in the type of cereals being grown on open-field farms was accompanied by an increase in the yield per acre, an interesting development in farm equipment took place at this time, which suggests that harvests may have become heavier; namely, the introduction of the commodious four-wheeled farm wagon in place of the old two-wheeled long-cart. The way in which the use of the wagon was spreading can be seen from the inventories. Dr Robert Plot, writing in 1677, praised the farm wagon, but said that it was little used at this time in Oxfordshire, except by carriers.[5] His estimate is borne out by the farmers' inventories, but they show that he was soon to be out of date; for while there are no examples of wagons in a sample of nearly 800 inventories taken between 1580 and 1640 and only three in a sample of 138 in the 1660's, by the 1690's about 20 per cent of the farmers possessed wagons, and by the 1720's the proportion had risen to 34 per cent. There was hardly a yeoman in George I's reign who did not possess at least one wagon, in contrast to the

[1] Bodl. MS. Wills Oxon. 11/3/36. [2] *Ibid.*, 139/2/7. [3] *Ibid.*, 147/2/1.

[4] John Worlidge, *Systema Agriculturae*, 4th ed., 1687, p. 36. The first ed. was published in 1669.

[5] R. Plot, *The Natural History of Oxfordshire*, 1677, p. 257.

situation at the Restoration when even the wealthiest yeomen were without them. Although all the reasons for the introduction of wagons at this period are not known, the possibility of higher yields cannot be ruled out.

It is not possible in a short paper to go any further into the details of the many improvements which occurred in open-field agriculture. I have tried to concentrate upon the main features. These were, of course, abetted by minor changes, such as the exchange and consolidation of strips, which all helped to make the system less inconvenient.

In conclusion, the evidence, when taken altogether, suggests that there was an ascending spiral of progress. It began with an increase in the area of grassland by means of leys. This led to more livestock and more manure. Then the demand for better winter food for the livestock led to the introduction of the legumes like sainfoin and clover. These, in conjunction with the increased supply of manure, helped to raise the fertility of the land, and enabled it to be more intensely cultivated by the partial elimination of fallows. As a result of more intensive cultivation, the supply of fodder for the livestock was further augmented (in the form of pulses), while the supply of grain was not only maintained, but actually improved in quality by means of the enlarged wheat acreage. Thus each advance, while small in itself, stimulated further advance in another sector, and the spiral was able to begin again at a higher level.

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