Changes in Crop Production in East Worcestershire 1540–1867

By J. A. YELLING

IN a recent issue of this REVIEW I discussed the patterns of cropping in East Worcestershire in the periods 1540–99 and 1600–60, using statistics from probate inventories.[1] The present paper includes an analysis of the inventories for two further periods, 1670–99 and 1700–50, together with a comparable treatment of the 1801 and 1867 crop returns. This provides a good record of long-term trends in crop combinations, and enables the main periods of change to be discerned. Some comparison is possible with figures available for other midland counties, but the paper is mainly concerned with internal differences in the character and chronology of crop changes at the regional level. These differences reflected not only varying physical conditions and economic circumstances but also the balance of common field and enclosed land.

The treatment of the inventories is generally similar to that in my previous paper, but some features require additional comment. In each period the study area is divided into seven regions as shown in fig. 1. Three of these cover the champion district in the south whereas the others lie in the north and west, an area affected by piecemeal enclosure to varying degrees. In addition to the crude figures for these two main sub-regions, and for East Worcestershire as a whole, adjusted figures have been obtained by weighting the crop proportions for each basic region according to its crop acreage in 1867. This helps to reduce the effect of regional variations in the availability of inventories. Since no figures can be obtained for region MN between 1660 and 1750, it is assumed that the same trends occurred there as in other parts of the champion district.

The study area is well covered in the 1801 returns, and in only one region (C) is the cropping pattern revealed likely to be at all unrepresentative. Unlike the inventories, the 1801 returns do not mention vetches or clover, and turnips are of course recorded with rape. In using the 1867 returns I have omitted entries for which earlier statistical evidence is not available, notably temporary grass, but figures for crops which were introduced after 1801 have been included.

The resulting statistics are presented in tables I–IV, and in addition a number of diagrams have been prepared (figs. II–VI). These enable a ready appreciation of the sequence of crop combination changes and assist regional comparisons. But for two reasons especially they must be used with care. Obviously, not all the changes which occurred from one inventory period to another were 'real', some result simply from bias in the sample of farms represented in inventories. What represented 'real'

[1] J. A. Yelling, 'The Combination and Rotation of Crops in East Worcestershire, 1540–1660; *Ag. Hist. Rev.*, XVII, 1969, pp. 24–43.

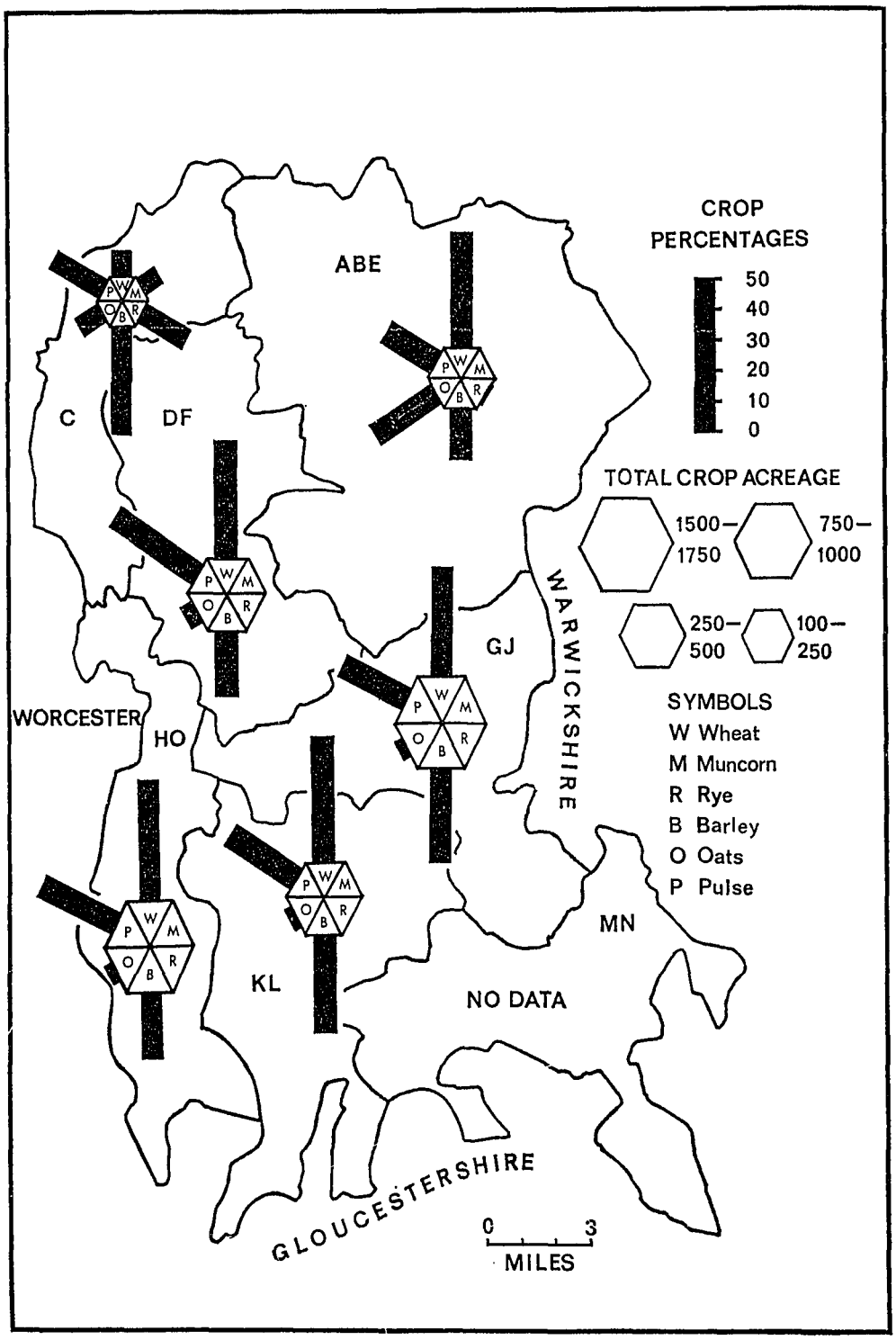

FIG. I
Crop combinations, 1700–50

change is a matter for consideration in the text. Again, as an essential aid to clarity of presentation, the results for the inventory periods are depicted as point statistics plotted for the mid-point of each period. This distorts the real course of agricultural change, so that only general chronological interpretations are valid.

TABLE I

REGIONAL CROP STATISTICS, 1670–99

Wh = wheat, Mu = muncorn, Ba = barley, Pu = pulses, Ve = vetches, Cl = clover

Area	*Wh*	*Mu*	*Rye*	*Ba*	*Oats*	*Pu*	*Ve*	*Cl*	*Total*
ABE acres	58	6½	9	53	53½	62	—	—	242
%	24	3	4	22	22	26	—	—	—
C acres	11	—	84	102	1½	48½	2	—	249
%	4	—	34	41	½	20	1	—	—
DF acres	56	4	—	52½	3	73	2	—	190½
%	29	2	—	27	2	38	1	—	—
HO acres	95	4	12	126	4	80	5½	—	326½
%	29	1	4	39	1	25	2	—	—
Total N & W %*	21	2	9	30	10	27	1	—	—
GJ acres	159	17	—	134½	19½	120	3½	—	453½
%	35	4	—	30	4	26	1	—	—
KL acres	132½	2	—	101	1	106	—	—	342½
%	39	½	—	30	—	31	—	—	—
Total south %*	37	2	—	28	1	30	—	—	—
Total %*	28	2	5	29	6	28	1	—	—

* The totals are adjusted according to the total crop acreage recorded in each area in 1867. The grand total, and that for the south, includes an estimate for Area MN.

I

Taking the figures for East Worcestershire as a whole, it is clear that the most significant long-term development was the emergence of wheat as the dominant crop, occupying 46 per cent of the tillage area in 1867 compared with 22 per cent in 1540–99 (fig. II). This growth came about both from successful competition with other winter grains and from a relative reduction in the use of spring crops. An important feature, however, is that neither of these trends was apparent in the early part of the period. Indeed, in the late sixteenth and early seventeenth centuries wheat appears to have undergone a slight fall in popularity. The emphasis at this time was on spring crops and their acreage continued to expand, proportionately,

until towards the end of the seventeenth century. Moreover, there was little change in the balance of wheat and rye before about the middle of the seventeenth century. From then on the acreage of rye and muncorn contracted sharply, with little left by 1700, and there was a corresponding increase in the wheat acreage. By contrast in the eighteenth and early nineteenth centuries the expansion of wheat came mainly from a relative reduction in the growth of spring grains.

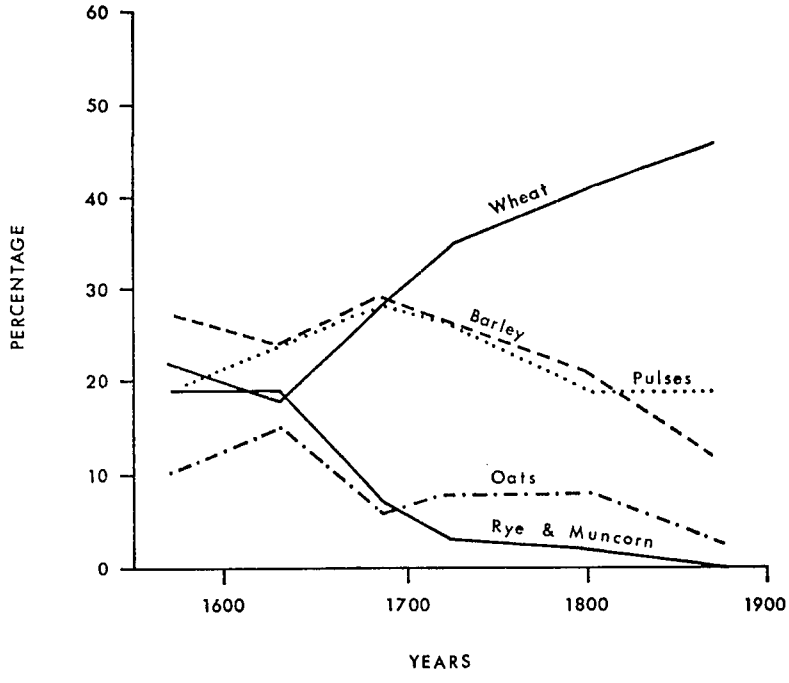

FIG. II

East Worcestershire: changes in crop proportions, 1540–1867 (selected crops only; for sources and methods of plotting see text)

These general trends correspond fairly well with those recorded in the other midland counties of Leicestershire, Oxfordshire, and Lincolnshire. In Leicestershire spring crops dominated in the sixteenth and seventeenth centuries, and were of increasing importance.[1] Wheat and rye apparently occupied some 17 per cent of the cropped acreage in 1558, 14 per cent in 1607–8, and for 1669–72 Hoskins noted that "the tendency to reduce the area of winter corn goes on." However, by 1700–3 this trend had been reversed, and by 1801 wheat comprised 28 per cent of the county's cropped area.[2] In the Oxfordshire uplands the proportion of wheat and rye increased from 14 per cent in 1590–1640 to 27 per cent in 1660–1730, and the decline of rye in the county came mainly after 1630.[3] In Lincolnshire there was a

[1] W. G. Hoskins, 'The Leicestershire Farmer in the Seventeenth Century', *Ag. Hist.*, XXV, 1951, pp. 9–20.

[2] W. G. Hoskins, 'The Leicestershire Crop Returns of 1801', *Studies in Leicestershire Agrarian History*, 1949, pp. 9–20.

[3] M. A. Havinden, 'Agricultural Progress in Open Field Oxfordshire', *Ag. Hist. Rev.*, IX, 1961, pp. 73–83.

small increase in the combined proportion of wheat and rye in the uplands during the sixteenth and seventeenth centuries, but it fell in the marshlands and claylands.[1]

TABLE II

REGIONAL CROP STATISTICS, 1700–50

Abbreviations as in table 1

Area	*Wh*	*Mu*	*Rye*	*Bu*	*Oats*	*Pu*	*Ve*	*Cl*	*Total*
ABE acres	162	4	4	71½	86	84	25	4	440½
%	37	1	1	16	20	19	6	1	—
C acres	20	14	42	81	25	53½	5	—	240½
%	8	6	18	34	10	22	2	—	—
DF acres	301½	—	—	161½	54	276	2	—	795
%	38	—	—	20	7	35	½	—	—
HO acres	606	—	1	413	62	471	12½	3	1,568
%	39	—	—	26	4	30	1	—	—
Total north %*	31	1	5	23	12	25	3	—	—
GJ acres	548	—	—	513	49	385	25	3	1,523
%	36	—	—	34	3	25	2	—	—
KL acres	383	2	3	294	16	253	5	—	956
%	40	—	½	31	2	27	½	—	—
Total south %*	39	—	—	31	2	28	1	—	—
Total %*	35	—	2	26	8	26	2	—	—

* Adjusted totals (see table 1).

By contrast, wheat proportions increased generally between 1630–1700 and 1801, and rose further by 1870. The claylands, which bear the greatest physical resemblance to East Worcestershire, had 28 per cent of their cropped area under wheat and rye in 1530–1600, 21 per cent in 1630–1700, 29 per cent in 1801, and 38 per cent in 1870.[2]

Barley and pulses were the main spring crops throughout the inventory period, with oats some way behind; a pattern which is generally found in the Midlands. More use was made of oats in the sixteenth and early seventeenth centuries than in the succeeding period, and initially oats and pulses seem to have advanced relative to barley. There are some parallels to this elsewhere, for instance in the Lincolnshire claylands, but no general agreement.[3] Then, after a fairly stable period in the late

[1] J. Thirsk, *English Peasant Farming*, 1957, pp. 157, 173, 188.

[2] Figures calculated from *ibid.*, table 34, p. 188, and table 47, pp. 302–3.

[3] *Ibid.*, table 34, p. 188.

seventeenth and early eighteenth centuries, which appears general, the Worcestershire experience begins to diverge markedly from that of Leicestershire and Lincolnshire. In both these counties the old balance of the spring crops had disappeared by 1801. Oats had risen greatly in favour, while pulses and, to a lesser extent, barley

TABLE III

REGIONAL CROP STATISTICS 1801

Percentage of total cropped acreage

Area	*Wh*	*Rye*	*Ba*	*Oats*	*Pu*	*Po*	*Tu/Ra*
ABE	46	–	13	16	17	3	3
C	31	6	29	3	5	2	24
DF	49	–	14	9	26	–	2
HO	43	1	22	5	22	2	6
Total north*	43	3	18	9	17	2	8
GJ	44	–	24	8	22	–	4
KL	36	–	25	6	23	2	8
MN	39	–	27	7	22	–	4
Total south*	39	–	25	7	22	1	5
Total*	41	2	21	8	19	1	7

TABLE IV

REGIONAL CROP STATISTICS 1867

Percentage of total cropped acreage

Area	*Wh*	*Rye*	*Ba*	*Oats*	*Pu*	*Po*	*Tu/Sw*	*Mon*	*Ve*
ABE	46	–	11	5	20	3	9	2	3
C	35	3	17	1	11	12	16	3	3
DF	50	–	11	2	21	1	7	2	6
HO	44	–	12	3	20	2	10	2	6
Total north*	44	1	13	3	18	4	10	2	4
GJ	51	–	9	2	20	—	7	3	6
KL	45	–	11	3	18	2	10	3	8
MN	46	–	11	2	21	3	6	3	8
Total south*	48	–	11	2	20	2	8	3	7
Total*	46	–	12	3	19	3	9	3	6

* Adjusted totals (see table 1).

had declined. In East Worcestershire, however, the acreage of oats remained at a relatively low level and instead pulses continued to be popular. The main feature was the fall in the barley acreage, particularly in the nineteenth century.

The new crops make very little impact on the inventory statistics, although their importance may be underestimated, particularly in the case of clover. This was first mentioned at Droitwich in 1670[1], and appears to have been subsequently in widespread use, though normally on a limited scale. The turnip was first recorded at Claines in 1701 and occurs occasionally in inventories thereafter, again in small amounts.[2] By 1801, however, it occupied, with rape, 7 per cent of the cropped acreage, and 9 per cent in 1867. At that date the combined acreage of turnips and mangolds equalled that of barley and far exceeded that of oats. Even so, root crops remained less important than in Leicestershire or Lincolnshire.

II

It is hoped that the parallels between the record of crop changes in East Worcestershire and other Midland counties will provide useful material for the investigation of general trends in production and consumption, but no further discussion of this matter will be attempted. Instead, attention is directed towards the character and chronology of crop changes under more specific farming conditions, both in terms of physical features and agrarian organization. Here the record of cropping in the seven sub-regions of the study area provides a good basis for a comparative study, since these regions lie athwart the division between the champion husbandry of the Midland plain and the 'woodland' farming further north and west.

The champion district in the south is the most easily-recognizable agricultural region in East Worcestershire during the study period, and its pattern of cropping was remarkably uniform both geographically and historically. Despite the fact that physical conditions in the Vale of Evesham are somewhat different from those further north, where raw clay lies closer to the surface, the same four-course system of barley–pulses–wheat–fallow was used throughout the three sub-regions which it contains (tables I–II, fig. 1).[3]

This system remained the basis of agricultural production in the region throughout the inventory period and, contrary to the norm in East Worcestershire, there were no drastic changes in crop combinations before 1750 (fig. II). By 1801 there are signs of a more radical divergence from the old cropping pattern and by 1867 there had been a considerable increase in the growth of wheat principally at the expense of barley. The main period of change thus broadly conforms with the general dates of the traditional agricultural revolution and, more specifically, there is a relationship with the chronology of enclosure. The number of parishes wholly enclosed before 1750 is unlikely to have been more than some half dozen and the communal system persisted remarkably in this district in the late eighteenth century

[1] Worcestershire County Record Office (W.R.O.), Inventory 1670/265.
[2] W.R.O., Inventory 1701/Norton.
[3] For details of cropping in 1540–1660 see Yelling, *op cit.*, pp. 30–3.

so that some 15,000 acres of open field remained to be enclosed by Act after 1801.[1]

It must be stressed that the four-course system was by no means anachronistic during the inventory period. In the late sixteenth century it represented the most intensive use of arable land in East Worcestershire and had a built-in bias towards the spring crops which were then in favour. All this had come about through a revolutionary change from the preceding two-field system at some time prior to 1550. To a large extent, therefore, the south was already equipped to meet the circumstances which elsewhere required considerable change during the seventeenth century. Indeed developments in the other regions, such as an increased use of spring

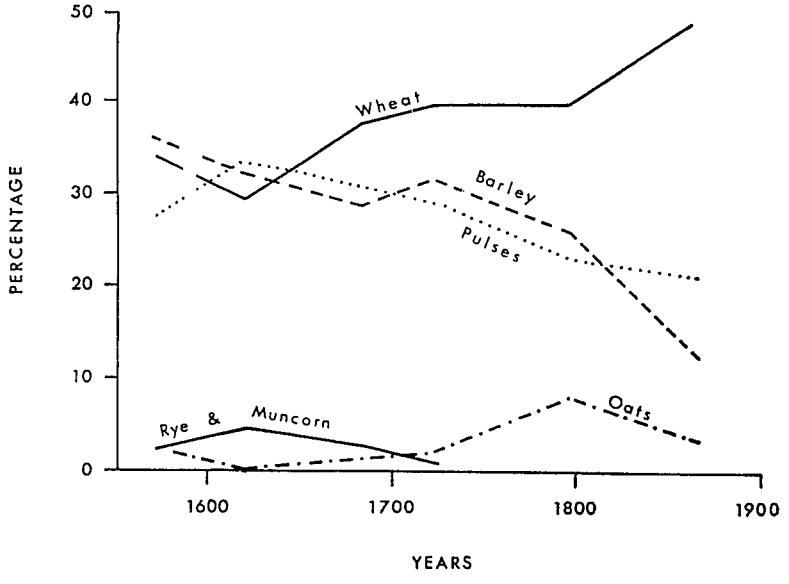

FIG. III
The south: changes in crop proportions, 1540–1867

crops and the replacement of rye by wheat, served mainly to bring their crop combinations more into line with those already found in the champion district.

It is not surprising therefore that an initial slight movement towards spring crops was soon reversed, and by the early eighteenth century wheat was already clearly the dominant crop in the partnership. Even so, there was as yet no serious threat to the basic four-course routine for there were various ways in which relatively minor fluctuations in crop proportions could be accommodated. Every township had a certain acreage of enclosed land which could be cropped although it was mostly kept in pasture. Land could be left uncropped in certain seasons. Moreover, parts of the open fields could be set aside and cropped separately from the main four-course area. In some parishes, for example Harvington and Rous Leach, crop and

[1] J. A. Yelling, 'Common Land and Enclosure in East Worcestershire, 1540–1870', *Trans. Inst. Br. Geog.*, 45, 1968, pp. 157–68.

fallow land existed, and every year's land is also mentioned,[1] recalling Davis's comment in Oxfordshire that "in divers unenclosed parishes the same rotation prevails over the whole of the open fields; but in others the homeward or bettermost land is oftener cropped, or sometimes cropped every year."[2] Land was also set aside for leys, both in scattered strips and compact blocks, but I would agree with Kerridge that their purpose was mainly to provide grass rather than to assist crop production directly.[3]

By the end of the inventory period, therefore, the champion district remained at the forefront of arable husbandry in East Worcestershire, but it had lost the clear lead which it had once held. After this time, however, the general trends in cropping were much less favourable to the maintenance of the existing system. There was the need to accommodate new crops such as clover and turnips. Above all, the movement in favour of wheat at the expense of the spring crops now called for changes which could not be easily brought about within the framework of the traditional shift systems. It is pertinent to ask, therefore, whether the maintenance of communal husbandry in any way delayed the adoption of new cropping patterns.

Some light can be thrown on this by comparing the production in open-field and enclosed parishes from the 1801 crop returns. Table v shows firstly the mean proportions of the various crops returned in 1801 for fifteen open and twenty-five enclosed parishes, and then for comparative purposes figures for the same parishes and crops in 1867. Clearly, in 1801 the open-field parishes lay closer to the four-course pattern than the enclosed ones; in particular they grew a greater proportion of barley and less wheat, oats, and turnips. By 1867 the differences between the same groups of parishes had much diminished and the old three-crop pattern of production had largely disappeared.

In respect of turnip production the contrast between open and enclosed parishes appears small. The crude difference in the aggregate figures occurs because a greater proportion of the open parishes recorded no turnips at all, and in none of these places was the crop later to become very significant. If one considers only the parishes where some acreage of turnips and rape was recorded in 1801, the open and enclosed groups were very similar, devoting respectively 6·6 per cent and 7·5 per cent of their area to these crops. In 1867 the comparable figures for turnips and swedes were 7·9 per cent and 9·7 per cent (table v).

This evidence from the crop returns conforms with the impression given by contemporary literature. For instance, when Pitt visited Eckington and Bredon in 1807 he noted that "in both these common fields are large breadths of turnips and potatoes."[4] Moreover, whilst there are no comparable statistics for clover, this crop was definitely grown in the open fields in the eighteenth century, mainly in the pulse quarter. Thus an Abberton inventory of 1740 recorded three acres of clover,

[1] W.R.O., Glebe Terriers, Harvington 1714, Church Lench 1715.
[2] R. Davis, *A General View of the Agriculture of Oxfordshire*, 1794, p. 11.
[3] E. Kerridge, *The Agricultural Revolution*, 1967, p. 102.
[4] W. Pitt, *A General View of the Agriculture of Worcestershire*, 1813, p. 316.

TABLE V

CROP PRODUCTION IN OPEN FIELD AND ENCLOSED PARISHES IN THE SOUTH, 1801 AND 1867

A *Crop proportions (means)*

	Wheat	*Barley*	*Pulses*	*Oats*	*Turnips**
15 parishes with open field in 1801					
1801	39	29	26	4	3
1867	54	11	25	2	7
25 parishes enclosed in 1801					
1801	42	21	23	8	5
1867	55	12	21	3	9

B *Ranking of parishes according to the number of acres of barley per 100 of wheat*

	1801		*1867*	
Ranking	*Open Field*	*Non-O.F.*	*Open Field (1801)*	*Non-O.F. (1801)*
1–10	8	2	3	7
11–20	4	6	4	6
21–30	1	9	4	6
31–40	2	8	4	6
	15	25	15	25

C *Percentage of cropped area under turnips**

	Number of parishes			
	Open Field 1801		*Enclosed 1801*	
Per cent turnips	*1801*	*1867*	*1801*	*1867*
Over 15%	1	1	3	3
6–14%	3	8	6	13
Under 6%	3	4	9	8
None	8	2	7	1
	15	15	25	25

* With rape in 1801 and swedes in 1867.

eight acres of vetches and ten acres of pulse "in the Pulse Field."[1] Clearly, where open land was found on light or medium soil suitable for turnip cultivation it was a fairly simple matter to change the old four-course to barley–clover–wheat–turnips,

[1] W.R.O., Inventories, 1740/Woodward.

and it is probable that this was done in parts of the open fields as it was on neighbouring enclosed land.[1]

The major difference between production in the common fields and enclosures lay not with the new crops, but with the old, and particularly with the use of barley. The fall in the barley acreage between 1750 and 1867 was quite spectacular, especially on heavy soils such as in region GJ, at the northern end of the lias outcrop. To take an extreme example, the parish of Flyford Flavell devoted 28 per cent of its acreage to the crop in 1801 when it was still in open field but grew none at all in 1867. The neighbouring parish of Dormston, enclosed in 1791, also grew no barley in 1867 but it had already cut back its acreage in 1801 to 14 per cent of the total. Indeed, it appears to have been the general rule that open-field parishes were slower to switch out of barley than enclosed ones. In 1801 the former had a mean of 76 acres of barley per 100 of wheat, compared with 56 for the enclosed parishes. Moreover, ranking the parishes in order of their ratio of barley to wheat, eight of the first ten were open (table v). In 1867 there was little difference in the use of barley in the former open and enclosed parish groups.

III

At the beginning of the study period the north and west included several distinct regional types of cropping system, but there was a basic adherence to a three-course rotation with one year fallow.[2] The greater part of the area was already enclosed, but initially a large proportion of the arable output still came from the open fields. The enclosed ground lay mainly in grass, and the economy as a whole had a strong pastoral bias at this stage. Subsequently, the output of tillage crops on enclosed ground increased considerably, thus reducing the relative importance of open-field production.[3] The amount of open field was also being continually diminished by piecemeal enclosures.

In the mid-sixteenth century the areas peripheral to the south had the more complex rotations, whereas those further removed used simple two-crop combinations. An example of the former is the Droitwich district (DF), in which the normal rotations were wheat and barley–pulses–fallow, and wheat–barley and pulses–fallow, although rye was often substituted for wheat. This area was also a stronghold of open field in the north and west, several parishes remaining open throughout the inventory period and some even after 1801. It is therefore extremely interesting to compare developments there with those in the adjacent champion district.

The record of cropping indicated in fig. IV takes on a somewhat different pattern from that in the south, but there are certain similarities. There is the initial decline in the wheat acreage, mainly in favour of rye, followed by a sharp reversal of that trend during the remainder of the seventeenth century. There is also the early rise in the proportion of spring crops, more marked and longer lasting than in the south.

[1] G. Turner, *A General View of the Agriculture of Gloucestershire*, 1794, p. 43.

[2] Yelling, 'Combination and Rotation of Crops', *loc. cit.*, pp. 33–41.

[3] J. A. Yelling, 'Probate Inventories and the Geography of Livestock Farming: A Study of East Worcestershire 1540–1750', *Trans. Inst. Br. Geog.*, 51, 1970, pp. 111–126.

Again, from about the late seventeenth century the trend is clearly towards an expansion of the wheat acreage and a decline in spring crops, with the exception of oats. The nature of this decline, however, shows some contrast with that in the south; in particular, it is the dominant pulses which suffered the greatest fall in popularity and the reduction of barley was less marked. Above all, the changes in this district occurred at an earlier date and were virtually completed by 1801, the remainder of the period being relatively stable.

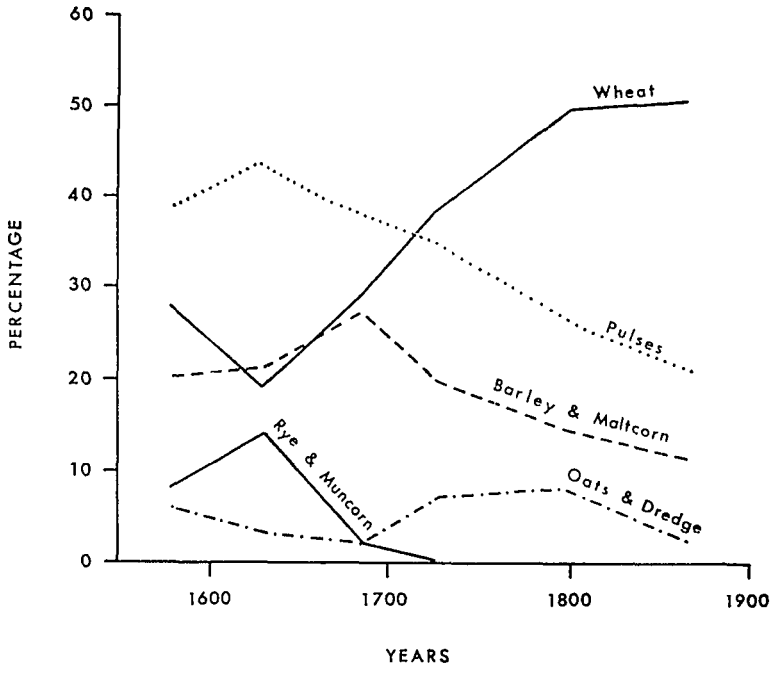

FIG. IV

The Droitwich district: changes in crop proportions, 1540–1867

It is tempting to explain this difference in the chronology of crop changes in terms of the earlier enclosure of the Droitwich district and there is certainly some additional evidence to support this. At the crucial time there are many records of enclosed arable often worked in convertible systems. Several surveys, as at Huddington and Cooksey in 1647, mention enclosed land "at present plowed," and later in a tithe dispute at Dodderhill in 1729, 66 acres of closes were described as "commonly sown with wheat or with peas and beans, and in some years layed down to grass."[1]

The evidence from the 1801 returns is less substantial in this district since only three parishes remained predominantly open at that date. These were Bredicot, Crowle, and Tibberton, all lying to the south of Droitwich, in the region which originally grew wheat and barley in one field and pulses in another, with the third

[1] P.R.O., E 317 Worcs. 4 & 6; E 134, 6 Geo. II, Mich. 8.

part fallow. They had all undergone some piecemeal enclosure, for instance 20 per cent of Tibberton's arable was enclosed in 1776 and probably more by 1801.[1] Nevertheless, they do provide some statistics for comparison with five adjacent enclosed parishes (Hadsor, Himbleton, Huddington, Oddingley, and Hindlip); a comparison which lends support to the suggestion that cropping changes were slower to take effect in the open fields.

TABLE VI

CROP PRODUCTION IN OPEN FIELD AND ENCLOSED PARISHES SOUTH OF DROITWICH, 1801 AND 1867

Percentage of total cropped acreage

	Wheat	*Barley*	*Pulses*	*Oats*	*Turnips*
3 parishes with open field in 1801					
1801	53	6	35	6	1
1867	52	13	27	2	5
5 parishes enclosed in 1801					
1801	53	10	24	12	1
1867	53	12	23	3	8

The figures given in table VI show that there were differences in the crop proportions used in the two groups of parishes in 1801, and that these had been much reduced by 1867 when all the land was enclosed. However, except in the case of oats, the differences were not the same as those which prevailed in similar circumstances in the south. Instead it was the enclosed parishes which here grew the greater proportion of barley, whilst pulses were the particular speciality of the open fields. Between 1801 and 1867 pulses declined in favour but there was an increase in the use of barley, completely contrary to the trend only a few miles to the south. In both cases the changes were most pronounced in the former open field parishes.

Undoubtedly, these features must be explained in terms of the history of crop combinations and rotations in each district. The boundary between four-course and three-course husbandry, so important in the traditional agricultural geography of East Worcestershire, does not coincide precisely with any physical limit. Yet at the beginning of the study period it was marked by a distinct change in crop combinations (figs. III–IV). The subsequent trends in cropping, or more particularly those since the middle or late seventeenth century, represent a shift from this regional individuality. By 1867 much the same crop combinations were used on either side of the former boundary, and there was also little difference in the proportions of fallow. The similarity is further confirmed in the rotations mentioned in the Tithe Files.[2] Yet elements of the former arrangements still lingered in 1801,

[1] W.R.O., ref. 1691/32.

[2] For example, four-course rotations were recorded at Doverdale, Hampton Lovett, and Hindlip, all parishes in the Droitwich district.

particularly in the open fields. In the Droitwich district, the continued emphasis on pulses is an indication of this, whilst the very low proportions of barley probably reflect the fact that this crop was in direct competition with wheat in one shift. Taking into account the conditions in the south, the net result was that in 1801 the old regional boundary was still important as far as open-field husbandry was concerned. On enclosed ground, however, its significance was disappearing fast and it was ignored by contemporary agricultural writers.

IV

In those parts of the north and west which possessed two-crop combinations at the start of the study period the later changes in cropping were more dramatic. This was particularly the case in the north-east (ABE), which originally used mainly rye and oats. By 1867 rye was an insignificant crop and oats of minor importance, although this was still its stronghold in East Worcestershire (fig. v). The north-east was the most enclosed part of the study region, and there can be no suggestion that

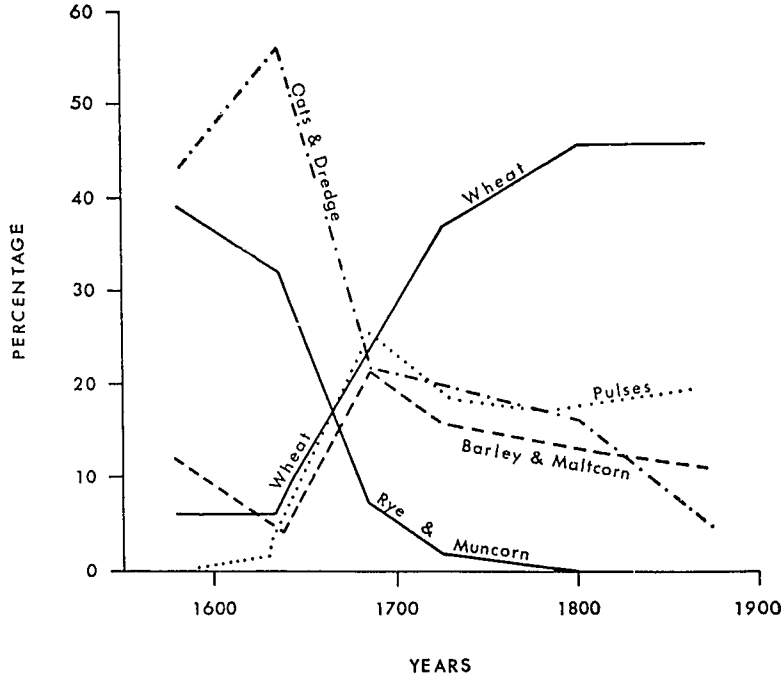

FIG. V

The north-east: changes in crop proportions, 1540–1867

open fields influenced cropping except in the early stages. It is also in this region, above all, that the second half of the seventeenth century appears as the period of revolutionary change. There was a sudden increase in the growth of wheat, barley, and pulses, and a proportionate decrease in rye and oats. Henceforth, crop combinations were more complex, reflecting a more arable economy. After 1700 wheat

became gradually more important at the expense of the other crops, and again the net result in the nineteenth century was a pattern of cropping similar to that in the Droitwich district and the south.

By this time the north-west (C) was really the only region to maintain a marked individuality in its cropping. This was due to its light soils, those in the rest of East Worcestershire being of heavy or medium texture, except on limited patches of superficial deposits. But this region underwent the same substantial alteration in cropping systems as that experienced in other districts and, as in the north-east, the trend was from a simple two-crop combination—in this case rye and barley—towards more complex arrangements (fig. VI).

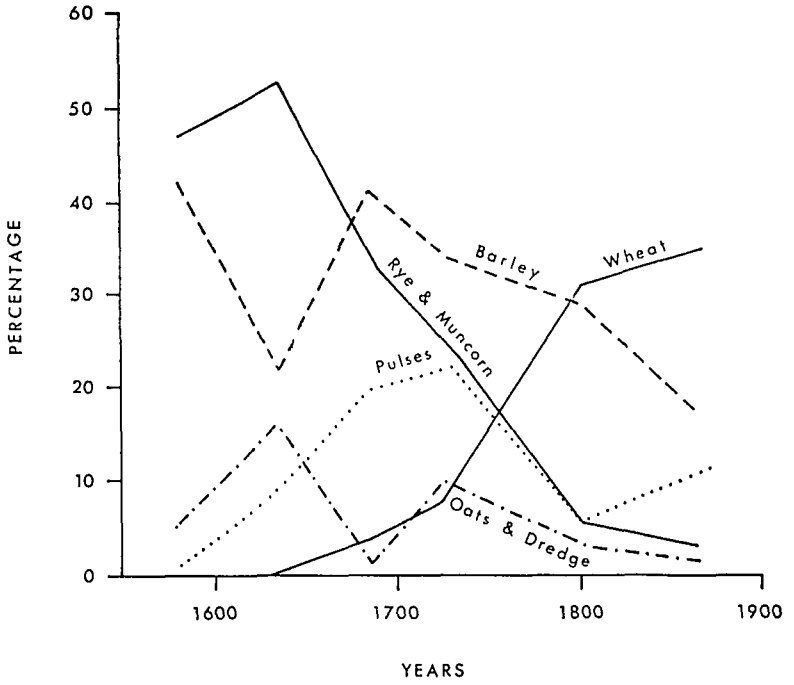

FIG. VI
The north-west: changes in crop proportions, 1540–1867

Unfortunately, the statistical record for region C is not as satisfactory as those for the other regions. Because of its smaller size the acreage of crops recorded in inventories was generally less and only two parishes have surviving 1801 returns. Nevertheless, although the figures may be somewhat erratic, they do show certain fairly reliable features. Because of the light soils the increased use of wheat was here considerably delayed. It only became really significant in the late eighteenth century, and although the most important single crop in 1801, it never achieved the dominance that it possessed in the other regions. Rye remained in use over a correspondingly longer period but was in rapid decline after the early seventeenth

century. Before 1750 the spring crops appear to have played the major role in improvement, and their proportion of the cropped acreage grew to two-thirds by 1700–50, a level higher than in any other region. Barley remained the most important spring crop but pulses in particular became much more widely used. The trend in this direction seems to have been already under way in the early seventeenth century.

In my previous article some arguments were advanced to suggest that open-field arrangements in this district were altered to accommodate the wider variety of spring crops.[1] But such developments could apply only to the early part of the period. Piecemeal enclosure was rife in the area in the late seventeenth and early eighteenth centuries and after that only trifling amounts remained to be enclosed by Act. There is in fact some evidence to suggest that enclosure may have been accelerated by changes in cropping. At Ombersley in 1695 it was recorded that the Lord of the Manor had thrown open "an inclosure which was made of a great part of a common field called Awford by several customary tenants of the said manor and sowed with clover," but several other enclosures made for the same purpose remained intact.[2]

The new crops were of particular importance in this region, although they make little impact on the statistics provided by the inventories. Apart from clover, turnips were a speciality and were recorded sporadically throughout the eighteenth century. By 1801 they occupied 24 per cent of the cropped area compared with 7 per cent in East Worcestershire as a whole, and at this time the Norfolk rotation was in fairly frequent use. By 1867, however, turnips were less popular, being replaced partly by potatoes which found a ready market nearby in Birmingham and the Black Country. The introduction of these new crops therefore produced in this particular district a second phase of crop combination changes to succeed that which brought pulses and then wheat to the fore.

V

In review, crop combinations in East Worcestershire may be said to have undergone a "revolution" between 1540–99 and 1867, but the extent and chronology of change was not the same from one region to another. In most of the enclosed districts the main period of transformation lay roughly between 1650 and 1750, although on the light soils of the extreme north-west further major alterations based on the use of root crops were made in the late eighteenth and early nineteenth centuries. In the champion district the greatest changes took place between 1801 and 1867 following the period of parliamentary enclosure. Comparison of the record of open and enclosed parishes within this area further suggests that during its last stages common-field practice had in some respects become anachronistic.

With regard to the geography of crop combinations there is a marked contrast between the regional diversity of the earlier part of the period and the uniformity

[1] Yelling, 'Combination and Rotation of Crops', *loc. cit.*, pp. 38–9.
[2] P.R.O., E 134, 5 W. & M., Mich. 54.

which prevailed in 1867, leaving aside the extreme north-west. In part this was a natural response to economic change, since the movement toward a more arable economy would have greatest impact on the poorer soils and in the enclosed districts. But the way in which crops and rotational systems were selected is also important. It is significant that elements of the earlier pattern can still be found in common-field cropping in 1801, *viz* relatively uniform conditions within regions and relatively large changes between regions. Whether these features had always been peculiar to common-field husbandry is not known. But from the mid-seventeenth century, cropping systems on enclosed land were more individualistic, increasing the diversity within the old regions but reducing the significance of the former boundaries. In that this represented a more rational land use in relation to physical conditions it could also have had some impact on crop yields and quality.

Notes and Comments

CLEVELAND & TEESSIDE LOCAL HISTORY SOCIETY

Bulletin No. 18 for Autumn 1972 published by the Cleveland & Teesside Local History Society contains articles on the Angles in Northumbria: history and placenames, the population of Stainton in the middle seventeenth century, the Meynell family of Yarm 1770–1813, and mining failure in Cleveland: the Kildale mines. The quarterly Bulletin is issued free to members (annual subscription £1), and the hon. treasurer is Mr D. W. Pattenden, 45 Stanhope Grove, Acklam, Middlesbrough, Teesside, TS5 7SF.

EAST ANGLIAN HISTORY

Readers interested in East Anglian history will be glad to hear that a new handlist of theses completed down to 1971 has now been compiled. Some 200 works are listed, including studies produced for American universities. The handlist is available from Dr A. Hassell Smith, Centre of East Anglian Studies, University of East Anglia, Norwich NOR 88C, price 20p.

"PEASANT STUDIES NEWSLETTER"

A new journal, *Peasant Studies Newsletter*, edited by David Sabean, is now being published from the University of Pittsburgh. It includes articles, reviews, notes on meetings, and work in progress relating to peasants in all parts of the world. Subscriptions ($2 for students, $3 for individuals, and $7.50 for institutions) should be sent to the Department of History, University of Pittsburgh, Pittsburgh Pa. 15213.

"TOOLS AND TILLAGE"

This is the title of an annual journal, now in its fifth year, which is published in English by the National Museum of Denmark. The current issue is edited by Axel Steensberg, Alexander Fenton, and Grith Lerche, and it contains articles by E. J. T. Collins on the diffusion of the threshing machine in Britain, Alexey V. Chernetsov on the origin of the East-European plough and the Russian sokha, and A. T. Lucas on Irish ploughing practices. The journal may be obtained from the agents, Messrs Gyldendal, 3 Klareboderne, DK-1001 Copenhagen K, Denmark, price 4 US dollars. Copies of Volume 1, numbers 1–4, are available at 3 US dollars.

BATH AND WEST ARCHIVES

The first nineteen volumes of the original Minute and Correspondence books of the Bath and West Society, covering the period from 1777 to the mid-nineteenth century, have been microfilmed and sets of the microfilms are available at a cost of £45. A discount of £5·50 will be allowed on all orders received before 31 January 1973. A brief index and contents list may be obtained from The Secretary, Bath and West and Southern

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