Agricultural Changes in the Chilterns 1875–1900[1]

By J. T. COPPOCK

WHILE the broad outlines of the agricultural depression which affected British agriculture from the late 1870's until the end of the century are well known, few local studies have been made. The Chilterns and the adjoining clay lowlands (Fig. I) provide a suitable area for investigating the changes which occurred, for they contain a wide variety of country within a small compass. The Chilterns themselves, rising to over 800 feet, have stony soils of low fertility, the clay lowlands to north and south are poorly drained and difficult to cultivate, while the gravel terraces of the Thames and the Icknield belt below the escarpment have free-working loams which make good arable soils.

In the 1870's the Chilterns were primarily rural. It is true that many of the towns were growing rapidly, but they were still small, and most of the land, though much interrupted by blocks of woodland, was used for agriculture. In those parts nearest London there were also numerous parks and mansions. The clay vales to the north, where there were few parks and little wood, were almost entirely farmed, but south of the Chilterns parks were again numerous. There were marked regional differences in the kind of farming practised, differences of fairly long standing, determined mainly by soil and by nearness to London markets. The easily worked loams of the Icknield belt and the Thames terraces were almost entirely arable, as were the Chilterns, where the only extensive stretches of grass lay in the landscaped parks or along the few streams. The amount of grass decreased with elevation; a typical farm at Swyncombe, for example, had only 7 out of 372 acres under grass. On the clays to the north, more land was under permanent grass, though the proportion varied from all-grass farms in the low-lying Vale of Aylesbury to mixed farms with a preponderance of arable around Bletchley. Generally between one and two-fifths of the land was under the plough, and a farm at Waterstock, with 208 acres of grass and 118 of arable,

[1] The cost of extracting the statistical data on which this paper is based was met by a grant from the Central Research Fund, University of London. The author is grateful to Mr J. Bryant who drew the maps. Statements which are not supported by references are either derived from the parish summaries of the agricultural returns (which have been extensively used in the preparation of this paper) or generalizations made from sources too numerous to list.

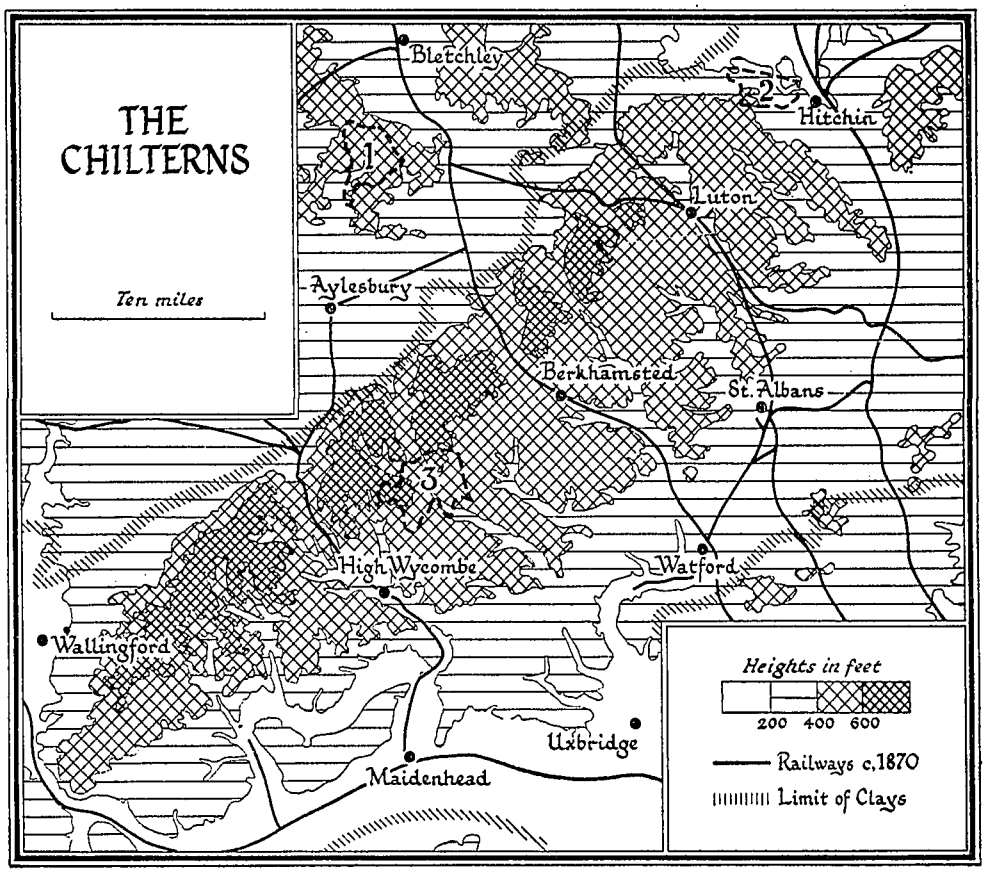

FIG. I

was fairly representative.[1] The clays of south Hertfordshire and Middlesex were nearly all under permanent grass, but the reason for this was only partly the heavy soil. London, with its large population of horses and dairy cattle, made heavy demands on the adjacent counties for hay, straw, and other fodder crops, and four-fifths of the grass was cut for hay each year (Figure IIa).

The stock kept and the crops grown also varied considerably. On the Chilterns and in all the main arable areas, the Norfolk four-course rotation, or some variant of it, prevailed (Figure IIb). Cereals, turnips, and clover accounted for four-fifths of the arable, the remainder being occupied by other fodder crops such as peas and vetches. On Hoo Farm, Kimpton, for example, there were in 1870 113 acres of wheat, 88½ of barley, 73 of clover, 20 of beans, and 99½ of turnips.[2] The better land supported an additional

[1] *Second Report, Commissioners on the Employment of Children, Young Persons, and Women in Agriculture*, Appendix, Part II, Parliamentary Papers, XIII, 1868–9, p. 326.

[2] Accounts, Hoo Farm, Kimpton, Hertfordshire Record Office.

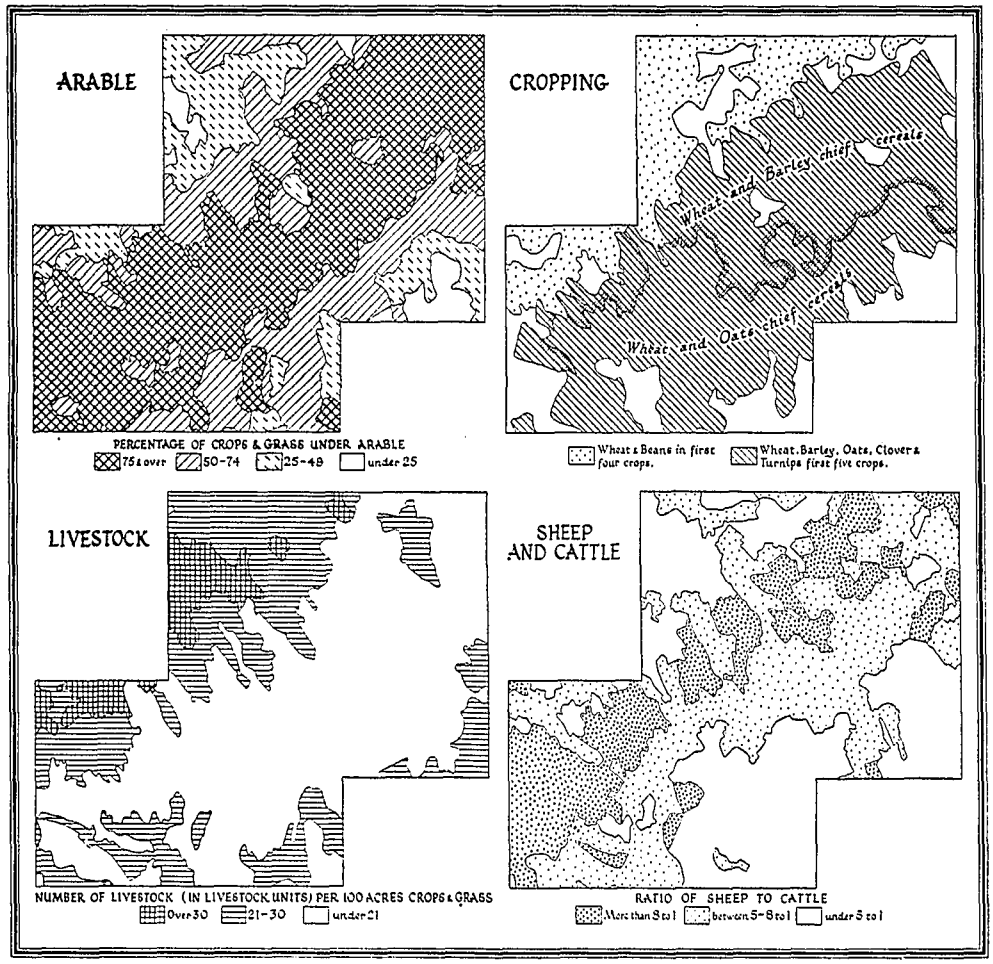

FIG. II

corn crop and usually carried more wheat and barley than oats. Thus, in the Hertfordshire Chilterns, where soils were generally better than further west, a five-course rotation was common and wheat and barley were the leading cereals;[1] in the poorer Oxfordshire Chilterns, a four-course rotation, with oats the second cereal, was general. On the clays, cropping was more varied, and rotations often longer.[2] Wheat was everywhere the chief crop, occupying a third or more of the arable. Beans were also a characteristic crop, and a larger proportion of land was bare-fallowed; but some oats, barley,

[1] H. Evershed, 'Agriculture of Hertfordshire', *Journal of the Royal Agricultural Society*, XXV, 1864, p. 272.

[2] *Second Report on the Employment of Children*, etc., *loc. cit.*, p. 75; *ibid.*, *First Report*, Appendix, Part I, Parliamentary Papers, XVII, 1867–8, p. 124.

clover, and turnips were also grown. On Manor Farm, Upper Stondon, wheat, occupying 99 acres, and beans, 52 acres, were the leading crops in 1868, the remainder of the arable being occupied chiefly by 50 acres of clover, 37 of turnips, 24 of barley, 22 of oats, and 18 acres of fallow.[1] On the little arable on the clays to the south of the Chilterns, wheat was again the leading crop.

Specialized cropping was rare. Market gardening was important only on the Middlesex gravel terraces and potatoes were grown only in small quantities, except in the market-gardening areas and on the sandy soils around Leighton Buzzard. Wheat and barley were the principal cash crops; on one Hertfordshire farm they accounted for 84 per cent of crop sales.[2] Within easy reach of London, however, oats, hay, roots, and straw were sold; the importance of oats in south Hertfordshire was probably due to the demand for oats and oat straw rather than to the quality of the soil.

Most observers noted the considerable uniformity of cropping on farms, particularly in the Chilterns, and their impressions are supported by the agricultural returns. To what extent this uniformity was due to lease restrictions it is impossible to say; clauses in leases ranged from general injunctions to cultivate the land in a husband-like manner to specific instructions to follow a particular rotation, as on a farm at Mapledurham, where the farmer was enjoined to cultivate the land on a four-course system and was forbidden to take two crops of the same kind of grain in succession or to crop more than half the land with grain.[3] There were limitations on growing other crops; a tenant of a 640-acre farm on the Ashridge estate was prohibited from growing more than two acres of potatoes.[4] There were also restrictions on the disposal of hay, straw, and roots grown on the farm. It is true that such restrictive covenants were not necessarily enforced and practice seems to have varied from estate to estate; only one specific example of the enforcement has been noted, where a tenant on a farm at Chenies was ordered to plough up and fallow a field sown to oats because of "too great a liberty in the extent of his White-Strawed Cropping."[5] The object of the covenants was, of course, to protect the land, and farmers were usually allowed to sell crops, hay, and straw when sufficient dung could be brought back to replace their manurial value.[6]

The importance of livestock varied inversely with the proportion of

[1] Bedfordshire County Record Office, DDX 159/3.
[2] 'Remarks concerning a Herts Farm', *Herts Illustrated Review*, 1, 1893, pp. 647–8.
[3] Agreement, April 1883, Blount MSS., Bodleian.
[4] Hertfordshire County Record Office, Leases, Ashridge Estate.
[5] Bedford Office, Bedford Estate Reports, 1887. [6] Evershed, *loc. cit.*, p. 284.

arable,[1] except on the clays to the south of the Chilterns where the hay crop severely limited grazing (Figure IIc). On the Icknield belt and on the Chilterns sheep were the principal livestock, especially on the higher parts where water was scarce. They were arable sheep, folded on roots, and were kept primarily to manure the soil. Horses accounted for one third of the total livestock, and a few dairy cattle, beef cattle, and stores were also kept. Stocking on these farms is exemplified by Hoo Farm, Kimpton, which carried 702 sheep, of which 408 were breeding ewes, 32 cattle, 23 horses, and 75 pigs. Lower down the Chilterns, where water was more abundant, fewer sheep and more cattle were kept (Figure IId). South of the Chilterns farms kept mainly cattle, and nearer London some dairying was practised. The chief areas of livestock farming were, however, the clay lowlands to the north, especially the area around Aylesbury, which Read had called "the pastoral garden of the county."[2] Cattle were the chief livestock, but both arable and grass sheep were kept. The mainly grass farms near Aylesbury fattened beef cattle, particularly Herefords, but the mixed farms, which covered most of the clays, practised dairying and rearing as well as fattening. Dairying was typical of the poorer grassland and was still largely concerned with butter production; only in well-placed areas was much milk sold.[3]

Stocking, too, was affected by lease restrictions, though less frequently than the use of the arable land. Some leases merely enjoined the farmer to stock the farm adequately; but occasionally restrictions were more specific, as on Park and Rose Farms, Mapledurham, where the tenant was required to keep a sufficient flock of sheep and to pen and fold them on the farm.[4]

This brief statistical account inevitably minimizes the rich variety of farming; nevertheless, the prevailing impression is one of considerable uniformity within regions which differed markedly from each other.

In the late 1870's a series of bad harvests coincided with a period of falling prices. Although the weather improved, grain prices, particularly of wheat and barley, continued to fall; they were joined in the 1880's by a similar, though smaller, fall in the prices of livestock and livestock products. These falling prices were met in two main ways; part of the burden was shouldered by landlords, who remitted and later reduced rents, and part by farmers, who

[1] No winter returns of livestock were made, but there is evidence of fattening of cattle in winter in the arable areas.

[2] C. S. Read, 'Report on the Farming of Buckinghamshire', *Journal of the Royal Agricultural Society*, XVI, 1855, p. 281.

[3] J. C. Morton, 'Dairy Farming', *Journal of the Royal Agricultural Society*, 2nd Series, XIV, 1878, p. 689, and report of Daily News Special Commissioner, reproduced in *Bedford Times*, 13 September 1879.

[4] Agreement, April 1883, Blount MSS.

attempted to reduce their losses by farming less intensively, by avoiding expensive cultivations, and by concentrating on those products which were least affected by the fall in prices. But none of these remedies was adopted uniformly over the whole area.

The reductions in rents are the best documented of the changes and were almost universal. At first landowners granted temporary remissions; in 1880 for example, the duke of Bedford allowed 25 per cent off the year's rent to all tenants on the estate.[1] But gradually, as it became clear that this was not a temporary recession, there were permanent reductions. These were made necessary both to retain existing tenants and to attract new, and it was said that in parts of Hertfordshire no rent at all was paid, the landowners being glad merely to keep a tenant on the farm.[2] There was often a succession of reductions; the rent of Flint Hall Farm on the West Wycombe estate, for example, was reduced by £30 in 1882 and by a further £40 in 1886. Revenues from rents fell steadily; on the West Wycombe estate the rental fell by 19 per cent between 1876 and 1888,[3] and on the Bedford estates in Bedfordshire and Buckinghamshire average farm rent fell by 48 per cent between 1876 and 1895.[4] Reductions were most marked on heavy arable clays, which were expensive and difficult to work, and on poor soils which gave a low return; on the thin soils of the Oxfordshire Chilterns, for example, rents fell by 50 per cent between 1880 and 1893.[5] On good grassland, or where there was easy access to a market, reductions were much less; in the Vale of Aylesbury reductions were generally 20–25 per cent, and near the railways south of the Chilterns from 10–25 per cent.[6]

The most general of the agricultural adjustments was an extension of the grass acreage (Figures IIIa and b). Since wages changed little, labour costs, the largest single item in the outgoings of the arable farmer, could be reduced only by curtailing expensive cultivations. It is difficult to be sure how much land was laid to grass. The agricultural returns show a progressive increase in the amount of permanent pasture; and while this may be due in part to a more complete enumeration of the smaller holdings, which would tend to be largely grass, there is no reason to suppose that it does not reflect an actual

[1] Bedford Estate Reports, 1880.

[2] *Royal Commission on Agriculture, Reports of Assistant Commissioners*, Parliamentary Papers, XVI, 1881, p. 368.

[3] Rentals, West Wycombe Estate papers.

[4] Duke of Bedford, *The Story of a Great Agricultural Estate*, London, 1897, p. 224.

[5] *Royal Commission on Agriculture, Minutes of Evidence*, Parliamentary Papers, XVI, Pt. I, 1894, p. 57.

[6] *Royal Commission on Agriculture, Report of A. Spencer on the Vale of Aylesbury and the County of Hertford*, Parliamentary Papers, XVI, 1895, p. 17.

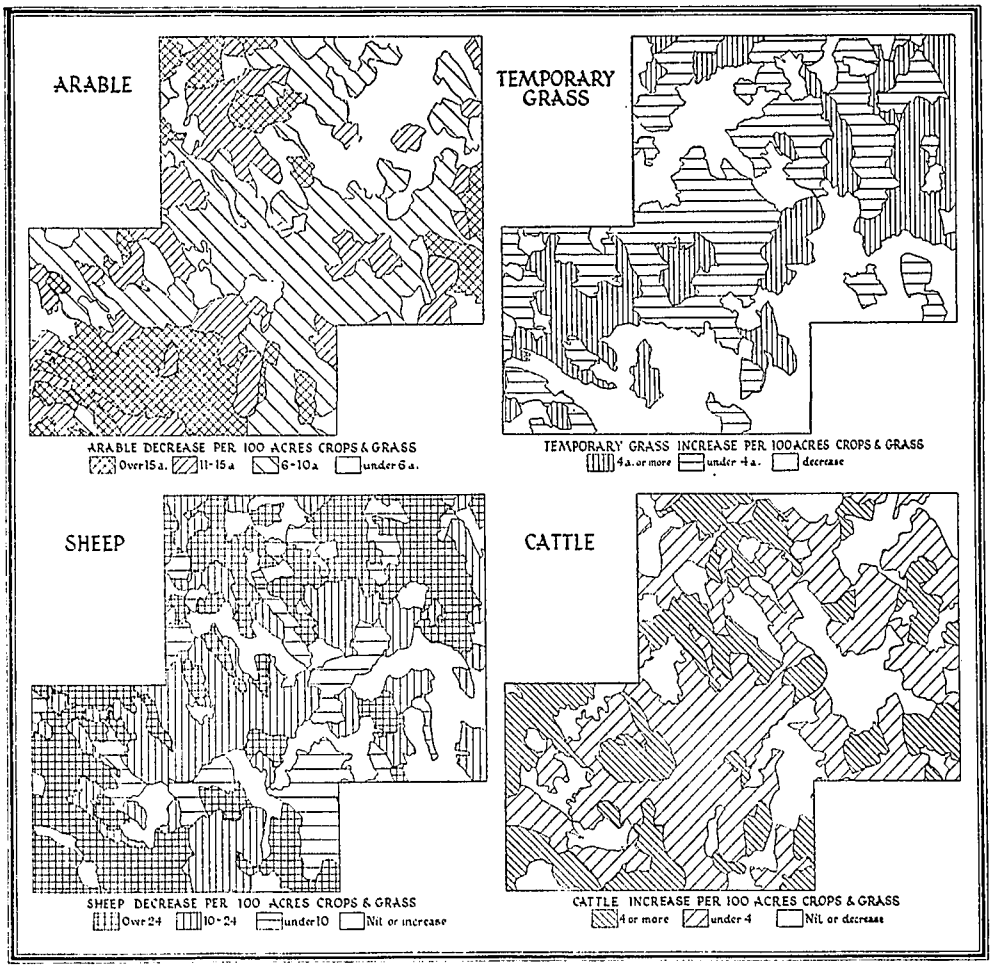

FIG. III

trend. Naturally the permanence of price reductions was not appreciated at first and many farmers simply left leys down for more than one year; these would be returned as temporary grass, and only later would they be regarded as permanent. It is true that the assistant commissioner who reported on Bedfordshire in 1895 thought that the amount of permanent grass was being overestimated and that of temporary grass underestimated;[1] but the returns themselves suggest that an expanded temporary grass acreage often concealed the extent of the conversion of arable to permanent pasture. His observation that fields were allowed to lie in grass for a number of years with the intention of ploughing them when prices improved is probably correct;

[1] *Report of H. Pringle on the Counties of Bedford, Huntingdon, and Northampton*, Parliamentary Papers, XVII, 1895, p. 41.

but prices did not improve, and the fields remained in grass. The point at which such leys should be regarded as permanent is in any case debatable; cropping records on a number of farms on the Panshanger estate show fields which, having been under a ley for two or three years, are recorded in the succeeding year as pasture.[1]

Farmers increased their acreage under grass in a number of ways; by sowing more temporary grass and allowing it to stay down longer, by laying down arable to permanent pasture, and by abandoning arable to colonization by self-sown grasses and weeds. The contribution made by each varied in importance in different parts of the area. The proportion of the arable occupied by leys increased nearly everywhere, and in the Chilterns the increases were on such a scale that, despite the diminishing arable, the acreage of temporary grass expanded (Figure IIIb). The Chilterns were said to be unsuited to permanent grass, though they could support leys of up to three years.[2] But these leys were left down and subsequently recognized as permanent pasture; in 1901 Rider Haggard noted that most of the grass in the Oxfordshire Chilterns was originally seeded as two- or three-year leys.[3] On the clays the increase in temporary grass was often ephemeral, and after bad seasons had passed the acreage was reduced (Figure V, Stewkley).

On better land, particularly the claylands where mixed farming was practised and the establishment of good grass was known to be possible, land was intentionally laid down as permanent grass, either directly or under a nurse crop. But "it is a very expensive luxury;" the seeds alone cost 30s. an acre, and the duke of Bedford estimated the total cost at £15 an acre.[4] It is likely to have been widespread, therefore, only on the estates of wealthy landowners. The duke himself laid down 1,308 acres on the 28,274 acres of his Bedfordshire and Buckinghamshire estates between 1880 and 1897. The landowner usually provided the seeds and the tenant the labour; in 1880, for example, two arable fields on stiff clay at Hill Farm, Potsgrove, were laid down to permanent pasture, the duke of Bedford providing the seeds on condition that the fields were not again ploughed up.[5] The farmer himself sometimes provided both seeds and labour, though he had frequently to obtain the landowner's consent first. In general, once the fields were laid down to permanent grass they were subject to the same prohibitions on ploughing up as the existing grass; a lease on a Datchworth farm stated that the tenant was not

[1] Panshanger Estate Papers, Hertfordshire County Record Office.

[2] *Royal Commission on Agriculture, Minutes of Evidence*, 1894, *loc. cit.*, p. 57.

[3] Rider Haggard, *Rural England*, London, 1902, II, p. 118.

[4] *Royal Commission on Agriculture, Minutes of Evidence*, Parliamentary Papers, XVII, 1881, 618, and Duke of Bedford, *op. cit.*, p. 197.

[5] Bedford Estate Report, 1880.

to break up fields which at the determination of the tenancy should have been under seeds for six years.[1] Increases in permanent grass were widespread, particularly on the clays, and in the Oxfordshire Chilterns and in north-east Berkshire (though here accessibility to markets rather than the nature of the soil was the important consideration).

Much was made by contemporaries of the abandonment of cultivated land and of fields that "tumbled down to grass." Agricultural historians have perhaps been too influenced by the "terrible map, dotted thick with black patches" (Clapham's phrase) which accompanied Pringle's report on Essex in 1893. But there is no evidence that abandonment was widespread here; a return in 1881 of abandoned farms and fields in Buckinghamshire, for example, gave a total of 1,102 acres, out of 403,673 acres of agricultural land.[2] It is possible that abandoned land might escape enumeration (though there was no fall in the total acreage returned); but Pringle himself could find none in Bedfordshire. Some of the farms on owners' hands through lack of tenants may well have been neglected; land on such farms at Wallington and Bygrave was said to be almost out of cultivation.[3] But even the extent of land on landowners' hands seems to have been exaggerated. Although one witness reported, at second hand, that on Lord Camoys's estate in the Oxfordshire Chilterns only two out of thirty tenants remained in 1882, this area seems to have been exceptional.[4] Spencer suggested in 1895 that rather more than 20 per cent of the cultivated area was in hand in Hertfordshire, and agricultural returns for 1887 of the acreage of land farmed by owners suggest that over most of the area the proportion was even smaller.[5] Moreover, farms were sometimes taken in hand to prevent the land being neglected by tenants who had lost heart or resources. This seems to have been the practice on the Bedford estate. What is clear is that standards of farming fell. Lord Macclesfield's agent said in 1892 that he did not know a parish where the land was being well farmed, and that he had just taken over one farm without a clean acre.[6] A bad season might lead to temporary abandonment; this is suggested by the laconic entry "thistles" in the cropping record of one farm in 1880.[7] The increase in the acreage of bare fallow, particularly in the Chilterns (Figure IVc), may also conceal such temporary neglect. Fields did tumble

[1] Hertfordshire County Record Office, Abel Smith Papers.

[2] Manuscript figures, parish summaries 1881, Ministry of Agriculture.

[3] Spencer, *loc. cit.*, p. 22.

[4] *Royal Commission on Agriculture, Minutes of Evidence*, 1881, *loc. cit.*, p. 847.

[5] Spencer, *loc. cit.*, p. 22.

[6] *Royal Commission on Labour, Report upon the Poor Law Union of Thame*, Parliamentary Papers, xxxv, 1893–4, p. 52.

[7] Panshanger Papers, Digswell Lodge Farm.

FIG. IV

down to grass; one such field is recorded on Great Green Street Farm at Chenies in 1887, where the land became covered with couch and weeds which provided only poor herbage. Self-sown grass was auctioned annually in Bedfordshire and was let at very low rents;[1] but even here the extent was exaggerated and an observer who had been told that a good deal of land around Toddington was "laying itself down with twitch" found the fields fairly clean.[2] It seems likely that in so far as self-sown grass was widespread, it was to be found chiefly on poor arable clays and on very light land.

In whatever way land was converted to grass there was everywhere a reduction in the tillage acreage. The fall was least on the free-working loams

[1] Pringle, *loc. cit.*, p. 22.

[2] *Royal Commission on Labour, Report upon the Poor Law Union of Woburn*, Parliamentary Papers, XXXV, I, 1893–4, p. 18.

at the foot of the escarpment, and on the predominantly pastoral clays around Aylesbury and in south Hertfordshire, where the need and scope for additional grass were limited. It was greatest on mixed farms on the clays and on the steep slopes and stony soils of the western Chilterns, especially in Oxfordshire. Three sample parishes show the range of variation, Stewkley (Bucks.) representing the heavy clays, Pirton (Herts.) the Icknield belt, and Great Missenden (Bucks.) the Chilterns (Figure V). That they are fairly typical of

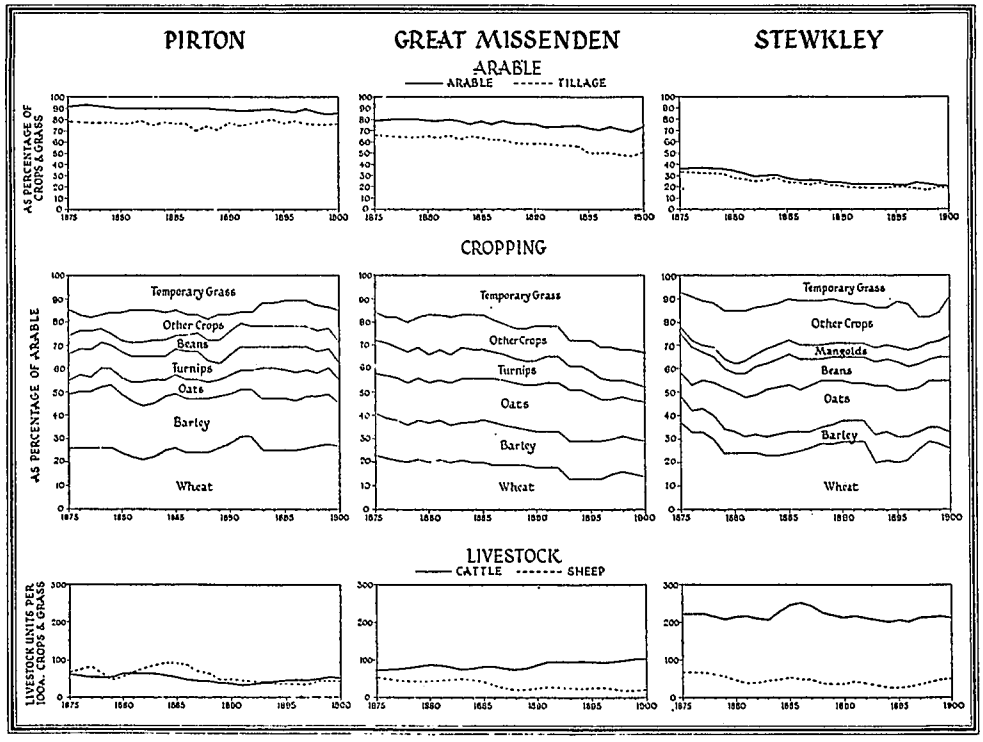

FIG. V

the areas in which they lie is confirmed by the maps in Figures III and IV.

Of course, these averages conceal considerable variation between different farms. It is possible to find farms which delayed conversion of arable until the 1900's. Furthermore, the process on any one farm was not as continuous as the graphs suggest; fields would be laid down at intervals between which the arable acreage was constant. A change in tenancy was frequently the occasion for an increase in the grass acreage since it was hard to find good tenants for arable farms on indifferent or heavy soils. Thus, on the 260 acres of Lodge Farm, Chenies, 81 acres were laid down to grass for a new tenant in 1884. The change in emphasis is well seen in a sale catalogue for the War-

grave Manor Estate, which, though largely arable in 1876, was advertised in 1896 as being mainly grass and having only 100 acres of arable, and that of high quality.[1] The great majority of farms increased their grass acreage between 1878 and 1900, and although the sequence of events and the proportion of arable converted to grass varied from farm to farm, there seems to be no doubt that the picture of steady conversion was true of the farms of any area as a whole.

In so far as it was deliberate, this increase in the grass acreage was effected primarily to reduce labour costs; but it was generally accompanied by changes in the stocking of farms. With less arable fewer sheep were needed to fertilize the land, and numbers fell, particularly where sheep had been most numerous, on the High Chilterns, below the escarpment, and in the clay vales (Figure IIIc). There was a corresponding increase in the number of both store and dairy cattle, save in the areas which remained largely arable (Figure IIId). In favoured parts, such as south Oxfordshire, the numbers of cattle increased at a faster rate than the grass acreage, suggesting that here the increase in stock was the cause and not the consequence of more abundant grass; but more commonly the increase in numbers of cattle seems to have been a by-product of the expanding grass acreage.

The extension of dairy farming was the most significant of the livestock changes; progressive farmers like Lawes established dairies because, as he put it, "foreign nations cannot so easily sell us milk."[2] Dairying had tended to increase in the traditional livestock areas on the clays north of the Chilterns ever since 1865, when the cattle plague decimated the population of the London cowhouses. Transport was the chief limitation on the production of milk for sale, and within two or three miles of a railway station farmers began to substitute milk-production for butter-making. With the decline in arable farming, other favourably placed farms along the railway lines adopted dairying as their grass acreage expanded, though they had frequently to await the construction of suitable buildings; a prospective tenant at Digswell insisted on a cowhouse for forty cows as a condition for taking over the farm. In addition to the London market, local markets for milk were provided by the condensed milk factory at Aylesbury and by the biscuit factory at Reading; the considerable increase in dairying in the Oxfordshire Chilterns is undoubtedly due in part to this local demand. The growing towns in the area, such as Watford, also provided local markets. The absence of water precluded dairying in the higher parts of the Chilterns, and the chief areas in which dairying increased lay in the lower south and in the major

[1] British Museum, Wargrave Manor Estate, Maps 137 c. 13.

[2] *Royal Commission on Agriculture, Minutes of Evidence*, 1881, *loc. cit.*, p. 949.

valleys. Figure VIa shows the general correspondence between areas of greatest increase and the major valleys, most of which carried railway lines from London. In the clay vales to the north there were both an increase in the number of dairy cattle and a further switch from butter-making to milk-

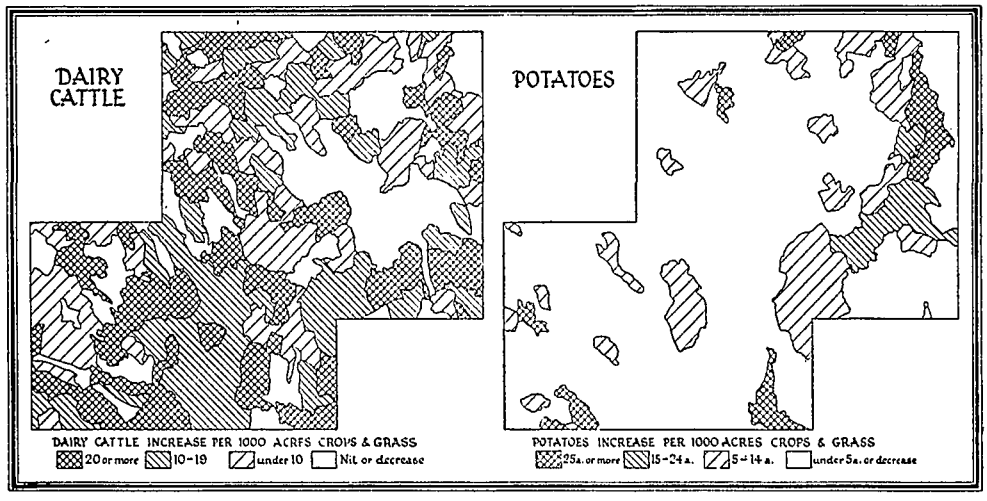

FIG. VI

selling, especially for the London market.[1] Unfortunately there are no records by which this change in the use of milk can be measured; but one contemporary writer reported that in 1888 some 60,000 gallons of milk were sold each week out of the Vale of Aylesbury, more than half of it to London, and that "Aylesbury butter has lost its prestige."[2]

The increased interest in cattle-keeping was partly due to the immigration of livestock farmers from the west country and from Scotland, who were attracted by the low rents and the ease with which farms could be got. On the Knebworth estate, for example, in 1895 Scottish farmers outnumbered English by nine to six,[3] and so numerous were the newcomers when Rider Haggard made his survey of Hertfordshire in 1901 that he was led to ask "But where are the home people?"[4] The Scots were particularly associated with dairying while the Devon and Cornish farmers were said to be more concerned with stock-rearing.

On the reduced acreage of arable there were also adjustments in cropping (Figure IV). Restrictive covenants could no longer be enforced, both because of the difficulty of finding tenants and because farmers' working capital had

[1] Evidence of Mr Perkins, *Journal of the British Dairy Farmers Association*, VI, 1890, p. 126.
[2] R. Gibbs, *A History of Aylesbury*, Aylesbury, 1888, pp. 666–7.
[3] Spencer, *loc. cit.*, p. 14. [4] R. Haggard, *op. cit.*, I, p. 510.

been reduced; on the Bedford estate, where the strict enforcement of cropping restrictions has previously been noted, there was relaxation,[1] and on the claylands convenience had become "the controller of rotations."[2] Apart from the increase in temporary grass, the most general changes were the greater emphasis on oats at the expense of wheat and barley, and the marked reduction in the acreage of other fodder crops, especially turnips on light land and beans on heavy land. Oats replaced wheat as the leading cereal over most of the western Chilterns, and replaced barley as the second cereal in the Hertfordshire Chilterns, where the oat acreage increased despite the falling arable. Fewer sheep were one cause of the reduced turnip acreage, but high labour requirements were also a factor, and the place of turnips in the root break was partly filled by an increase in the acreage of bare fallow. On the clays beans occupied a smaller proportion of the diminished arable and the acreage under mangolds rose; but while there was a marked increase in bare fallow in the early years of the depression, this expansion was not maintained (Figure V, Stewkley, other crops). The least change in cropping occurred on the loams of the Icknield belt.

As with the laying down of land to grass, these generalizations conceal differences between farms. These can be illustrated by the Panshanger estate, where cropping records for a number of farms in close proximity permit comparison of the average acreage under different crops for the periods 1874–6 and 1889–91. On Lower Handside Farm, for example, the acreage under wheat fell 8 per cent, while the acreages under barley and oats rose 5 per cent and 8 per cent respectively. On Digswell Lodge Farm the wheat acreage declined less than 1 per cent, the barley acreage 11 per cent, while the oat acreage increased 10 per cent. At Attimore Hall the oat acreage rose 2 per cent, and acres under wheat and barley declined slightly, while on Birchall Farm the wheat acreage rose 5 per cent, the barley 1 per cent, and the oat acreage fell 4 per cent. Nevertheless, although there was much variation from farm to farm, the trend on most farms was similar.

While in many parts of the country farmers met falling cereal prices by growing potatoes and vegetables, few farmers in the Chilterns adopted these crops. Market gardening spread westward along the Thames terraces in south Buckinghamshire, and southward from the mid-Bedfordshire market-gardening area towards the foot of the Chilterns. But on the Chilterns and in the clay vales soils were either too poor or too heavy to encourage vegetable growing, while much of the area was too inaccessible; even Barton-

[1] Royal Commission on Labour, *loc. cit.*, p. 17, and J. Caird, *English Agriculture in 1850–1*, London, 1852, p. 436.

[2] Pringle, *loc. cit.*, p. 40.

in-the-Clay, little more than three miles from the nearest station, was held to be too far away for it to be suitable for market gardening.[1] The stony soils of the Chilterns were also unsuited to potato growing, which increased mainly in the Vale of St Albans and the Hitchin Gap (Figure VIb). Three causes promoted this expansion: the lighter soils, the immigration of Scottish farmers, who brought not only dairying but potato growing and ley farming, and the abundant supplies of manure which London provided. It was this last consideration which restricted potato growing to a narrow belt near the railway lines; manure cost only 4s. 6d. a ton at the station, but its price was more than doubled five miles away by transport charges.[2] Figure VIb shows how highly localized this expansion was, though the parish returns, which include more distant farms which did not grow potatoes, minimize the size of the increase. On the 340 acres of Digswell Lodge Farm an average of 43 acres of potatoes was grown in 1882–9 by a new Scottish tenant, whereas none had been grown in 1873–9 by the former tenant, a local farmer whose family had occupied the farm for six generations.[3]

There were other minor changes. Although fruit-growing never became a major activity in the Chilterns, additional orchards were planted, often by smallholders, along the foot of the escarpment, particularly between Totternhoe and Ivinghoe, and in places such as Holmer Green on the plateau. Poorer soils were sometimes taken out of cultivation altogether and planted with trees, usually conifers; many small parcels of arable were planted in the western Chilterns and are usually distinguished from the surrounding beechwoods by their conifers, their straight boundaries, and their names, e.g. Jubilee Plantation (Hambleden).

It is clear that the regional pattern of agricultural change was determined mainly by the nature of the soil and by accessibility. Where land was easy to cultivate and moderately fertile it remained in arable, often with little modification in its cropping; where soils were heavy arable fields were laid down to grass and pastoral farming was widely adopted; and where soils provided poor arable but were also unsuited to grass, pastoral farming was adopted almost involuntarily by leaving temporary grass unploughed. On the flatter terrain and somewhat better soils of the Hertfordshire Chilterns changes were less marked than further west, and the differences were accentuated by the relative ease with which manure could be got. While the importance of the supply of manure is probably exaggerated by the farmer who said that

[1] Bedfordshire County Council, Smallholdings File, Bedfordshire County Record Office.

[2] Minutes of Evidence, Select Committee of the House of Commons on Railway Bills, Ques. 9223, 1881, BTC 899, in British Transport Commission Archives.

[3] Panshanger Papers.

without the abundant supplies of dung he would not have the land as a gift,[1] Spencer in his report on Hertfordshire did not see how the poorer land could have remained in cultivation without the advantages conferred by the railways.[2] The closer network of lines in Hertfordshire (Figure I) reinforced the advantages of greater nearness to London and better soils which the county enjoyed over Buckinghamshire and Oxfordshire. Railways facilitated the adoption of dairying and potato growing, and their importance was generally recognized in higher rents near railway lines, away from which, said one farmer, was "agricultural death."[3]

The effects of other factors are more difficult to estimate and their incidence was probably more localized. Wages fell little, but there was continued emigration to the towns and many complaints of the quality of the remaining labour. How far the adjustments in farming were caused by labour shortage or by high labour bills is uncertain; but it seems probable that the need for economy was more important than the shortage of labour.[4] The presence of immigrant farmers, introducing new ideas, also affected the local pattern of change; they were among those most successful in riding the depression, partly because their farming suited the new conditions, partly because they were less conservative than the local farmers, and partly because they worked hard and lived hard. Adjustments also depended on landlords; wealthy landowners might retain tenants by temporary remissions of rent and facilitate change by providing necessary buildings, while tenants of poorer landowners would have been left to fend for themselves. But this consideration, while it undoubtedly modified local details, can hardly have determined the broad regional pattern of change.

The main effect of the events of this twenty-five year period was to emphasize differences which had only been latent before, and to diversify further the pattern of farming. The agriculture of 1875 could still be recognized in the hay-making on the London Clay, the corn and sheep farming on the Chilterns, and the pastoral farming in the clay vales; but these differences were becoming muted, and other differences were arising in their place. The contrast between the arable Chilterns and the grasslands to the north and south became less marked, but that between the eastern and western Chilterns and between valley and hilltop farm increased. A further thirty years were required to complete the process; but the foundations of change were clearly laid in this period.

[1] Rider Haggard, *op. cit.*, I, p. 542. [2] Spencer, *loc. cit.*, p. 22.

[3] Rider Haggard, *op. cit.*, I, p. 511.

[4] H. Rew, *Report on the Decline of the Agricultural Population of Great Britain*, Parliamentary Papers, XCVI, 1906, p. 37.