INTRODUCTION

A comparison between English farming in 1750 and 1850 reveals a number of striking differences. Yet they were differences of degree, rather than kind, for the agricultural revolution was brought about by the acceleration of existing trends rather than any sudden innovations. Indeed, an early Victorian farm would have presented few surprises—with the exception of the reaper and the steam threshing machine—to a good mid-eighteenth century farmer.

Perhaps the most far-reaching changes came in farm organization, and certainly no other topic received so much attention from contemporary writers. In 1750, in spite of several centuries of enclosing, about half the cultivated area of England was still farmed under the open-field system. Farms consisted of a number of strips, scattered among the open fields, which were unfenced and subject not only to a common rotation but to common grazing after each harvest. The enclosure of the open fields, which was nearly complete by the end of the Napoleonic Wars, allowed the consolidation of a farmer’s holdings into one compact unit. The reorganization brought about by enclosure sometimes led to the amalgamation of small holdings into larger farms; but ‘engrossing’, as this process was called, was probably less common than eighteenth-century pamphleteers supposed. Changes in landownership during enclosure are less easy to trace. In some cases the smaller landowners—particularly the occupier owners—finding their share of the cost of enclosure excessive, may have sold out to larger landowners. But the decline of the occupier owner, which was once attributed primarily to enclosure seems to have been largely completed before the era of Parliamentary enclosure. Certainly by the 1780’s the occupier owner was the exception and the tenant farmer the rule in English farming.

2 E. K. C. Gonner, Common Land and Inclosure (London, 1912), p. 2. In 1820 only two counties, Oxford and Cambridge, had more than 5 per cent of their total area remaining in common field.
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Although the introduction of new crops and methods was sometimes possible in the open fields,[1] their survival was generally a deterrent to the adoption of new techniques. It was the technical progress of the late eighteenth century and the first half of the nineteenth century which led to the increases in crop and livestock productivity, which are perhaps the most important feature of the agricultural revolution. Between 1750 and 1850 the average wheat yield in England nearly doubled, a rate of increase greater than in any preceding period.[2] This was achieved, not simply by the introduction of fertilizers and new rotations but by a fundamental change in the farming system. In the open fields, animal and crop production were carried on together on the same farm but were only partially integrated. During the eighteenth century, and increasingly in the nineteenth century, the adoption of certain new farming methods not only increased crop productivity, but firmly integrated livestock and crop husbandry. It was this ‘mixed farming’ which was the culmination of a series of advances in agriculture which had begun in the seventeenth century, and which were the basis of the ‘High’ farming of eastern England in Victorian times. This latter period can be said to mark the end of the agricultural revolution, not because there ceased to be the advances in technique, but because the changes were different in kind from those of the earlier nineteenth century.

The fundamental improvement of the eighteenth century was the replacement of the normal open-field rotation of two grain crops and a bare fallow. Of the new rotations the Norfolk four course was justly the most celebrated.[3] The turnip crop not only utilized the fallow and provided additional fodder, but when it was properly cultivated with the drill and hoe proved an excellent cleaning crop. In some areas, noticeably on light soils, sheep were folded on the crop and their feet consolidated the soil whilst their manure enriched the land for the following wheat crop. The growth of temporary grasses provided grazing and hay, and, perhaps more

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important, increased the nitrogen content of the soil. The new rotations alone would have increased crop yields and the stock-carrying capacity of the land. But there were other improvements. Cattle were increasingly stall fed on both crops and purchased oilcake; this both fattened the animals more efficiently and gave a greatly enriched manure. In addition to farmyard manure, artificial fertilizers such as bones, guano and lime all contributed to increased crop yields. On heavy soils some of these innovations were impossible without adequate drainage, and thus in the clay lands of England underdrainage was essential. The progress in arable farming was paralleled in livestock husbandry by increases in both the quantity and quality of milk, wool and meat.

But the rise in the total output of English farming was not accomplished solely by greater outputs per acre and per animal. The enclosure of heath and moorland together with the reclamation of fen and marsh added greatly to the cultivated area. Although there are no reliable statistics on the total agricultural area of England until the 1860's, one authority has estimated that there was an increase of nearly a third between 1700 and 1854.¹ This came from land which had long lain waste, but there was also an increase in the arable acreage at the expense of grassland, for the spread of mixed farming meant that livestock were fed increasingly on fodder crops and artificial feeds. By the 1860's permanent grassland remained in eastern England only where the land was either unsuited to arable or gave a particularly fine pasture.

Whilst the agricultural revolution saw considerable advances in crop and livestock productivity, there was less progress in labour productivity. Indeed rather than causing a fall in labour needs the New Husbandry almost certainly required an increase. The process of enclosure, with its construction of fences, new roads and farm-houses, required a considerable if temporary work-force. So too did the reclamation of fen, marsh and heath which was going on in many parts of England and Wales.² Arable farming needed more labour

¹ L. Drescher, ‘The development of agricultural production in Great Britain and Ireland from the early nineteenth century’, The Manchester School of Economic and Social Studies, xxiii, no. 2 (1955), 167.
² For example the reclamation of Traeth Mawr employed over three hundred men for six years from 1805 to 1811 (A. H. Dodd, The Industrial Revolution in North Wales, London, 1933, p. 43).
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per acre than grazing, and the first half of the nineteenth century saw an expansion of arable not only into former waste land but into areas of permanent pasture. Under the Norfolk system the land was worked more frequently and more carefully than on the open fields. The turnip crop alone required an enormous amount of labour if it was to be properly drilled and hoed. The increasing rural population of this period meant, however, that there was no shortage of labour, except perhaps locally, and labour was used prodigiously in places. Thus in several limestone areas gangs of women and children were used for stone-picking. The Norfolk system, and its regional variants, were based on cheap labour, and the use of machinery was not such an important part of the agricultural revolution as it was in the industrial revolution. It is true that new implements were being used, the drill being perhaps the most important whilst the plough had been greatly improved in some areas. But the drill was not primarily a labour-saving device, and such implements were few in the first half of the nineteenth century. Although the steam threshing machine, the reaper and other devices were all being used in the 1820’s and 1830’s their general adoption came much later.

The great changes in agriculture did not of course occur independently of the rest of the economy, and were but part of the accelerated growth in the British economy which began in the later eighteenth century. Much of the stimulus to agricultural development came from the increased demand for agricultural products from the growing urban population. This, coupled with scarcity during the Napoleonic Wars, made agricultural prices more favourable in the second half of the eighteenth century than in the first. Many of the changes in agriculture, and indeed in industry, would have been impossible without the improvements made in transport by the construction of canals and the turn-piking of roads. Not only were remote areas linked to new markets for the first time, but existing facilities were improved so that the movement of bulk commodities was cheapened. This allowed farmers to use lime, bones, tiles for underdrainage and later coal for steam engines. The market-

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ing of farm products was also made easier and this not only encouraged the expansion of output, but by freeing the farmer from simply local demand, led to changes in the type of output.

The improvements in agriculture required considerable expenditure. Unfortunately there is little reliable evidence on the sources of capital. Landowners, rather than tenants, were responsible for many of the costlier improvements—enclosure, fen drainage and marsh reclamation. It does not seem that in the later eighteenth century there was such a flow of capital into English farming from non-agricultural sources as there had been at an earlier date. To some extent the capital was self-generated, for both tenants and landlords must have made considerable profits during the inflationary period at the end of the century. Much of this profit was probably reinvested in the land. One factor which must have encouraged investment—by tenants particularly—was the rapid growth of country banking in the last two or three decades of the century.English farming contributed to the general economic growth as well as benefiting from developments in other industries. Increased agricultural output provided food for the growing urban population although it is true that in the nineteenth century the country became increasingly reliant on imports. Further, the new industrial towns must have acquired much of their labour force from rural migration, although the complex relationship between enclosure, increasing farm productivity and rural migration is not altogether clear. Agriculture directly contributed to industrial growth by providing markets for a number of new industries; the manufacture of farm implements is an obvious example.

This account of the agricultural revolution in England has necessarily been brief and generalized, and many of the topics mentioned are still the subject of considerable controversy. Thus the relationship between enclosure, the occupier owner and increasing farm size is far from settled. When exactly did the occupier owner dis-

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appear from English agriculture? Was enclosure always followed by the amalgamation of small holdings? If not, did engrossing occur in the eighteenth century in areas which had been enclosed in previous centuries? A series of unresolved problems surrounds the question of technical progress. Recent work has shown that many of the new methods associated by early writers with the period of Parliamentary enclosure were already being practised in some parts of England at a much earlier date. If this is so, what factors controlled the diffusion of new techniques? Has the survival of the open fields as an obstacle to technical progress been overestimated? Is there any correlation between farm size and landownership and the rate of technical progress? Other aspects of the agricultural revolution have as yet received little attention. How, for instance, did the new methods affect land use? And conversely to what extent did existing patterns of land use affect the adoption of new techniques?

To some extent it is not surprising that these and other topics in a much discussed period remain unresolved, for the evidence is incomplete and often unreliable. In the first place there is a dearth of reliable statistical information on many of the points at issue. For example many of the problems of technical progress would be solved if there was comprehensive information on crop yields. On crop and livestock numbers there are only estimates for the whole country until the Board of Agriculture's returns begin in 1866, with the exception of the incomplete parochial returns made to the Home Office in 1801. On farm sizes there are only scattered estate surveys for small areas until the 1851 census; and even these latter accounts are far from exact. Landownership can only be approached on a regional scale, by using estate records and the Land Tax returns. The latter whilst forming the basis of much work on the occupier owner, can be no more than a rough guide. The neglected topic of land use changes presents particular problems, for either maps or statistics on a parish basis are essential. Before the Board of Agriculture's returns, only Tithe Maps and the 1801 returns give any quantitative indication of the distribution of arable, grass and rough grazing.

Literary evidence, although more abundant than statistical
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evidence, is not without its defects, and the record is far from complete. Archive collections may have estate and farm papers which describe farming policy and methods, but these are invariably sporadic in their survival both in time and place, and form a dubious basis for generalization. This type of evidence, for instance, makes it relatively easy to date the first appearance of a new technique or crop in an area; but it does not tell us when it was generally adopted. It is this difficulty which has led to much controversy on the rate of technical progress in the eighteenth and nineteenth centuries. It is possible to supplement the records of archive offices with the descriptions of agriculture to be found in contemporary topographies and tours, whilst at the end of the eighteenth century there is a rich descriptive literature, culminating in the General Views of the Agriculture of each county. But the writers of these detailed reports were often strangers to the county they described, and many of them were concerned only with describing the best practices rather than average farming conditions.

A second difficulty in interpreting the changes of the agricultural revolution lies in the pronounced regional differences in farming practice which have always existed in England. What can be shown to be true for one part is not necessarily true for another. To be sure the farming of the whole country was uniformlly subject to certain external economic and political factors. But the differences between farming regions—in landownership and farm size as well as in soil and land use—meant that they may respond in a very different manner.

Thus most of the new farming methods adopted in the eighteenth century were in arable farming. Yet in the late eighteenth century arable land predominated only in the east and south of England. The new techniques then had relatively little to contribute to the farming of much of the Midlands and the west. Even within the arable areas of the east different regions responded in very different ways. The Norfolk system of farming developed on the light sand soils of that county, and was not easily adopted on clay soils. Thus throughout much of the later eighteenth and early nineteenth centuries there were striking contrasts between the development of agriculture on the limestone uplands of Yorkshire and Lincolnshire and the low,
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badly drained clay vales of the same counties. Farming regions, of course, differed in other ways. Enclosure was held by eighteenth-century writers to have been the spearhead of progress, and without the stimulus of enclosure little was done. Yet in the early eighteenth century much of England was already enclosed. It would be profitable to compare the rate of agricultural development in old enclosed districts with that in late enclosed but otherwise similar regions to assess the significance of enclosure properly.

This book has been written in order to suggest an approach to some of these problems, particularly that of regional change. It deals with the changes which took place in the farming of South Lincolnshire\(^1\) during the agricultural revolution of the late eighteenth and early nineteenth centuries. But simply to confine the study to a county—or a part of a county—is not an answer to the problem of regional change. This study is concerned more with the regional differences within South Lincolnshire than with the contrasts between the area and the rest of England, though these are necessarily touched upon.

A regional discussion of this type requires a geographical approach. Consequently much of the book is concerned with first, how the agricultural geography of the area varied regionally, and how it changed over a period of time. Ideally a study of regional change during the agricultural revolution should begin in the early eighteenth century. But unfortunately there is not sufficient literary or statistical evidence adequately to describe the regional differences within such a relatively small area, or to be able to distinguish the average conditions from the best farming practices. Indeed it is not until the end of the century that this is possible, and so the first part of the book deals with the agriculture of South Lincolnshire during the Napoleonic Wars. The agricultural geography of the area is described both systematically and regionally; and the factors influencing regional variations are separately analysed. Because this was a period of apparently rapid change, attention is also paid to the rate of change—for instance the rate at which farm improvements were adopted and the expansion of the arable acreage. The second part of the book deals with regional changes which occurred after

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\(^1\) South Lincolnshire consists of the two Parts of Kesteven and Holland.
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the Napoleonic Wars, and the technical and economic conditions which influenced these changes. These developments are traced down to the middle of the century. By the 1860’s ‘High’ farming was well established in most parts of South Lincolnshire, and the agricultural revolution can be said to have been completed. This is not to say that progress ended. Rather that new types of changes—particularly the introduction of labour-saving machinery and later the adaptations to falling prices—replaced the old.

The study begins with an analysis of the factors which determined both the regional differences in farming and the rate at which improvement was progressing in the late eighteenth century. A variety of factors is operative: the survival of open fields, differences in land tenure and farm size, accessibility—and so forth. But paramount was the condition of the land the farmers had to work, and so the first chapter deals with the soils of South Lincolnshire and the state of drainage in the fenland.
PART I

AGRICULTURE DURING THE NAPOLEONIC WARS